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**Contents**

- Influence of Demographic Variables on Knowledge of Hypertension Among Residents of Obio/Akpor Local Government Area of Rivers State  
*Itaa Patience & E. I. Achalu* **PP. 5 - 12**
- Libraries and Information Accessibility for Sustainable Primary Health Care Services in Nigeria's Rural Area  
*Joyce Awajio boroinyem Barth-Nengia, Edeh, Edwin I.* **PP. 13 - 21**
- Impact of Birth and Death Rates on the Sectorial Contribution of Agriculture to Nigeria's GDP  
*Okuh Benjamin Ajokpaoghene, Kerry Chinedu Christopher, Konwe Chukwuemeka Sunday* **PP. 22 - 28**
- Perception of the Effects of Cement Dust and Particulates on the Health and Safety of Factory Workers in Port Harcourt  
*William Azuka Iyama, Chukwudi Omeni Egbunefu, Caroline A. Chioma, Somieibi Amakiri & Lilian Uzor* **PP. 29 - 40**
- Chemical Composition and Effect of Various Treatments on Nutritional and Anti-nutrient Levels of Physic Nut (*Jatropha curcas*) Seed  
*Chukwudi Omeni Egbunefu, William Azuka Iyama, Lilian Uzor & Chinwendu Uchendu* **PP. 41 - 46**
- Prevalence and Patterns of Infertility among Women of Child Bearing Age Attending Gynaecology Clinic at Port Harcourt Teaching Hospital Rivers State, Nigeria  
*Rachael Itubosebiekpoma Ibulubo<sup>1</sup>, Gloria Tamunoboma Ibulubo* **PP. 47 - 56**
- Effect of Students' Reading Habit on their Academic Performance in External Examinations in a Tertiary Institution In Rivers State  
*Belinda Mordecai Jaja & Gloria Tamunoboma Ibulubo* **PP. 57 - 65**
- Design and Construction of an Electronic Blind Walking Stick Using Arduino and Ultrasonic Sensor  
*Mark Ukelabuchi Ideozu, Gordon Amadi, Chikaire Ike-Ihunwo Ndamzi, Nelly Onyinyechi Elechi, Gift Gberesuu Dinebari, Gold Nwigbara Pius Z., Prince Sampson Ogbilikana & Beatrice Nte Awaji-Imam* **PP. 66 - 74**
- Primary Health Care Strategies as Inevitable Tools in Achieving Health Care in Nigeria  
*Nmeakor, Letam Doole & Onyekwere, Kingsley Nyeghandah* **PP. 75 - 79**
- Job Satisfaction Among Pastors in Nyo-Khana District of Khana Local Government Area of Rivers State.  
*Chime Ishmael Onumbu & Dornu Gbeneneh* **PP. 80 - 90**
- Geoelectric Measurement for Overburden Thickness and Groundwater Potential in Parts of Obio/Akpor Local Government Area, Rivers State, Nigeria  
*Anele, Ejikeme ThankGod, Amechi, Bright U, Amakiri Somiebi* **PP. 91 - 97**

Trump Withdrawal from Climate Change Paris Agreement:  
Implications to Global Environmental Reforms

**Edeh, Edwin I. & Ibeabuchi, Uzor H.**

**PP. 98 - 106**

Adulterated Kerosene Utilization Among Women in Aluu Community,  
Ikwerre Local Government Area of Rivers State

**Rorkeek Michael Offiah & Nwankwo Obasi Kalu**

**PP. 107 - 113**

Impact of Health Education Programmes on the Spread of Communicable Diseases in Umuagbai-  
Ndoki Community, Oyigbo Local Government Area of Rivers State

**Rorkeek Michael Offiah & Njidechi Faustina Akoma**

**PP. 114 - 120**

Restructuring our Nigerian Environment for Sustainable Development

**Okoro, Norman Luke\* and Ideozu, Mark Ukelabuchi**

**PP. 121 - 131**

Sedentary Work Pattern and Health Challenges of the Civil Servants at the Rivers State Secretariat  
Complex in Port Harcourt

**Hayford, Bright. M. L. Abu, O. P. & Worlu, H.**

**PP. 132 - 137**

Social Welfare Services: Appraisal of Traditional and Formal Methods in Ataba Community in Andoni  
Local Government Area of Rivers State, Nigeria

**Hayford Bright Mgbo Lawson**

**PP. 138 - 144**

The Knowledge and Attitude of Public Health Workers Towards the Management of HIV/AIDS  
Patients

**Amachree, Vincent Oribo Augustine & Jaja, Belinda Mordecai**

**PP. 145 - 150**

Causes of Late Marriage Among Highly Educated Women in Ikwerre Local Government Area, Rivers  
State

**Lucy Moses Amini & Jeremiah Unwene, G.**

**PP. 151 - 158**

Operations of Commercial Motorbikes in Nigeria: Its Economic, Health and Social Implications

**<sup>1</sup>Unwobuesor Richard Iloma, <sup>2</sup>Fanny Samuel-Harry & Umasom Iloma**

**PP. 159 - 165**

Assessment of Microbiological and Physiochemical Attributes of  
Sachet Water Sold in Rumuodamaya, Port Harcourt

**Unwobuesor Richard Iloma, Bariyaa ThankGod Wiri, George Gift &  
Fanny Samuel-Harry**

**PP. 166 - 170**

Perceived Health Problems Induced by Overcrowded Campus Hostel  
Accommodation Among Students in State-Owned Universities in Rivers State

**Kokpa, Israel Kokpa; Itaa Patience & Onumbu, Chime Ishmael**

**PP. 171 - 182**

Invitro-Fertilization: An Innovation for Managing Infertility among Couples in Recent Years

**Nmeakor, Letam Doole, Dike Evelyn Nwakaego, Onyekwere Kingsley Nyeghandah. PP. 183 - 190**

Entrepreneurship Education: Students' Rating of Skills for Employment Opportunities

**Iheanyi Osondu Obisike, Prince Ikechi Nweke & Ann Nwala**

**PP. 191 - 197**

United Nations' Peacekeeping Missions and Human Security

**Veronica Eke & \*\*Goodnews Wabah**

**PP. 198 - 204**

## **Influence of Demographic Variables on Knowledge of Hypertension Among Residents of Obio/Akpor Local Government Area of Rivers State**

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### **Abstract**

Hypertension is a major public health problem in Nigeria and Rivers State is not an exception. Statistics on hypertension in Obio-Akpor Local Government Area in Rivers State show that the number of cases reported monthly for treatment at health facilities from January 2014 - March 2016 is on the increase. The study investigated knowledge of risk factors of high blood pressure and prevention of hypertension as well as influence of selected demographic variables. The study adopted descriptive survey research design. A sample size of 2,324 respondents was sampled using purposive sampling technique. The research instrument was analyzed using the simple percentage, mean score, Chi-square, and Analysis of Variance (ANOVA) was used to test the hypotheses at 0.05 alpha level. Results revealed an adequate knowledge of high blood pressure among the respondents. Also, there was a significant difference on the level of knowledge of hypertension based on gender, age, level of education and occupation. However, the practice towards prevention of hypertension was poor. The study recommended that the Nigerian government should provide hypertension education programme to improve knowledge on prevention and early detection and management of hypertension.

**Keywords:** knowledge, demographic variables, hypertension, residents.

### **Introduction**

Every day, thousands of people die all over the world due to high blood pressure. Approximately 86 million adults (34%) in the United State are affected by hypertension, which is defined as the systolic blood pressure (SBP) of 140 mmHg or more or a diastolic blood pressure (DBP) of 90mmHg or more. It is a major risk factor for stroke myocardial infarction, vascular, diseases, and chronic kidney diseases (American Heart Association, 2018). According to the World Health Organization (2017), hypertension also known as high blood pressure is a condition in which blood has persistently raised pressure especially in cases of adult patients older than 60 years. In many countries, 50% of individuals in this age group have hypertension. Studies have shown that hypertension contributes to millions of deaths per year all over the world (WHO, 2017).

According to the World Health Organization (WHO), the prevalence of hypertension is highest in the African region at 46% of adults aged 25 years and above, while the lowest was found in the American region (Ajaji, 2016). The global burden of hypertension and non-communicable diseases (NCDs) is rapidly on the increase and the African continent seems to be the most affected region in the world. Hypertension in sub-Saharan Africa is a wide spread problem of immense economic importance because of its high prevalence in urban areas. Hypertension is always under diagnosed, and with severe complications.

The 7th Joint National Committee (JCN 7) on Prevention, Detection, Evaluation and Treatment of High Blood Pressure noted that approximately 30% of adults are not aware of hypertension. Hypertension is the most important modifiable risk factor for coronary heart disease (the leading cause of death in North American) with stroke as the third leading cause of death.



Therefore, health care professionals must not only identify and treat patients with hypertension but also promote a healthy lifestyle and preventive strategies to decrease the prevalence of hypertension in the general population (US Department of Health and Human Service, 2014). Hypertension is an asymptomatic disease. A recent national survey reveals that the prevalence of hypertension is the most important risk factor for CVD and prevalence continues to rise and expected to affect 1.5 billion people worldwide. Prevalence in Nigeria is about 30-45% and genetic and environment factors are key to its development.

In 1930s' epidemiologic research on cardiovascular risk factor in the USA, it was discovered that there is disparity in hypertension risk among the African and the European. Pre-data suggested that high blood pressure cases were also discovered among the young Afrocarribean and African migrants to the UK. Hypertension is a global health problem an estimated one billion people live with high blood pressure, out of these no more than nine million die from the condition yearly. Cardiovascular diseases and particularly hypertension are associated with an ageing process. It affects mainly, people over 40 years. When high blood pressure is not treated properly patient develops cardiovascular diseases such as stroke, heart attack and kidney failure. Lifestyles practice across the continent and urbanization and changes of attitude in people bring about indulging in eating various types of food prepared by fast food outlets, adding salt to meal while eating and they are involved in little or no exercise. Some indulge in taking of alcoholic drinks and hard drugs such as cocaine, marijuana, etc. which can contribute to hypertension.

According to Achalu (2008), in Nigeria, most cases of sudden death are wrongly attributed to either witchcraft or poisoning by enemies. The consequence of high blood pressure if not controlled can damage the vital organs of the body: the heart, brain and the kidney including the eyes. The prevalence of hypertension in Nigeria forms a substantial portion of the total burden in country currently estimated to be over 170 million. With an increasing adult population and changing lifestyle of Nigerians, the burden of hypertension may continue to increase as time unfolds. As such, there is need to adequately review the influence of age, gender, type of occupation of the residents of Obio/Akpor Local Government Area on the knowledge of hypertension and their predisposition to hypertension and the dangers associated.

### **Statement of the Problem**

Statistics on hypertension cases in Obio/Akpor Local Government Area show that the number of cases of patients reported monthly for treatment at the health facilities from April 2016 – April 2018 indicated that high blood pressure cases have increased from 126 to 332 patients, which means that hypertension cases need to be checked and put under control in Obio/Akpor Local Government Area (District Health Information Service 2016-2018). The problem is that most people are not aware of the dangers of high blood pressure and some people in Obio/Akpor Local Government Area have little or no knowledge of the risk factors of high blood pressure. This study therefore, investigated the influence of demographic variables on the knowledge towards prevention of hypertension among residents of ObioA/kpor Local Government Area.

### **Research Design**

This study adopted descriptive survey research design. This design was considered appropriate because the study was aimed at collecting sampled data to represent the entire population, in order to examine the influence of demographic variables on the knowledge or awareness level of the population of the study towards the prevention of hypertension among residents of Obio/Akpor Local Government Area of Rivers State.

### Population of the Study

Population of the study consisted of adult residents in Obio/Akpor Local Government Area. The total population of Obio/Akpor as at the period of the study was estimated at 462,350 by the National Population Commission (NPC, 2006).

### Sample Size and Sampling Technique

The sample size consists of 2,234 adults out of a total of 462,350 residents of Obio/Akpor Local Government Area. Simple random sampling without replacement was used to select 2,234 respondents, which was 0.48% of the entire population of Obio/Akpor residents (NPC, 2006).

### Instrument for Data Collection

The instrument for data collection was a well-structured questionnaire. The questionnaire was structured on True/False basis.

### Procedure for Data Collection

A total number of 2,234 copies of questionnaires were distributed, but a total number of 1957 questionnaires were retrieved and used for the study.

### Method of Data Analysis

The data collected were analyzed using the descriptive statistics of simple percentage, mean and standard deviation and Chi-square and ANOVA were used to test the hypotheses at 0.05 alpha level.

### Results

**Table 1: Level of knowledge of hypertension among the residents of Obio/Akpor LGA**

S/N	Items	True		False	
		F	%	F	%
1	Hypertension is common among the old than the young	1761	90	196	10
2	Hypertension can lead to heart attack	1859	95	98	5
3	Hypertension has many complications such as kidney failure and stroke	1862	95	95	5
4	Hypertension tends to ruin families	1710	87	247	13
5	Some food and drugs can trigger hypertension	1468	75	489	25
6	Hypertension is a constant rise in blood pressure	1879	96	78	4
7	Headache, dizziness and increase in heart beat are all signs of Hypertension	1859	95	98	5
8	Hypertension is a major risk factor in stroke	1840	94	117	6
9	Excessive stress can lead to hypertension	1854	95	103	5
10	Regular eating of fatty foods can lead to high blood pressure	1527	78	430	22
11	Hypertension is a silent killer with no specific symptoms	1683	86	274	14
12	Smoking is a potential risk factor of hypertension	1429	73	528	27
13	High salt intake mostly result in high blood pressure	1840	94	117	6
<b>Cluster %</b>			<b>89</b>		<b>11</b>

Table 1 reveals that 1761(90%) of the respondent is aware that hypertension is common among the old than the young; 1859(95%) agreed that hypertension can lead to heart attack; also 1862(95%) of the respondents know that hypertension has many complications such as kidney failure and stroke while 1710(87) agreed that hypertension tends to ruin families and, 1468(75%) of the respondents also agreed that some food and drugs can trigger hypertension. 1879(96%) of the residents agreed that hypertension is a constant rise in blood pressure. Furthermore, 1859(95%) of the respondents recognized that headache, dizziness and increase in heart beat are all signs of hypertension; in the same vein, 1840(94%), 1854(95%) and 1840(94%) of the respondents were aware that hypertension is a major risk factor in stroke; excessive stress can lead to hypertension and high salt intake mostly result in high blood pressure respectively. While 1527(78%), 1683(86%) and 1429(73%) of the respondents were aware that Regular eating of fatty foods can lead to high blood pressure, Hypertension is a silent killer with no specific symptoms, Smoking is a potential risk factor of hypertension. The cluster percent of 1736(89%) agreed indicates that residents of Obio-Akpor had high level of knowledge of hypertension.

**Hypothesis 1:** There is no significant difference in the knowledge towards hypertension between male and female adult residents in Obio-Akpor local government Area.

**Table 2: Chi-square analysis of knowledge of hypertension of residents in Obio - Akpor LGA based on Gender**

Variable	N	Df	$\chi^2$ cal	Sig. (2-tailed)	$\chi^2$ crit.	Decision
Male	728	1	24.39	0.000	3.84	H01
Female	1229					Rejected

$p < 0.05$

Table 2 revealed that the  $\chi^2$  calculated is 24.39 with df= 1 and p-value is equal to 0.000 which is less than 0.05, therefore the null hypothesis that there is no significant difference in the knowledge of hypertension between male and female adult residents in Obio-Akpor local government Area was rejected. This indicates that the male had higher percent than the female and there was a significant difference on the knowledge toward hypertension of residents in Obio-Akpor LGA base on gender.

**Hypothesis 2:** There is no significant difference in the knowledge of hypertension of residents in Obio-Akpor local government Area base on age.

**Table 3 : Chi -square analysis on knowledge of hypertension of residents in Obio - Akpor LGA based on Age**

Variable	N	df	$\chi^2$ cal	Sig. (2-tailed)	Level of Sig.	$\chi^2$ crit.	Decision
Age	1957	3	34.88	0.00	0.05	7.82	H01
							Rejected

$p < 0.05$



Table 3 revealed that the  $\chi^2_{cal}$  is 34.88 with  $df = 3$  and  $p < 0.05$ . The obtained p-value of 0.00 is less than the level of significance = 0.05, therefore the null hypothesis that there is no significant difference in the knowledge of hypertension of adult residents in Obio-Akpor local government Area base on age was rejected. This indicates that there is significant difference on the knowledge toward hypertension of residents in Obio-Akpor LGA based on age.

**Hypothesis 3:** There is no significant difference in the knowledge of hypertension of residents in Obio-Akpor local government Area base on their level of education.

**Table 4: Chi-square analysis on knowledge of hypertension of residents in Obio Akpor LGA based on their level of education**

VARIABLE	N	Df	$\chi^2_{cal}$	Sig. (2-tailed)	Level of Sig.	$\chi^2_{crit}$	Decision
Level of Education	1957	3	155.00	0.00	0.05	7.82	H01 Rejected
$p < 0.05$							

Table 4 revealed that the  $\chi^2_{cal}$  is 155.00 with  $df = 3$  and  $p > 0.05$ . The obtained p-value of 0.00 is less than the level of significance = 0.05, therefore the null hypothesis that there is no significant difference in the knowledge of hypertension base on the level of education of adult residents in Obio-Akpor local government Area was rejected. This indicates that there is significant difference on the knowledge of hypertension of residents in Obio-Akpor LGA based on their level of education.

**Hypothesis 4:** There is no significant difference in the knowledge of hypertension of residents in Obio-Akpor local government Area base on occupation

**Table 5 : Chisqu are analysis on knowledge of hypertension of residents in Obio Akpor LGA based on their occupation**

VARIABLE	N	Df	$\chi^2_{cal}$	Sig. (2-tailed)	Level of Sig.	$\chi^2_{crit}$	Decision
Occupation	1957	3	12.396	0.06	0.05	7.82	H01 Rejected
$p < 0.05$							

Table 5 revealed that the  $\chi^2_{cal}$  is 12.39 with  $df = 3$  and  $p > 0.05$ . The obtained p-value of 0.06 is less than the level of significance = 0.05, therefore the null hypothesis that there is no significant difference in the knowledge of hypertension base on the occupation of adult residents in Obio-Akpor local government Area was rejected. This indicates that there is significant difference on the knowledge of hypertension of residents in Obio-Akpor LGA based on their occupation.

### Discussion of Findings

The findings revealed that majority of the respondent knew that **hypertension is common among the old than the young; and that hypertension can lead to heart attack. Also hypertension has many complications such as kidney failure and stroke. Hence, the residents had high level of knowledge of hypertension.** Emphasizing more on the role of knowledge, Moronkola and

Okonlawon (2003) posited that knowledge helps to create a change in behaviour towards health. Knowledge about risk factors is an important prerequisite for an individual or adult to implement behavioural changes towards hypertension prevention.

The results reveal that male respondents had high level of knowledge of hypertension among the residents of Obio-Akpor L.G.A. Thus, there was a significant difference based on gender on the level of knowledge of hypertension. This finding is supported by Achalu (2008), that the incidence of heart attack is lower in women at 45 year of age than men of comparable age. Men have more heart attacks at an early age than woman. In line with this study, Igwe and Onuzulike (2004) observed that there are more widows than widowers. This implies that women are more careful in adopting the strategies which can help them in controlling hypertension. Scientists have proved that females live longer in life than the males because woman experience less tension, less bulk, have better heart and generally have more white blood corpuscles, exhibit better internal body adaptation, face less normal labor and undertake less risk. The findings are akin with Minh, Byass, Chuc and Wall (2006) cited in Onyekwere (2012) who carried out a study to assess gender differences, prevalence and socio-economic determinants of hypertension. Their result reveals that Men experienced more hypertension than women (81.1 % versus 19.1 %).

More so, the findings show that the aged residents had higher level of knowledge of hypertension among the residents of Obio-Akpor L.G.A. Hence, there was a significant difference on the level of knowledge of hypertension based on age. Age is another factor that influences the strategies for controlling hypertension among the people of Obio/Akpor. It is presumed that the more one age, the more he is exposed to knowledge, the more he become exposed to stations and condition which are inimical to his health. According to Mekariri (1999) who opined that knowledge of the strategies differs by age. As one grows older, there is the tendency of depression, which will automatically lead to poor coping strategies with severe illness of any type. That means, the older one becomes, and the more there is a declining coping strategy with severe health problems as a result of the degeneration of some organs.

Also, there was a significant difference on the level of knowledge of hypertension based on educational level. According to WHO (2012), the more educated one is the more he responds positively to the reading of books where he can get information concerning disease condition; he or she will know when to seek doctor's attention concerning his health, information on paper, radio, television, internet will be well understood e.g. the cause, risk factors and treatment of a disease condition. Education will enable the individual to acquire knowledge pertaining to the coping strategies of illness and can as well as positively towards it on the other hand, an individual with low educational level or an illiterate who hasn't the opportunity of reading books will have the problem of not knowing what to do. The result revealed that there was a significant difference on the level of knowledge of hypertension based on occupation. The findings corroborate with Igwe and Onuzulike (2004), who acknowledged that a job that goes with high remuneration invariably may lead to better ways of living which have direct relationship with good health. People, who earn high in their places of work, will have enough money to afford the better goods and drugs that may help in controlling hypertension. Francesca Anowie and Sarah Darkwa (2015), affirm that those who had good occupation and works were more knowledgeable about hypertension than those who do not have.

## **Conclusion**

The findings of this study, revealed that adult residents in Obio/Akpor had high knowledge on hypertension, and in general displayed a positive practice towards prevention of hypertension. It was also seen that male respondents have high knowledge of hypertension compared to the female respondents; while the influence on age shows that younger residents do not have much knowledge

on hypertension as compared to the older residents. In terms of occupation, workers and business operators have the resources to feed well and afford necessary drugs for the control of hypertension. Also, education of the citizens plays a significant role in that it provides the needed exposure and information on the risk factors and the living conditions that promote good health.

### Recommendations

Consequent upon the findings and conclusions of this study, the following recommendations are made:

1. The adult residents of Obio/Akpor should put their knowledge of hypertension into practice so as to live healthily
2. There should be rigorous health education on risk factors, avoidance and prevention among younger residents who were found to have less knowledge from this study.
3. Periodic community survey and test for adults on hypertension and mandatory routine blood pressure test on all adults is suggested to aid those who may not have the means.
4. There should be urgent public health actions (such as health education and early detection of cases) taking into account its relationships with gender and socio-economic status by the government.

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## **Libraries and Information Accessibility for Sustainable Primary Health Care Services in Nigeria's Rural Area**

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### **Abstract**

The ultimate goal of Primary Health Care services is better health for all. The scheme is aimed at making adequate health care universally accessible to individuals and families in the country through promotive, preventive and rehabilitative approaches. However, the implementation of such services has been marred with ignorance on the part of the rural beneficiaries. Majority of Nigerian's live in rural areas, they serve as the base for production of food, a major source of capital manufactures. Given the contribution of the rural sector to national economy, rural sustainable development is aimed at developing the rural poor, their economy and institutions from a state of stagnation or its low productivity equilibrium into dynamic process leading to higher levels of living and better quality of life. This can only be possible when the rural poor have access to information that is vital to their lives and livelihoods. This paper having described factors militating against Primary Health Care services, made case for the role of libraries as social agency for the realization of the goal of Primary Health Care services to the rural areas in Nigeria. It concluded that the timely and well packaged health information accessibility will sustain the benefits of the health care services to the people which includes cost saving, reduces mortality and morbidity, among others. Establishment of public libraries throughout the local government areas of the country, training of more librarians to manage the libraries and sustained acquisition of health information materials, among others were recommended.

**Keywords:** rural areas, primary health care, libraries, information accessibility

### **Introduction**

The value for rural population in Nigeria was 95,604,260 (51.4%) as last measured in 2016, according to the World Bank rural population refers to people living in rural areas as defined by the National Statistics Office. It is calculated as the different between the total population and urban population. The value for rural population in Nigeria by 2016 was 95,604,260 (51.40%). It is the highest value over the past 56 years which was 38,182,080 (84.59%) in 1960. The rural areas of Nigeria are inhabited, by the bulk of the nation's population, with an average settlement having over 5,000 inhabitants. The Nigeria population census of 1963 show that 80.7% of Nigeria lives in such settlement. An estimate for Nigeria's rural population in 1985 was 70% of an estimated total National population of approximately 100 million (World Bank, 1987), while the figure for 1995 was 61% (World Resources, 1997). They serve as the base for the production of food and fibre,



they are the major sources of capital formation for the country and principal market for domestic manufactures (Olatubonsun, 1975).

Systematically, the term 'rural' is an adjective that precedes a noun, such as a place, person, society, community, area, dweller, economy, environment etc. so we have rural area, rural society, rural economy, rural environment etc. Strictly, compared to the antonym urban; rural and urban are the two categorization of the society. A rural area according to Olatunbosun (1975) in Omale (2005) is an area with a population lower than 20,000 occupationally, specific location, removed from urban area in terms of services like water, health, electricity, etc. (and as far as Nigeria is concerned poorly provided for by the index of demography, Nigeria is 80% rural). The American Bureau of Census classified a group of people living in a community having a population of not more than 2,500 people as rural, whereas in Nigeria, the Federal Office of Statistics defines a community less than 20,000 people as rural. According to Afolaya (1975) rural areas can be easily identified by various criteria apart from population. Such criteria includes level of infrastructural development, road networks, educational institutions, health, water, environment, etc. Anele (2012) hypothetically said life in rural areas is hard rustic and sometimes inhuman cannot be overemphasized. Many rural dwellers are traumatized by poverty, starvation and diseases. Muoghalu (1992) observed that rural areas are characterized by depressingly meagre annual per capita income, pervasive and endemic poverty, manifested by widespread hunger, malnutrition, poor health, general lack of access to formal education, lack of livable housing and various forms of social and political isolation compared with their urban counterparts.

The Asian Development Bank (2007) observed that rural societies live in a simple environment, yet structure and the dynamics of their day to day life is complex, poverty and underdevelopment are synonymous with rural setting of the developing countries of the world; with Nigeria inclusive. Abah (2000) perceived that the deplorable condition of the Nigerian rural sector is emphatic. The rural population constitutes the Nigerian peasantry, the poor and the target illiterates groups. The rural poor are heterogeneous group which includes small-scale farmers, the landless, nomads, pastoralists and fishermen, they share common disabilities, limited assets, poverty, malnutrition, environmental vulnerability and lack of access to public services, poor medical facilities, persistence of local endemic disease, sometime without cure which reduces the quality of labor force, premature death, a dependent deprived womenfolk, unproductive, subsistence agriculture, etc. Ekekepe and Ekpe (2009) averred that whether you are in the northern part or the southern part of Nigeria, you will be stuck by the level of abject poverty, mass illiteracy, unsanitized environment, lack of clean water, lack of access road, unavailability of health care facilities, improper and inadequate housing, large family sizes, small income, defeatist/fatalist attitude, out of mode ineffective farming implement.

It is a fact that the inhabitants of the rural areas are experiencing various challenges associated with health status and well-being. These health challenges range from preventable diseases to other sophisticated health problems, which are mainly attributed to the environmental conditions and poor living condition of the people. However, the emergence of Primary Health Care services to serve as an essential and unique approach for the people in order to ensure better health for all.

Worried over the side spread inequalities in health and health care that afflicted all nations of the world, developed as well developing member nations, the World Health Organization (WHO) held a conference in Alma Ata, in the former Soviet Republics, to address the issue. The objective of the conference was to design a strategy that would ensure health care for all, starting from the family and community levels to the state and national levels of all countries. This strategy was termed Primary Health Care. There was also a declaration of health for all by 2000 and beyond (Oluh, 2003). This was the origin of Primary Health Care Services.

This ideal model of healthcare was adopted in the declaration of the International Conference on Primary Health Care held in Alma Ata, Kazakhstan in 1978 (known as the "Alma Ata Declaration"), and became a core concept of the World Health Organization's goal of Health for all. The Alma-Ata Conference mobilized a "Primary Health Care movement" of professionals and institutions, governments and civil society organizations, researchers and grassroots organizations that undertook to tackle the "politically, socially and economically unacceptable" health inequalities in all countries.

The ultimate goal of primary healthcare is the attainment of better health services for all. It is for this reason that World Health Organization (WHO) has identified five key elements to achieving this goal:

- reducing exclusion and social disparities in health (universal coverage reforms);
- organizing health services around people's needs and expectations (service delivery reforms);
- integrating health into all sectors (public policy reforms);
- pursuing collaborative models of policy dialogue (leadership reforms); and
- Increasing stakeholder participation.

Behind these elements lies a series of basic principles identified in the Alma Ata Declaration that should be formulated in national policies in order to launch and sustain Primary Health Centre as part of a comprehensive health system and in coordination with other sectors. In sum, Primary Health Care recognizes that healthcare is not a short-lived intervention, but an ongoing process of improving people's lives and alleviating the underlying socioeconomic conditions that contribute to poor health. The principles link health and development, advocating political interventions, rather than passive acceptance of economic conditions.

### **Concept of Primary Health Care**

Since the global target of Health for All was declared in 1978, primary health care (PHC) has been adopted and accepted universally to be the approach to achieving this lofty goal. The world will only become healthy when we achieve Health for All- the developed and developing nations alike, the poor and the rich, the literate and the uneducated, old and young and women, children and the elderly. The primary health care system is a grass-root approach meant to address the main health problems in the community, by providing preventive, curative and rehabilitative services (Gofin, 2005, Olise, 2012).

As defined in the Alma Ata declaration, primary health care is the "essential care based on practical, scientifically sound and socially acceptable methods and technology, made universally accessible to individuals and families in the community through their full participation, and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self- Determination" (WHO, 2012). The principles of primary health care underscore the great value of the approach. These principles which include essential health care, community participation, equity, intersectoral collaboration, and use of appropriate technology are the driving forces behind the efficiency of primary health care as the hope of achieving universal health coverage. This means that primary health care is meant to provide services to the majority of the people based on needs without geographical, social or financial barriers through their involvement in the planning, implementation and evaluation of health programmes. It implies drawing resources from within and outside the health sector and utilizing technologies on the basis of suitability. In other words, Primary Health Care is an approach to health beyond the traditional health care system that focuses on health equity-producing social policy. Primary Health Care includes all areas that play a role in health, such as access to health

services, environment and lifestyle. Thus, primary healthcare and public health measures, taken together, may be considered as the cornerstones of universal health systems (Lucas & Gilles 1990; Marcos, 2004).

Primary Health Care addresses the health problems in the communities, providing promotive, preventive, curative and rehabilitative services accordingly. It also includes education concerning prevailing health problems and methods of prevention and controlling them; promotion of food supply and proper nutrition and adequate supply of safe water and basic sanitation, maternal and child care including family planning immunization against the major infectious diseases, appropriate treatment of common diseases and injuries, and provision of essential drugs (Lucas & Gilles, 1990; Oluh, 2003). It is the first level of contact of individuals, family and community with national health system bringing health care as close as possible to where people work and live and constitutes the first element of continuing health care process (Lucas & Gilles, 1990).

Amonoo-Lartson, Ebrahim, Lovel and Ranten (2004) opined that the underlying principle for primary Health Care services is to transfer resources from care in the hospitals to care in the community. They pointed out that the reason for adopting Primary Health Care was the discovery that despite the heavy infusion of health care resources in many countries in the last twenty years and more, there is still lack of health care in most areas and even with increase in health manpower and hospital beds, clearly, the problems and health service inadequacies are continuing in many parts of the developing world, where up to forty percent (40%) of children die before they reach school age. They observed that apart from higher death rates due to preventable diseases, there are also high rates of blindness, lameness and other forms of disabilities and lamented that the tragedy is that many of these disease could be prevented or controlled through Primary Health Care services, by the use of immunization, simple medication, environmental alteration and health education and information.

In Nigerian rural communities, the successful delivery of Primary Health Care has long been impeded by some factors among which are; ignorance and illiteracy, religious and cultural beliefs and lack of infrastructure. Therefore, the successful implementation of Primary Health Care requires the knowledge of basic health problems among health workers, health planners and especially by the people of the community. There is also the need for cooperation between agencies like those in the education, agriculture, health and library and information services to ensure sharing of resources, information and coordinated approach to health problems.

### **Libraries and Information Accessibility**

Primary Health Care is aimed at alleviating ill health and eliminating mortality and morbidity caused by preventable and curable diseases in the society. The use of immunization and drug administration and dispensation are two important methods of achieving these objectives, however, there is one other social disease that stands in the way of success to Primary Health Care service delivery in Nigeria society. This disease is ignorance, information is the only antidote to ignorance, and the library is the institution designed through its functions of adequately dispenses this antidote and disperse ignorance.

The Library Glossary (1987) see a library as a place where information are acquired, stored, processed, organized, retrieved and disseminated to potential users when need arises. To Ugwuogu (2006), the library is a social instrument designed to serve information, recreation, research, culture, education and conservation. It is a veritable tool or repository of knowledge that provides the vital underpinnings for socio-economic, political and cultural development in any civilization. Libraries contain written, printed, information technologies and other materials like periodicals, films, audio tapes, microforms and other information bearing materials. All the above materials are



used by the library to disseminate information to users for knowledge and decision making. The recognition of information as power, strength, weapon and the fourth factor even in the line of production, in addition to land, labor, and capital; re-echo its importance in the present world order. The bedrock for all kinds of development in varying societies is information (Ezeani, 2013) information is that which one has that is useful for decision making. It illuminates and removes fears and doubt, anxiety, and ignorance. Though timeless, information need forms the gap between what one knows and what one ought to know.

Access to information by the rural dwellers in Nigeria is therefore a right and not a privilege. It is critical in the people's understanding of their entitlement to welfare benefits and sources of support to overcome social exclusion (Harande, 2009). Okiy (2013), notes that rural development is a basis for economic development and information is an important ingredient for people's participation. It is through the provision of information on matters affecting communities and the people's access to information that produces the desired development. Tackie and Adams (2007) agrees to this noting that adequate and up-to-date information is clearly of paramount importance to organizations and communities in order to attain target goals.

Harande (2009) citing Alegbeleye and Aina (1985) includes Health information, Sustainable wealth creation, Agriculture and allied occupations, Education, Welfare and family matters, Crime and Safety etc. as some of the information needs. Although other aspects of information are crucial to the rural areas; in no time do they require timely information on health than now on deadly diseases ravaging the world. Such diseases as cholera, polio, meningitis, AIDS, malaria etc. are recognized by the World Health Organization as slow killers that needs greater awareness and mode of tackling it. Even as much fund has been spent by donor agencies; the rural areas still stands at great risk of suffering from these ailments based on limited and sometimes lack of information and action. Today, the issue of the dreaded scourge Ebola is on the news again ravaging most of Central Africa and by extension the world.

Health is such an abstract concept which poses difficult to be ascribed a definition due to varied perception on it. However, World Health Organization sees it as a state of complete physical, mental and social well-being. It includes such other aspects as physical, emotional, psychological, social and spiritual. Health information is therefore the knowledge, feeling and behavior to be applied to existing or envisaged health problem. Uzoagba and Nwokedi (2013) attribute it to the knowledge that informs, motivates and help people to adopt and maintain healthy practice and life style. Among others, it informs people about existence mode of infection and prevention of diseases in order to promote good health.

Health information is related to those pieces of information that will make the user to have physical and emotional stability. It contains such information as sanitation rules and regulations (environmental cleanliness), family planning, diseases control and prevention, immunization, location of good hospitals and clinics, laboratory centers, and the like. It may also include news about international bodies and agencies responsible for global health activities as the World Health Organization (Uhegbu, 2007). Dissemination of health information to the people in a community by the library is akin to the adage which says "to be forewarned to be forearmed". Health information will among other things, enable people to understand that certain diseases like cholera is as result of poor hygienic environment, that nutritional disorder like kwashiorkor is reduce by fat, the incidence of maternal and mortality, why family planning rather than encourage promiscuity among women as is erroneously believe by some rural folks, helps to reduce the dangers arising from multiple and unwanted pregnancies, as well as ensure that families stop at the number of children they can comfortably care for, and even enable them to choose the sex of their babies. Health information is timely and need to be handled as a matter of urgent importance. It leads to the decimation of populations if neglected, especially in case of high infection mobility.

The need therefore, of concerted effort by special information handle agencies is required, with much support from international donor agencies to raise awareness on health matters. This is where the library comes in.

The information needs for rural communities in Nigeria are provided in forms of library extension services. The libraries offer support services needed by different organizations, agencies and groups such as schools, churches, health organizations, age grades, social mobilizations center, etc. they provide space for organizing educational and enlightenment campaigns and programmes needed by the rural communities to stimulate and promote activities. Adimorah (1989) asserts that library extension services may take the form of space provision as avenues for organizing talks, seminars, workshops, lectures and recreational activities; and that users take the opportunity to acquire greater knowledge, skills and experiences. The libraries provide the information needs of the rural communities in the form of its mobile library service. Uwa (2014) posits that mobile library service provides information to the doorsteps of the prospective users remotely located, making dramatic impacts on the rural communities. Nwalo (2003) and Ranganthan (1992) describe mobile libraries as “library in miniature”, “knowledge on the wheel”, and “librachine”, mobile library provide information at service stations, such as village squares, town halls, courts, health center etc. for the benefit of the rural communities.

Apart from the traditional functions of selection, acquisition, organization, storage and retrieval of information to satisfy the information needs of the communities. Other methods that the libraries could use to make health information accessible to the people to support Primary Health Care Services delivery in Nigeria's rural communities are stated below.

**Displays and Exhibitions:** to display is to put something in a place where people can see it easily. To exhibit means to show something in a public place for people to enjoy and giving them information. Library displays are usually done within the library premises especially around the readers' department. An organized display of information materials such as films, videos, books, magazines, tapes etc. on health issues will attract the attention of library users to their existence, and some may even be borrowed by clientele for home reading. The library can as well organize exhibition of health information materials in the community. Public places like town halls, village squares health center, etc. can be used as venues. This type of exhibition is usually done in collaboration with authors, health workers and book vendors. Leaflets and handbills can be freely distributed and thus, great awareness is generated.

**Lectures, Seminars and Workshops:** lectures, seminars and workshops are means of sharing ideas and passing information to people. The library can in collaboration with the appropriate health agencies, institutions and professionals organized public lectures, workshop or seminar in the community to address the health issues.

**Public Enlightenment/Awareness:** the library can collaborate with the State Ministry of Health or Directorate of Public Health and mount an awareness/enlightenment campaign in the community to eradicate and enlighten the people on prevailing health issues, especially those that are common in the community. Audio visuals like films, video, posters, etc. concerning the health problem can be shown to the audience to make them have a vicarious experience of the subject matter. A medical doctor or a competent health worker can be brought in to deliver talks and give some explanations during the campaign. Well designed and colorful posters with catchy messages written in both English and local languages are very good vehicle for public enlightenment and awareness campaign.



**Use of Oral Media:** this is the use of traditional associations and institutions like the town criers, age grades, cultural groups, market associations, traditional rulers and religious organizations to disseminate information to the people in the community. Public owned associations or groups as mentioned above command the attention and loyalty of their members and therefore are good media for information dissemination especially in rural communities.

**Information Packing:** This refers to the ways of adopting information to suit the desired information need of any user (Uhegbu, 2007). Information users in any community differ in their academic backgrounds and qualifications, cultural and religious beliefs, occupational and professional inclinations as well as their psychological and socio-economic backgrounds. These differences affect their perception and understanding of information at their different background. In information packing, the librarian rearranges or repackages the contents of information in such a way that it would satisfy the information need of the user, given his or her background. Packaging and repackaging of information can be done in the following ways: Content Repacking, Medium Repackaging, Language Repackaging and Time Schedule.

### **Conclusion and Suggestions**

Relevant Health information is necessary in ensuring proper health practices. Okore and Njoku (2012) advocate for information repackaging in the local language of its environment and develop rural information centres and information systems; Pyati, (2009) citing National Knowledge Commission of India posits that libraries as information disseminators have a social function in making knowledge available to all. It is through this role that various health issues can be communicated to the rural communities. He further stated that the libraries serve as local centres of information and learning and are gateways to national and global knowledge. Libraries must create avenues to reach out and mobilize communities with information that will help in controlling the scourge of deplorable health in Nigeria. This calls for all hands to be on deck, to introduce programmes to improve the delivery of basic health care services to the rural communities.

Community mobilization is therefore, all activities carried out in building capacity for citizens to identify their needs, interest, resources and remedies, in a way that will enhance representative participation, good health, accountability, astute governance and create peaceful change. Government in its desire to ensure good health and welfare of its citizens, established agencies and organizations charged with the responsibility of information dissemination, whose responsibilities includes social mobilization and information delivery. Oyeniyi and Olaifa (2011) identified libraries as important agent for information dissemination, so libraries should be in the forefront of carrying out this exercises. Therefore, libraries have a vital role to play in the actualization and implementation of Primary Health Care.

The library as a social institution is a vital organ for the realization of the aims and objectives of Primary Health Care Services. Health information packaged and disseminated by the library to the communities is an effective antidote against most psychological diseases that are currently ravaging most rural communities. Health information in support of Primary Health Care has some benefit as it save money, saves time and reduce the raise of mortality and morbidity in the communities.

In the view of the above, this paper suggests the following:

- Government should ensure that Health facilities and medical centres are provided and well equip in the rural communities.
- The use of indigenous languages for health information dissemination in the rural communities.
- The need to repackage health information both in content and strategies of delivery.

- Acquisition of health information materials and audio visuals among others for dissemination of the same to the communities.
- Collaboration between libraries, health institutions and agencies, including relevant Non-Governmental Organizations (NGOs) in the successful implementation of Primary Health Care services in Nigeria's rural communities.
- Lastly and very important, the establishment of libraries and information centres in very communities in Nigeria

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## **Impact of Birth and Death Rates on the Sectorial Contribution of Agriculture to Nigeria's GDP**

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### **Abstract**

Agriculture plays a major role in economic development of any nation. In order for the agricultural sector to continue to contribute meaningfully to the Gross Domestic Product (GDP) of growth, factors that can impact on the agricultural sector must be taken seriously. The purpose of this paper is to study the nature of the impact of birth and death rates on the sectorial contribution of the agriculture on the GDP. The data for this paper were obtained using secondary means based on the publications of the Central Bank of Nigeria (CBN), National Bureau of Statistics (NBS) and National demographic health surveys on the internet from 2007 to 2017. F ratio test was used to test the 1st hypothesis while t-test was used to test the 2nd hypothesis. The null hypotheses were rejected which showed that there was significant impact of birth rate and death rate on the percentage sectorial calculation of the agricultural sector.

**Keywords:** Economic development, Gross domestic product, Birth rate, death rate, population Growth

### **Introduction**

Agricultural output is a component of the Gross Domestic Product (GDP) of a nation. Birth and death rates as components of population growth, play a major role on the final output of the agricultural sector as humans either as direct labour or through the use of mechanized controlled activities are responsible for the implementation, and controlling to a large extent what becomes of agricultural products at the end of the day.

Etuk and Uchendu (2009) state that birth rate is the number of births per 1000 population in a given year. Ogundele and Nana (2012) define death rate as the number of deaths in a given year per 1000 population. The agricultural sector cannot make any meaningful contribution to the GDP with the population of a nation. In Nigeria with a population of 195 million people (NBS Bulletin,

2017) it is without doubt that birth rate and death rate as components of population growth will impact on the agricultural sector, which in turn impacts on the GDP. World Bank (IBDR) report of 2016, puts Nigeria's birth rate at 38.89% and death rate of 12.54%.

According to the National Demographic Health Survey (NDHS, 2017), the birth rate in Nigeria fell from 45.9% in 1967 to 36.9% in 2017, while the same source states the death rate fell from 237% in 1967 to 12.4% in 2017. Reports of the National Demographic survey (Jan, 2018) state that the birth rate in Nigeria from 2005 to 2017 has witnessed a steady decline from 42.5% to 36.9%, while death rate has witnessed an improvement in the same period from 16.3% to 12.4%.

Blanchet (1991), observed that there was a relationship between components of population growth. Alberto (2008) stated that economic growth with human capital accumulation can be afforded through healthy population growth where birth rate out grows other components of population growth. This implies that the contribution of the agricultural sector to the GDP cannot shy away from birth rate and death rate. The purpose of this paper is to find out the impact of birth rate and death rate on the sectorial contribution of agriculture to the Nigeria's GDP. The following research hypotheses were formulated.

**Ho<sub>1</sub>:** There is no relationship between birth rate, death rate and the sectorial contribution of agriculture to the GDP.

**Ho<sub>2</sub>:** The variations in the sectorial contribution of agriculture to the GDP are not influenced by the variations in birth rate and death rate.

## **Method**

The research design is secondary in nature using secondary data. Population and sample of 13 years data publication of the National demographic survey from 2005 to 2017, was studied and a sample of 11 years from 2001 to 2017 was selected for the data on birth rate and death rate. While in the sample period, the publications of the Central Bank of Nigeria (CBN) were taken from 2007 to 2017 for the data on agricultural contribution to the GDP. Using a method of comparison the data was analyzed.

## **Methods of Data Analysis**

The hypothesis were tested using Fritio

T – test

$$\text{Fritio} = \frac{\text{MSR}}{\text{MSE}}$$

$$t = r \sqrt{\frac{n-2}{1-r^2}}$$

MSR = mean squares due to regression

MSE = mean squarer due to error

$$\text{Where } r^2 = \frac{\text{SSR}}{\text{SST}}$$



SSR = sum of square of regression  
 SST = sum of square of total  
 n = number of observation

### ANOVA TABLE

Source of variation (sv)	Degree of freedom (df)	Mean square (ms)	Fratio
Regression (SSR)	K	SSR/K	MSR/MSE
Error (SSE)	n-k-1	SSE/n-k-1	
Total (SST)	n-i		

K = No of independent variables

F, k, n-k-1

Where level of significance = 0.05

The comparison test used is  $Y = b_0 + b_1 x_1 + b_2 x_2$

where

$$y = \mathbf{x}\beta$$

and  $y = \sum y$

$$\begin{pmatrix} \sum x_1 y \\ \sum x_2 y \end{pmatrix}$$

$$\mathbf{x} = \begin{pmatrix} n & \sum x_1 & \sum x_2 \\ \sum x_1 & \sum x_1^2 & \sum x_1 x_2 \\ \sum x_2 & \sum x_1 x_2 & \sum x_2^2 \end{pmatrix}$$

$$\beta = \begin{pmatrix} b_0 \\ b_1 \\ b_2 \end{pmatrix}$$

Using Cramer's rule

$$\begin{pmatrix} \sum y \\ \sum x_1 y \\ \sum x_2 y \end{pmatrix} = \begin{pmatrix} n & \sum x_1 & \sum x_2 \\ \sum x_1 & \sum x_1^2 & \sum x_2^2 \\ \sum x_2 & \sum x_1 x_2 & \sum x_2^2 \end{pmatrix} \times \begin{pmatrix} b_1 \\ b_2 \end{pmatrix}$$

$$b_0 = \frac{\text{Det}(b_0)}{\text{Det}(x)}$$

$$\text{Det}(x)$$

$$b_1 = \frac{\text{Det}(b_1)}{\text{Det}(x)}$$

$$\text{Det}(x)$$

$$b_2 = \frac{\text{Det}(b_2)}{\text{Det}(x)}$$

$$\text{Det}(x)$$

$$\text{SST} = \sum y^2 - (\sum y)^2/n$$

$$\text{SSR} = b_0 \sum y + b_1 \sum x_1 y + b_2 \sum x_2 y$$

$$- (\sum y)^2/n$$

$$\text{SSE} = \text{SST} - \text{SSR}$$

## Result

In the 11 years simple data taken the contribution of the agricultural sector to the GDP ranged from 32.27% in 2007 to 20.85% in 2017. While birth rate was 42.1% in 2007 and 36.9% in 2017, death rate was 15.4% in 2007 to 12.4% in 2017.

**Hypothesis I:** There is no relationship between birth rate, death rate and sectorial contribution of the agricultural sector to the GDP

**Table 1: Agricultural Contribution to the GDP, Birth Rate and Death Rate in Percentages**

Year	Agric (Y)	Birthrate (x <sub>1</sub> )	Death rate (x <sub>2</sub> )
2007	32.27	42.1	15.4
2008	32.36	41.9	15.0
2009	36.40	41.6	14.6
2010	23.52	41.3	14.3

2011	22.03	41.0	14.0
2012	21.79	40.7	13.7
2013	20.76	40.5	13.4
2014	19.99	39.8	13.1
2015	20.63	39.4	12.8
2016	20.98	38.9	12.5
2017	20.85	36.9	12.4
Total	271.58	441.1	151.2

$$\begin{aligned}
 \sum y &= 271.58 \\
 \sum x_1 &= 441.1 \\
 \sum x_2 &= 151.2 \\
 \sum x_1 y &= 11018.65 \\
 \sum x_2 y &= 3781.98 \\
 \sum x_1 x_2 &= 6118.59 \\
 \sum x_1^2 &= 17938.55 \\
 \sum x_2^2 &= 2088.52 \\
 \sum y^2 &= 7057.85 \\
 y &= 2.2048 - 2.051 x_1 + 7.6598 x_2
 \end{aligned}$$

### Mean

$b_1 = -2.051$  implies that birth rate might be having a negative impact on the contribution of the agric sector to the GDP.

$b_2 = +7.6598$  implies that death rate is most likely having a positive impact on the contribution of the agricultural sector to the GDP.

$$\begin{aligned}
 SST &= 352.79 \\
 SSR &= 263.27 \\
 SSE &= 89.52
 \end{aligned}$$

**Table 2: Anova Table for the Model**

$$Y = 2.2048 - 2.051 x_1 + 7.6598 x_2$$

Sv	Df	SS	MS	F
REGRESSION	2	263.27	131.64	11.76
ERROR	8	89.52	11.19	
TOTAL	10	352.79		

Since  $F(11.76) > F(4.46)$  the value of the hypothesis is rejected. Therefore there is a relationship between birth rate, death rate and the sectorial contribution of agriculture to the GDP.

**Hypothesis 2:** The variations in the sectorial contribution of agriculture to the GDP are not influenced by the variations in birth rate and death rate.

The t-test is computed in this regard from Table 2

$$R^2 = \frac{SSR}{SST} = \frac{263.27}{352.79} = 0.75$$

This implies that 75% of the variations or fluctuations in the sectorial contribution of the agricultural sector to the GDP are as result of variations in birth rate and death rate the remaining 25% variation may be due to external factors.

$$r^2 = \sqrt{R^2} = \sqrt{0.75} = 0.89$$

$$t = 0.89 \frac{\sqrt{9}}{\sqrt{1-0.75^2}} = 0.89 \times 6 = 5.22$$

$$t_{\alpha/2, n-2} \Rightarrow t_{0.025, 9} = 2.262$$

Since  $t_c (5.22) > t_{\alpha/2} (2.262)$ , value of the hypothesis is rejected therefore, the variations in the sectorial contribution of the agricultural sector to the GDP are influenced by the variations in birth rate and death rate.

### Conclusion

In this research the following: have been identified as the impact by birth rate and death rate to the sectorial contribution of the agric sector to the GDP. It was observed that there is a significant relationship between birth rate, death rate and the sectorial contribution of agric to the GDP. The variations in the sectorial contribution of agric sector to the GDP are influenced by the variations in birthrate and death rate. Birth rate had a negative impact, while death rate had a positive in the period under review.

### Recommendations

1. Government should try and provide an enabling environment for healthy population growth where birth rate impacts positively on the agricultural sector.
2. Government should endeavour to keep up with health policies that keeps the decline of

- death rate consistent.
3. Government should encourage investment in the agricultural sector to further boost the GDP, especially by offering grants and subsidized loans to farmers.
  4. Government should map schemes that will encourage youths to embrace agriculture as a way of looking beyond the oil sector as the major means of economic reliance.

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## **Perception of the Effects of Cement Dust and Particulates on the Health and Safety of Factory Workers in Port Harcourt**

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### **Abstract**

The study was based on the perception of the effect of cement dust and particulates on the health and safety of the factory workers in two major cement factories in Port Harcourt, Rivers State by the workers. The use of questionnaires, interviews, observations was adopted for the study. The descriptive research design, simple random sampling technique, percentages, histograms were employed to elicit perception from the cement factory workers. Cement factory workers agreed the composition of  $\text{CaCO}_3$  (42.86%), silica (30.36%), chromium (26.79%). Similarly, 85.71% agreed to the positive effect of the dose-response relationship of cement dust whereas 50% agreed that skin irritation, redness of eyes, nose and throat irritation are effects emanating from cement dust exposure. Skin irritation was identified as commonest effect of cement dust exposure (51.79%). Ibeto had 82.86% while Dangote had 92.86% on the perception of the effect of cement on the environment. This study has also revealed that the cement factory workers are not aware of the toxic components of cement or are ignorant of its consequences.

**Keywords:** Cement dust, Ibeto, Dangote, cement factory, Environment, toxic

### **Introduction**

The environment of man is defined as the matrix of the surrounding of man including all that man can feel, touch, see *etc.* Deshmuckh and Deshmuckh (2008) also defined environment as water, air, land, all plants and humans and other animals living there in and interrelationship which exists among them. The environment consist of physical, biological and socio-cultural aspects in which man resides which have great influence on his health and these influences can be positive or negative (Rubin, 2001).

Some human activities have impacted negatively on health, properties and the total environment in terms of pollution. Cement production is one of the major occupations of man, as the products are widely used in construction of houses, bridges, roads, drainages and some other structures. Egbe *et al.* (2016) posits that cement dust inhalation has deleterious health implications based on the study of organ systems of humans such as the liver and lungs. The processes involved in the production create hazardous condition which impacts negatively on the total well being of workers and the environment. These include air pollution which may possibly have a trans-boundary impact; the deposition of cement on plant leaves slows down photosynthesis, causing network of negative impacts to human health and the environment (Sadhana, Ashwani & Gupta, 2014).

The inhalation of cement dust by man is also a known cause of silicosis and other related

health conditions (Egbe *et al.*, 2016). Dust being one of the major pollutants in the environment that is the air, water, land, has to be controlled. The health of man is of great important both at home and in the work environment, looking into this situation, it has been discovered that the relationship or close contact between man and dust particulate matter has a great effect on the health of man and the environment generally. For the purpose of this research, lack of awareness of the impact and effect of cement dust on the workers need be ascertained as to understand the best approaches to protect man and the environment.

In the production of cement, dust particles are released in large quantities into the atmosphere without control. This reacts with natural air and when workers or community members inhale the air mixed with cement dust particles, will cause a lot of irritation of the respiratory tract, but inhaling high level of dust will occur when workers empty cement bags. Large exposure causes irritation to the nose and the throat; choking and difficulty in breathing (Egbe *et al.*, 2016). These effects will range from immediate or delayed irritation and redness of eyes to chemical burns or blindness (Syed, Bhat & Hena, 2013). When the particulate matters that are generated from the production of cement are released in large quantities into the atmosphere, they will return to the earth as acid rain which will affect man, materials, plants, buildings and even the source of water. Taking a critical look on the workers of cement industry, investigation and research work has shown that most of the workers suffer from respiratory tract infections, skin diseases and eye irritation as a result of the dust that emanate from the cement production, hence can impact on the environment and that of the surrounding communities, nearby stream, rivers and plants (Anda, 1990).

Similarly, Sadhana, Ashwani and Gupta (2014) posits that plants closer to cement industries lack more chlorophyll compared to those farther away by assessing the impact of cement industry related pollution on some selected plant species around designated cement industries. These conditions necessitated the researcher in carrying out investigation or research work on level of awareness of potential health and environmental effects of cement dust exposure and to recommend measures of managing/controlling the particulate matters to a tolerable level so that they will ameliorate the danger posed to the health of workers and the environment at large.

Greszta *et al.* (1987) in an experiment observed six kinds of dust which contained heavy metals introduced under the stand canopy. This dust was collected from zinc, cadmium, aluminum, iron plants, and electric power station and cement plant. The dusts were in concentration of 100, 500, 1000, and 5000 tons/ km<sup>2</sup>. The experiment proved that the cement dust brought about changes in ecosystem. Another experiment shows that the effect of cement dust exposure on acute respiratory health was assessed among 51 high exposed and 33 low exposed cement workers. Air pollution has been identified as the presence of physical and chemical substances in the air in such quantities and duration as to adversely affect the environment, the health of man, animals, plants and materials. Air pollution is the presence of substances or introduction of substances into the atmosphere that is above the ambient level of such materials capable of altering the physical, chemical or biological characteristics of the air thereby posing a deleterious or harmful effect on man and other organisms.

The introduction of these pollutants into the atmosphere through industrial, domestic and agricultural activities have resulted in an effect on man's existence, plants and materials (Emeharole, 1996). These particulate matters which are dust, fume, mist, *etc* are eventually returned to the earth as acid rain to react in the environment to interact with fauna and flora of the

area causing alteration and destruction of its terrestrial and aquatic ecosystem. Therefore, effect of cement dust on health has been a very serious problem over the years. From about 1990 to 2006 so many cases of diseases have been occurring in the cement industry, the category of diseases were more in men than women. In a Cement industry, 100 were junior workers, 70 were senior workers, 30 are women and 50 are casual workers. Therefore, the rate of occurrence are more in junior workers, this is because they empty the cement bags. The rate of occurrence is rated in percentage (%). Dust is solid particle (pneumoconiosis) 0.5 -10 mm in size dispersed in air. It is an aerosol produced mainly by mechanical action. Dust does not tend to flocculate except under electrostatic forces, they do not diffuse but settle under the influence of gravity. Dust is formed by pulverization of solid matter into small size particles. These may be as a result of some processes as grinding, crushing, blasting and drilling particle, and their sizes range from 1 µm up to about 100-200 µ.

Dust is initially raised when particles become dislodged by aerodynamic stresses of the strong wind upon exposed grains. The larger particles fall after attaining considerable horizontal speed and bombarding other particles on which surface which in turn become dislodged and further the process. Respirable dust refers to those dust particles that are small enough to penetrate the nose and upper respiratory system and deep into the lungs. Particles that penetrate deep in the respiratory system are generally beyond the body's natural clearance mechanisms cilia and mucous and are more likely to be retained (Hamed, Masoud, Hossein, 2016; Mandal & Majumder, 2013).

The EPA describes inhalable dust as that size fraction of dust which enters the body, but is trapped in the nose, throat and upper respiratory tract and the median aerodynamic diameter of this dust is about 10 µm. Total dust includes all airborne particles, particles regardless of their size or composition. According to Emehorale (1999), dust may be classified according to toxic effect;

- (i) Dusts causing stelemic poisoning: If the solids soluble or particle is small enough, it may be absorbed and this may cause system toxicity *e.g.* the dust of heavy metals and insecticides.
- (ii) Dust causing a febrile reaction *e.g.* the several metal fumes fevers or reaction to cotton dust.
- (iii) Dust causing extensive pulmonary fibrosis *e.g.* silica and asbestos. Dust has been known as one of the major causes of respiratory and skin disease. These diseases include; silicosis, asbestosis, byssinosis, berylliosis, dermatosis *etc.*

## Materials and Methods

The research method adopted in this project is descriptive design. This is because it will analyze in detail the effects of dust particulate matters on health. It also gives a picture of the inferences that will be drawn from solving likely future problems of cement dust. The population of study is the Ibeto cement industry and the Dangote Cement Nigeria Limited in Port Harcourt. The Ibeto cement industry currently has staff strength of 200 workforces whereas the Dangote Group has over 1000 staff including the casuals. The industries are divided into different departments. The method of sampling techniques is the simple random sampling method which is used for identifying the respondent of questionnaires that were served. Due to large number of workers, it was not possible for the researcher to use the whole population, so a total number of 120 persons were served with questionnaires from the departments by a simple random sampling for the Dangote group whereas 70 persons for the Ibeto Cement group. Some approaches were used to ensure accuracy in administration of instrument in this study. These approaches are direct and indirect approaches. The direct approaches include questionnaire, observation and interview while the indirect



approaches include, textbook, journals published and unpublished.

The methods of data collection were achieved through the use of personal observation, reports, interviews and questionnaires. The test for reliability was done using the Pearson's Product Moment Correlation Coefficient ( $\alpha=0.87$ ). The instrument for validating the questionnaires is the same principle and procedure as validation of instrument. The method of data analysis is simple descriptive analysis, percentage and histograms.

This study adopted the use of questionnaire to elicit responses from the respondents who work closely in cement manufacturing environment in Port Harcourt following these research questions.

- (i) What are the constituents of cement dust?
- (ii) What are the methods used in production of cement?
- (iii) Does cement dust have effect on the respiratory tract of man?
- (iv) What are the effects of cement dust on the environment and man?

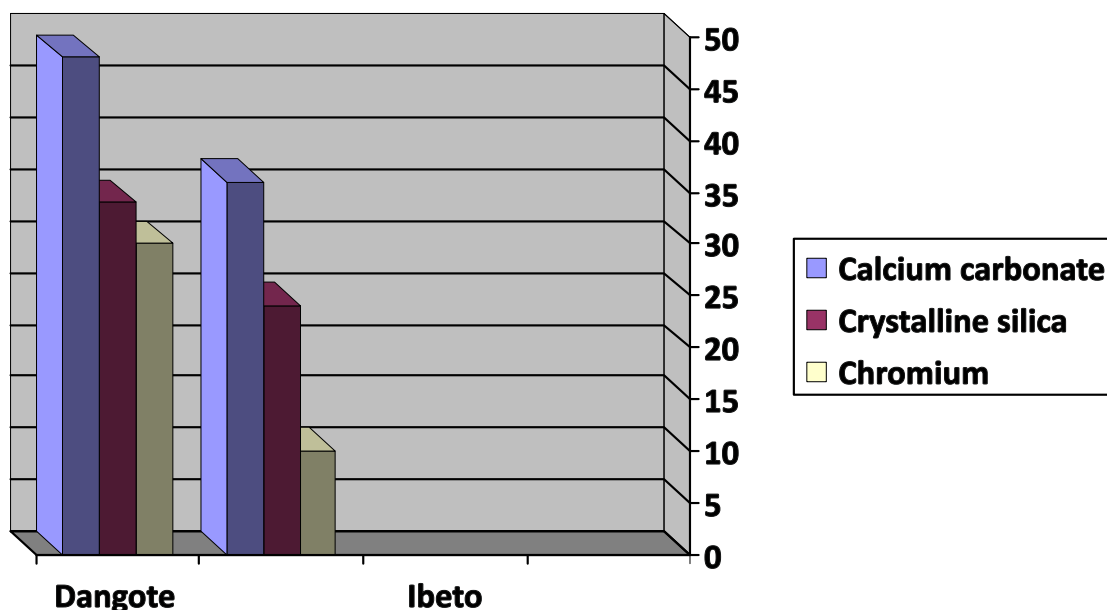
### Results and Discussion of Findings

The data collected in this study are presented in tables which show the response from the source of data collection. The data was derived from the questionnaire that was served on the respondents. The questionnaire comprises of open ended questions with optional answers where as some question are to be responded with either Yes or No which are also optional. As determined from the sample size, a total of one hundred and twenty (120) persons were sampled in the population and one hundred and twenty (120) questionnaires were distributed but only one hundred and twelve (112) which makes-up the sample size for the Dangote Cement Industry, Port Harcourt. Similarly, eighty (80) questionnaires were distributed to staff of Ibeto cement but only seventy (70) were retrieved.

**Table 1: What is the major raw material for cement production?**

Responses	No. of Respondents (Ibeto)	Percentage %	No. of Respondent (Dangote)	Percentage %
CaCO <sub>3</sub>	36	51.43	48	42.86%
Crystalline silica	24	34.29	34	30.36%
Chromium	10	14.28	30	26.79%
Total	70	100	112	100%





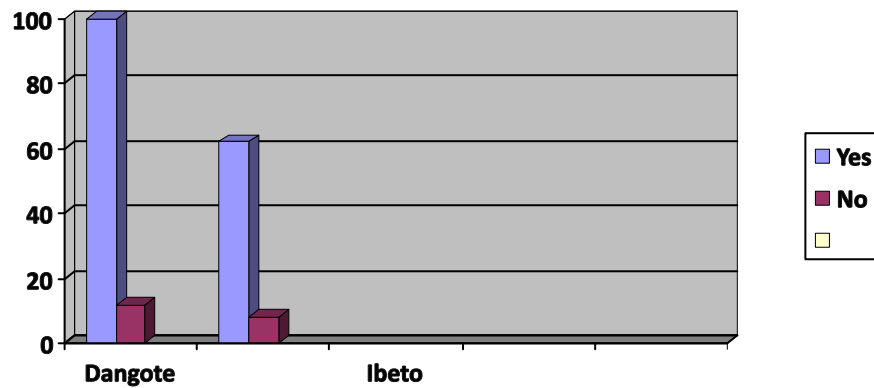
**Figure : Prominent Raw Materials for Cement Industry**

Table 1 shows that 48 persons responded that major raw material for cement production was calcium carbonate (42.86%), 34 persons (30.36%) said it was crystalline silica while 30 respondents (26.79%) agreed that it was chromium in Dangote Industries. Similarly, in Ibeto Cement 36 workers (51.43%) gave credence to Calcium carbonate as main source of cement whereas 10 persons (14.28%) said chromium and 24 (34.29%) accepted crystalline silica. This shows the level of ignorance on the knowledge of cement and its composition. The raw materials for cement production are primarily limestone, laterite, clay and gypsum (Amodu & Egwuogu, 2014). Similarly, Emmanuel, Ibiam, Okaka and Alabi (2015) posits that cement is a dark grey coloured powdery substance of alumina, silica, lime, iron oxide and magnesium oxide. Therefore the major raw material for cement production is calcium carbonate. Similarly, Figure 1 illustrates the prominent raw materials in cement production.

**Table 2: Constituents of cement dust and source**

Response	No. of Respondents (Dangote)	Percentage %	No. of Respondents (Ibeto)	Percentage %
Yes	100	89.29%	62	88.57
No	12	10.71%	8	11.43
Total	112	100%	70	100

Table 2 shows 100 persons responded positively that the constituent of cement dust is gotten from other proportions of materials used in the production of cement (89.29%) while 12 persons (8%) disagreed by workers of Dangote Cement. It was clearly affirmed by the Ibeto group of staff when 62 respondents (88.57) also agreed that constituents of cement dusts were from other proportions of materials whereas only 8 (11.43%) disagreed showing that the cement dust was gotten from other proportions of materials used in production. Research has shown that limestone, laterite and clay are got from operational processes of quarry operations (Emmanuel *et al.*, 2015). Figure 2 shows the bar chart of cement constituents and their sources.

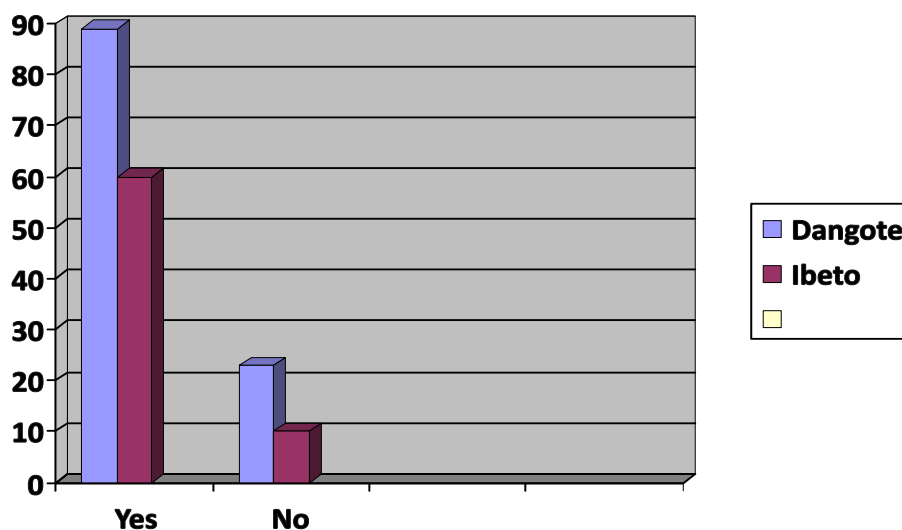


**Figure 2:** Constituent of Cement Dust and Source

**Table 3:** Dependence of health effects on the level of exposure duration

Company	Yes	No	Total
Ibeto	60	10	70
%	85.71	14.29	100
Dangote	89	23	112
%	79.46	20.54	100

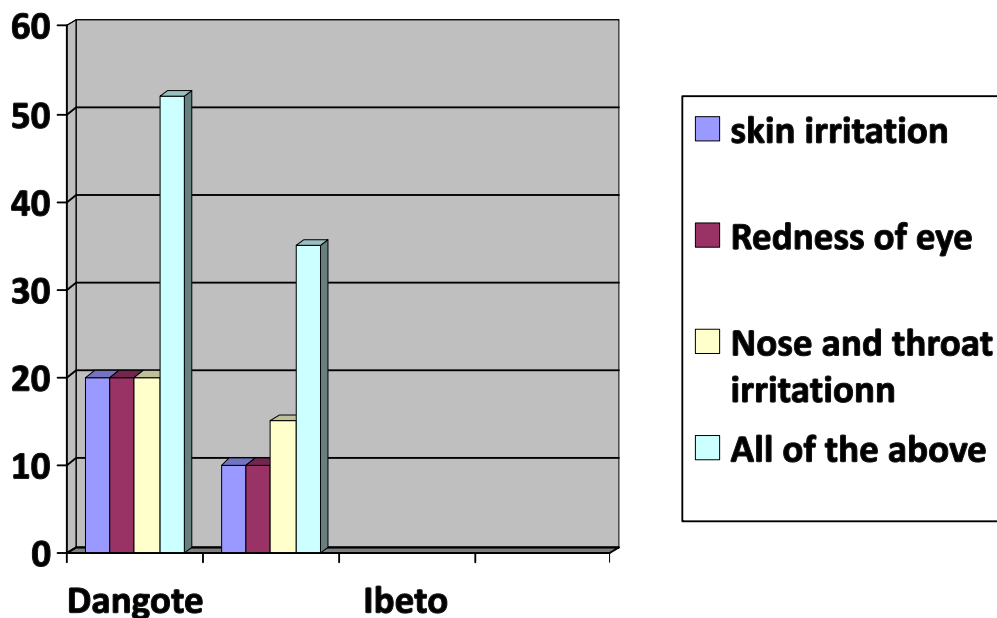
Table 3 shows that the level of duration was taken into consideration from the responses. Eighty nine (89) persons (79.46%) accepted that the level of duration of exposure will affect the health, while twenty three persons (20.54%) agreed whether the level of duration is more or not, cement dust affect the health of humans for the Dangote group of staff as shown in Figure 3. Similarly, the Ibeto staff had agreed that the level of exposure is affects the health of workers which was affirmed by the over 85.71% while less than 15% disagreed. This is supported by research showing that prolonged or continuous exposure depending on the duration, level of exposure and individual sensitivity affects the skin, eye, respiratory and hematological systems ( Osaro *et al.*,2013; John & Olubayo, 2011). According to Emmanuel *et al.* (2015) single and short term exposure to cement dust presents with little or no hazard



**Figure 3:** Health Effects and Duration of Exposure

**Table 4: Effects of cement dust exposure**

Responses	No. of Respondent (Dangote)	%	No. of Respondents (Ibeto)	%
Skin Irritation	20	17.86	10	14.29
Redness of eye	20	17.86	10	14.29
Nose and throat irritation	20	17.86	15	21.43
All of the above	52	46.43	35	50
<b>Total</b>	<b>112</b>	<b>100%</b>	<b>70</b>	<b>100</b>



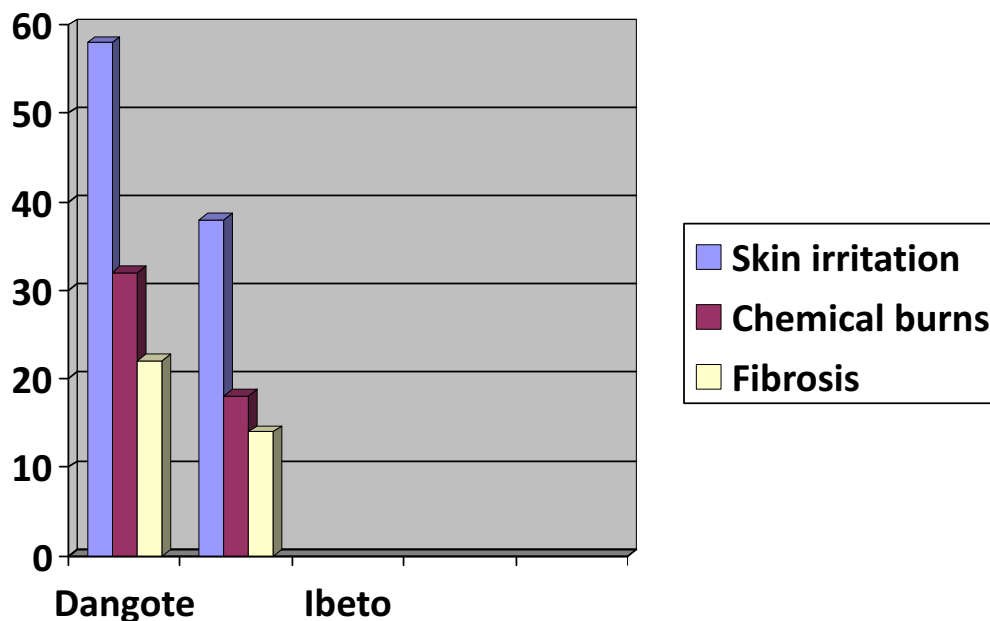
**Figure 4: Effects from Cement Dust Exposure**

Table 4 and Figure 4 above show the result from the Dangote Cement Depot that twenty respondents (17.86%) said that the likely effects that could be dictated from cement dust exposure was skin irritation, twenty (20) respondents (17.86%) accepted that it was redness of eye, twenty (20) respondents (17.86%) said it was Nose and throat irritation while 52 respondents (46.43%) said it was all of the above. This shows that cement dust can affect the skin, the eye, nose and the throat. Similarly, Ibeto staff were in consonance with the result from the Dangote Group as 35 respondents (50%) accepted that exposure to cement dust can lead to myriads of effects and not any specific ailment to mention. Prolonged exposure has health implications on the skin, eye, respiratory and hematological systems (Osaro *et al.*, 2013; John & Olubayo, 2011). Similarly, Bour *et al.* (2011) mentioned skin dryness, discomfort, irritation, dermatitis, and burns as due to cement exposure. This awareness is very low amongst the workers in these cement fractions.

**Table 5: Health problems due to cement dust exposure**

Responses	No. of Respondent (Dangote)	Percentage %	No.of Respondents (Ibeto)	Percentage %
Skin Irritation	58	51.79%	38	54.29
Chemical burns and partial blindness	32	28.57%	18	25.71
Fibrosis like silicosis	22	19.64%	14	20
<b>Total</b>	<b>112</b>	<b>100%</b>	<b>70</b>	<b>100</b>

Table 5 and Figure 5 show that Dangote staff had twenty (58) respondents (51.79%) who are of the opinion that skin burns and rashes were the most common health challenges, thirty-two (32) respondents (28.57%) accepted that chemical burns and partial blindness is caused by cement dust, whereas twenty-two (22) respondents (19.64%) said that it was fibrosis such as silicosis.



**Figure 5: Health Implications of Cement Dust Exposure**

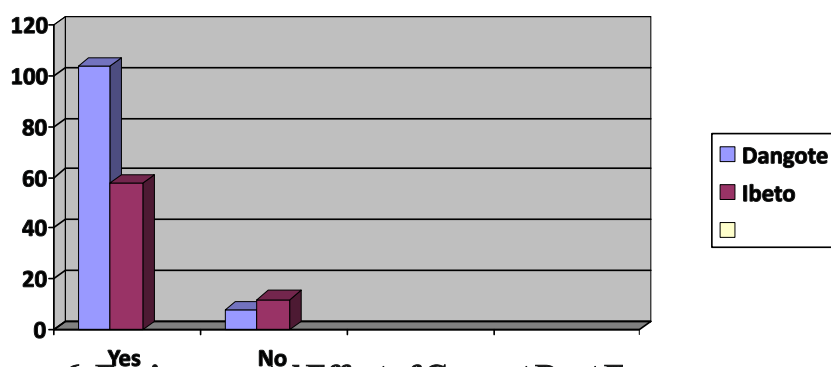
Ibeto workers are of the opinion that Silicosis was not common health challenge especially when orally explained though the meaning was also a bit outlandish to them. On the part of Ibeto workers, skin irritation was the commonest as well (54.29%) while fibrosis had the least (20%). There is low knowledge of the complex ailments associated with cement exposure hence few respondents knew about silicosis not to mention the element silicon. Oral interview exposed the fact that majority never understood what silica meant. A link between crystalline silica exposure and lung cancer has been established (Suan, Yingvar, Edtraud & Hans, 2009; Syed, Bhat, & Hena, 2013). The lack of awareness is linked to negligence, absence of seminars, workshops, enlightenment campaigns and in-service trainings for the low level manpower staff.



**Table 6: Effect of cement dust on the environment**

Company	Yes	No	Total
<b>Ibeto</b>	58	12	70
%	82.86	17.14	100
<b>Dangote</b>	104	8	112
%	92.86	7.14	100

Table 6 above indicates that 104 respondents (92.86%) accept that cement dust affect the environment while 8 persons (7.14%) did not agree that cement dust affect environment in the Dangote Cement industry. Similarly, Ibeto workers were of the opinion also that cement affects the ecosystem especially as they see the roofs of adjoining houses (82.86%). Therefore, it can be inferred that cement dust affects environment. One of the most pressing environmental problems facing the regions of the study area is the issue of dust pollution from cement. Figure 6 illustrates the effect of cement dust on the ecosystem. The ecosystem made up of animate and inanimate objects is greatly affected as affirmed by majority of the staff but the few who do not agree look at cement dust as mere dust that can be washed off as any other materials. The oral interview saw some few workers saying they have been in the business for over 15 years and no health hazards indicating high level of ignorance which portends danger. Research has shown that sanding, grinding, cutting processes in cement manufacturing exposes enormous quantity of cement dust containing high levels of crystalline silica and prolonged exposure leading to silicosis (Kakooei *et al.*, 2012). The airborne cement dust may lead to immediate or delayed inflammation, eye irritation, abrasion, red eye, chemical burns and blindness (Emmanuel *et al.*, 2015). As a form of control, ten (10) well structured questions were designed for each cement factory whose results indicated that of nonchalant attitude towards the activities of cement dust except complains of the inconveniencing dust in rooms and on the garden plants making them look stunted (Igbal & Shafiq, 1987). They have complained but no help even from government quarters which has to be looked into. On the issues of health effect, there was a general consensus of irregular form of choking sometimes especially when there is dry air.



**Figure 6: Environmental Effect of Cement Dust Exposure**

Research has shown that several forms of pulmonary diseases are known to arise due to exposure to cement dust. This is because the dust particles that emanated from the process are being discharged into the atmosphere which can be gotten either through inhalation, ingestion or dermal contact resulting to several disease conditions. Furthermore, cement dust is dangerous to the sources of water supply and plants growth because all the sources of water supply around the work environment have been affected by cement dust (Borka, 1986). Concentration of particulate matters in the atmosphere causes acid rain. They cause turbidity when they enter into surface water and underground water. Since the sources of water supply can be affected the inhabitants of that area will equally be affected and they will not have portable water for consumption. The workers in Ibeto Cement Industry react negatively to cement dust because small dust particles increases scattering of light mainly in short (blue) wave lengths.

Table 7: Knowledge of the Toxic Components of Cement

Cement Factory	Lime/Cr/Silica	Alumna/MgO	Laterite/Iron Oxide	Clay/Gypsum	Total
Dangote	15	23 (20.54%)	38	36	112
Industry	(13.39%)		(33.93%)	(32.14%)	
Ibeto	6	15	20	29	70
Cement	(8.57%)	(21.43%)	(28.57%)	(41.43%)	
<b>Total</b>	<b>21</b>	<b>38</b>	<b>58</b>	<b>65</b>	<b>182</b>

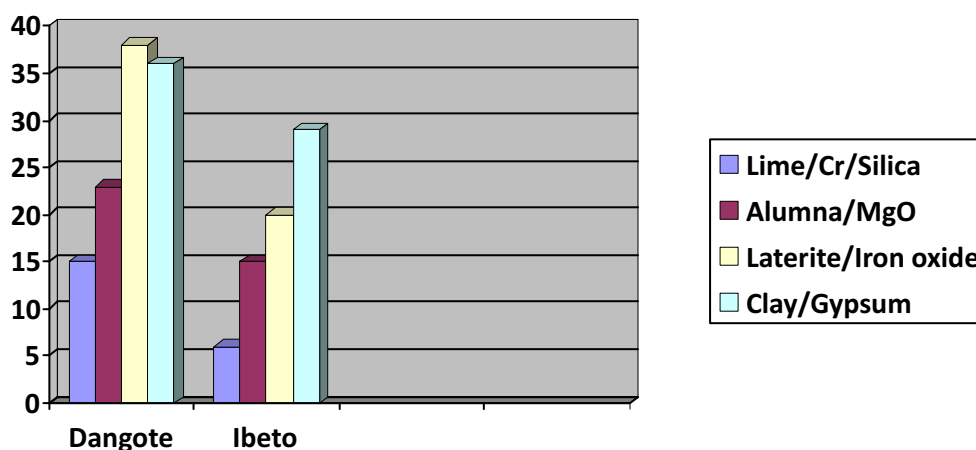


Figure 7: Toxic Components of Cement

Table 7 shows that the awareness on the cement components that are known to be corrosive is an illusion to the factory workers. This is because the workers neither know the nature of the composition nor their chemistry. The Dangote staff agreed that 15(13.39%) respondents are aware of lime, Chromium, silica are the most corrosive while 38(33.93%) said is laterite /Iron oxide, 36(32.14%) was for clay/gypsum and 23(20.54%) were alumna/MgO. The result shows that the respondents are more conversant with the materials they see not on the latent components. Similarly, for Ibeto cement respondents and staff that only 6 (8.57%) showed awareness of the corrosive nature of lime/silica and Chromium whereas 15(21.43%) for alumna/MgO, 20(28.57%) for laterite and iron oxide and 29(41.43%) for clay and gypsum ( $\text{CaSO}_4$ ). This is in total variance with earlier researches which mentioned the hazardous materials in cement to include lime (corrosive to the human tissues), crystalline silica (abrasive to the skin and can damage the lungs) and chromium which leads to allergic reactions (Meo,Azeem, Ghor, Subhan, 2004; Syed *et al.*, 2013). The result showed that only 21 workers (22.96%) out of 182 respondents had good knowledge of the most hazardous components of cement. Sadhana, Aswani and Gupta (2014) posits that plants closer to cement industries lack more chlorophyll compared to those farther away by assessing the impact of cement industry related pollution on some selected plant species around designated cement industries. Workers and staff during oral interviews showed great insensitivity on awareness of any effect on plants except according to them, man.

## Conclusion

This study has brought adequate information and ideas on how cement dust can affect the health of the workers. From the findings, most workers are ignorant about the effect of cement dust. This research work was based on the effect of cement dust, and so it focuses on the relationship between

cement dust and the health of workers. Similarly, the relationship between cement dust and sources of water supply as to determine workers reaction to cement dust and to recommend some preventive and control measures of the particulate matters were also considered.

Questionnaire, interview and observation were used to obtain information from the study population. The general awareness consequent upon this research work predicts great danger to health and environment. Therefore, cement dust is very hazardous to worker's wellbeing and the environment, as cement dust should be properly treated before discharging into the environment. This is a study that has brought awareness to the people of the study area and adequate information has been given on the consequences of cement dust. Therefore, the following conclusions were drawn:

1. Cement dust is made of particulate matters which are hazardous to health and these particulate matters are one of the major environmental pollution.
2. The discharge of cement dust into the environment without control has a lot of negative impacts on the sources of water supply, plants, atmospheric air, soil and materials.
3. Therefore, ingestion, absorption, or inhalation of the dust particles causes a lot of discomfort to man that cause disease condition like skin infection, respiratory infection and eye problem.
4. Cement dust are being discharged indiscriminately into the environment without considering the consequences.
5. Accumulation of dust particles in the atmosphere lead to acid rain.

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## **Chemical Composition and Effect of Various Treatments on Nutritional and Anti-nutrient Levels of Physic Nut (*Jatropha curcas*) Seed**

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### **Abstract**

The chemical composition and anti-nutrient level of *J. curcas* seeds were investigated before and after various treatments. The proximate composition result revealed that the values of moisture, fats and carbohydrate obtained were reduced after the treatments while the ash, fibre and protein contents were significantly ( $P < 0.05$ ) increased. The values of anti-nutrients (phytate, lectin, trypsin inhibitor and phorbol esters) were also drastically reduced in the seed meal after undergoing these treatments (hydrothermal processing, solvent extraction, solvent extraction and treatment with  $\text{NaHCO}_3$ ). The result obtained from this study has shown that the treatment of *J. curcas* seed using the various treatments resulted in the improvement of quality of the seed meal.

**Keywords:** Anti-nutrients, chemical composition, physic nut, treatments, *Jatropha curcas*.

### **Introduction**

The physic nut (*Jatropha curcas*) is a drought resistant species which is widely cultivated in the tropics as a living fence. Many parts of the plants are used in traditional medicine. The seeds, however, are toxic to humans and many animals (Akinpelu, Aiyegoro & Okoh 2009). Physic nut is highly adaptable species, but its strength as a crop comes from its ability to grow on poor, dry sites (Chivandi, Mtumungu & Makuza, 2004). Numerous investigations have been carried out to determine the food values of the physic nut, but these were centred mostly on the seed. Little or nothing has been done on the other parts of this plant (leaf, root and stem-bark) (Nwala, 2013). The seed of *Jatropha curcas* is considered as being highly toxic and does not serve as food to either animal or man. Although the seed cake (meal) is rich in protein, it is toxic to rats, mice and ruminants and therefore cannot be used as an animal feed if it is not detoxified (Nwala, Akaninwor & Monanu, 2013). Several cases of *J. curcas* nut poisoning in humans after accidental consumption of the seeds have been reported with symptoms of giddiness, vomiting and diarrhea (Makkar and Becker, 2009). The meal has high trypsin inhibitor and lectin activities, which could be inactivated by heat treatment. In addition, high concentration of the anti-metabolic metal-chelating and heat-stable factor, phytic acid has been reported in *J. curcas* meal (Nwala et al., 2013).

Apart from these, phorbol esters that are present at high levels in the kernels have been identified as the main toxic agent responsible for toxicity (Makkar, Francis & Becker, 2008). Though various processing techniques have been attempted, no treatment has been successful in completely eliminating the anti-metabolic factors and toxic principles of defatted *Jatropha* meal (Martinez-Herrera, Siddhuraju, Francis, David-Ortiz & Becker, 2006). The *J. curcas* plant has high agro-industrial potentials because of its various beneficial products. The oil extracted from the seeds can be used as a substitute for diesel after trans-esterification. The residual protein-rich seed cake, remaining after extraction of the oil, could form a protein-rich ingredient in feeds for poultry, pigs, and cattle if it could be detoxified. The present research was therefore designed to study the effects of various treatments (hydrothermal processing, solvent extraction and treatment with  $\text{NaHCO}_3$ ) to inactivate the anti-nutritional factors in defatted *jatropha* meal.

## **Materials and Methods**

The *Jatropha curcas* seeds used for the work were obtained from Igbo in Etche Local Government Area of Rivers State, Nigeria, where the plant is normally used as life trees to make fence that demarcate plots of land.

### **Processing of *J. curcas* Sample**

The seeds of the *J. curcas* plant were de-hulled to gain access to the endocarp, which is the sample material. These were sun dried and then blended to powdery form with high speed blender. The seed samples were then stored in an air-tight polythene bag and kept in a refrigerator of 4°C prior to analysis.

### **Treatment of Samples**

The treatment of *J. curcas* seed was carried out as described by Nwala et al. (2013). The ground seeds were defatted in a soxhlet apparatus using petroleum ether (boiling point of 40 - 60°C), for 16 hours. This was referred to as *J. curcas* meal. A portion of the meal was autoclaved at 121°C for 60 minutes at 66% moisture and then lyophilized. Another portion of the meal was treated with 0.07% NaHCO<sub>3</sub> solution in the ratio of 1.5 (w/v) and immediately autoclaved at 121°C for 20 minutes. The autoclaved sample was freeze – dried as it was. The third portion of the meal was extracted with 90% ethanol for 2 hours of room temperature with constant stirring. The sample-to-solvent ratio was 1:10 (w/v). The solvent was removed by filtration and the residue was freeze-dried. The last portion of the meal, after undergoing treatment similar to that of 3 above, was air-dried, mixed with 0.07% NaHCO<sub>3</sub> solution in the ratio of 1:5 (w/v) and subjected to autoclaving at 121°C for 20 minutes. After removing the residual water by freeze-drying, the sample was ready for use.

The moisture content of the samples was determined by oven-drying to a constant weight of 105°C. Crude lipid, protein, fibre and ash content were determined in accordance with the standard methods of AOAC (1990). Carbohydrate was determined by different method.

### **Anti-nutrient Estimation (Phytate content evaluation):**

The phytic acid contents of the samples were determined by a colorimetric procedure as described by Makkar & Becker (2009).

### **Lectin Content Estimation:**

The lectin content of the samples was estimated using the haemagglutination assay as reported by Aregheore et al. (2003).

### **Trypsin Inhibitor Estimation:**

Trypsin inhibitor activity was determined as outlined by Martinez-Herrera et al. (2006).

### **Phorbol Esters Estimation:**

The phorbol esters estimation of the samples was done as described by Makkar et al. (2008). Phorbol-12-myristate-13-acetate was used as the standard during the determination of phorbol esters concentration.

### **Statistical Analysis**

The data were analyzed using tables, range, means, percentages, analysis of variance (ANOVA), standard deviation (S.D) and hence standard error (S.E).

Table 1: Proximate Composition of Raw Samples of *J. Curcas* Seeds

% Composition	Seed
Moisture	4.30± 0.17
Lipid	40.90± 0.23
Ash	4.00± 0.15
Fibre	17.40± 0.17
Protein	27.13± 0.32
Carbohydrate	6.28± 0.16

Values are means ± standard deviation of triplicate determinations

## Results

### Proximate Analysis

The raw sample of *J. curcas* seed is very rich in proteins, fibre and lipid. The values are 27.13±

Table 2: Proximate Composition of Treated Samples of *J. Curcas* Seed

% composition	Treatment 1	Treatment 2	Treatment 3	Treatment 4
Moisture	1.80 ± 0.29 <sup>a</sup>	2.00 ± 0.46 <sup>a</sup>	1.87 ± 0.39 <sup>a</sup>	1.95 ± 0.55 <sup>a</sup>
Lipid	0.10 ± 0.00 <sup>a</sup>	0.20 ± 0.06 <sup>a</sup>	0.10 ± 0.03 <sup>a</sup>	0.15 ± 0.00 <sup>a</sup>
Ash	6.30 ± 0.26 <sup>a</sup>	6.10 ± 0.32 <sup>a</sup>	5.97 ± 0.52 <sup>a</sup>	6.20 ± 0.14 <sup>a</sup>
Fibre	51.75 ± 0.43 <sup>a</sup>	50.77 ± 0.16 <sup>ab</sup>	49.63 ± 0.36 <sup>b</sup>	50.49 ± 0.33 <sup>ab</sup>
Protein	37.19 ± 0.11 <sup>a</sup>	38.34 ± 0.20 <sup>ab</sup>	40.08 ± 0.38 <sup>b</sup>	39.32 ± 0.92 <sup>ab</sup>
Carbohydrate	2.86 ± 0.30 <sup>a</sup>	2.39 ± 0.34 <sup>a</sup>	2.35 ± 0.23 <sup>a</sup>	2.20 ± 0.12 <sup>a</sup>

Values are means ± standard deviation of triplicate determinations

Means in the same row with different superscript letters were significantly different at the 0.05 level.

### Anti-nutrient Constituent of *j.curcas* Seed

The anti-nutrient composition of raw samples of *J. curcas* had the phytate content of 0.40 ± 0.09%, lectin content of 10.15±0.20mg/ml, trypsin inhibitor content of 3164.93±0.47mg/100g and phorbol esters content of 318.13 ± 0.31mg/100g.

Table 3: Anti-nutrient Composition of Raw Samples of *J. Curcas* Seed

Parameters	Seed Content
Phytate (%)	$0.40 \pm 0.09$
Lectin mg/ml	$10.15 \pm 0.20$
Trypsin Inhibitor mg/100g	$3164.93 \pm 0.47$
Phorbol Esters	$318.13 \pm 0.31$

Values are means  $\pm$  standard deviation of triplicate determinations.

#### Effect of various Treatments on Anti-nutrients in *jatropha curcas* Seeds

The effects of various treatments on anti-nutrient content of *J. curcas* seeds are presented in Table 4. Treatment 4 had the highest phytate content of  $0.35 \pm 0.16\%$ , followed by treatment 3 ( $0.32 \pm 0.14\%$ ), then treatment 1 ( $0.29 \pm 0.11\%$ ), while the lowest phytate content of  $0.28 \pm 0.09\%$  was observed in treatment 2. The lectin content of various treatments ranged from  $1.80 \pm 0.20\text{mg/ml}$  (treatment 1) to  $4.80 \pm 0.52\text{mg/ml}$  (treatment 2). The trypsin inhibitor content of treatment 1 ( $59.00 \pm 0.57\text{mg/100g}$ ) was significantly reduced ( $P < 0.05$ ) relative to the content of the other treatments. Treatment 1 had the highest level of phorbol esters ( $183.40 \pm 0.36\text{mg/100g}$ ), which was further reduced in the others treatments (2, 3 and 4) with treatment 4 having the lowest content ( $8.00 \pm 0.58\text{mg/100g}$ ).

Table 4: Effects of Various Treatment on Anti -nutrient in *JatrophaCurcas* seeds

Parameters	Treatment 1	Treatment 2	Treatment 3	Treatment 4
Phytate %	$0.29 \pm 0.11^a$	$0.28 \pm 0.09^a$	$0.32 \pm 0.14^a$	$0.35 \pm 0.16^a$
Lectin mg/ml	$1.80 \pm 0.20^{acd}$	$4.80 \pm 0.52^b$	$1.97 \pm 0.46^c$	$2.13 \pm 0.33^{acd}$
Trypsin inhibitor mg/100g	$59.00 \pm 0.57^a$	$78.00 \pm 0.28^b$	$175.00 \pm 0.35^c$	$67.00 \pm 0.46^d$
Phorbol Esters mg/100g	$183.40 \pm 0.36^a$	$56.00 \pm 0.23^b$	$16.00 \pm 0.00^c$	$8.00 \pm 0.58^d$

Values are means  $\pm$  standard deviation of triplicate determinations

Means in the same row with different superscript letters were significantly different at the 0.05 level.



## Discussion

The moisture content of any item can be used as a measure of its keeping quality or shelf-life since high moisture content connotes susceptibility to microbial attack, it therefore suggest that these samples can keep for a long time before deterioration can take place. The moisture content of *J. curcas* seeds were a little higher than the ones reportedly by Oladele and Oshodi (2007) for *J. cathartica* seed (2.53%) and lower than the moisture content of cowpea (19.25%) as reported by Nwala (2013). The seed oil content of *J. curcas* ( $40.90 \pm 0.23\%$ ) was much higher than the observed content for *Bauhinia reticulata* which belongs to the pea family (Amoo, 2003) but similar to the ones reported for melon seed (Omafuvbe, Falade, Osunlogum & Adewusi., 2004) which is also an oil seed crop consumed in Nigeria. Lipids form a heterogeneous group of organic compounds which are important constituents of plant and animal tissues. The ash content of *J. curcas* seed is small compared to the ash content of the seeds of *J. Cathartica* reported by Oladele and Oshodi (2007).

Since ash content is essentially a measure of the mineral content of a food sample, the ash content of *J. curcas* seed may be an indication of its low mineral level. The fibre content ( $17.40 \pm 0.17\%$ ) was relatively higher than that reported for *J. cathartica* seed (1.6%) (Oladele & Oshodi, 2007) and that reported for raw African locust bean (1.70%) and raw melon seed (15.80%) (Omafuvbe et al., 2004). Fibre content is a significant component of the diet. It increases stool bulk and decreases the time that waste materials spend in the gastrointestinal tract. It is commonly used as an index of value in poultry and feeding stock's feed (Eze & Ibe, 2005). The seed of *J. curcas* is a better crude protein source compared to the other parts of the plant. The protein content of *J. curcas* seeds is obviously much higher than most legumes/grain consumed in Nigeria, for example guinea corn has crude protein content of 5.25% (Amoo, 1998).

Carbohydrates constitute a major class of naturally occurring organic compounds. They are essential for the maintenance of plant and animal life and also provide raw materials for many industries. The carbohydrate content of  $6.28 \pm 0.16\%$  of the seeds was comparable to that of *J. cathartica*,  $6.45 \pm 0.51\%$  (Oladele & Oshodi). The proximate composition of treated seed samples of *J. curcas* showed that the moisture, lipid and carbohydrate contents were drastically reduced as a result of these treatments when compared to the contents of the raw seeds. The crude protein contents of the seeds for the various treatments were higher than the content for the raw sample. These contents were within the range for most grain, legumes (20–40%).

The phytate content of *J. curcas* seeds was very low compared to the values reported by Oladele and Oshodi (2007) in *J. cathartica* seeds (2.95%) and comparable to that reported by Nwala et al., (2013) in *J. curcas* seed ( $0.70 \pm 0.09\%$ ). Phytate, apart from being known as a potent chelating substance which prevent some minerals from absorption have been discovered to possess both anti-cancer and antioxidant activities (Nwala, 2013). The seeds had lectin content of  $10.15 \pm 0.09\text{mg/ml}$  which was close to that reported by Martinez – Herrera et al., (2006) for *J. curcas* seeds ( $11.46 - 12.20\text{mg/ml}$ ). Trypsin inhibitor content of the seeds was very high ( $3164.94 \pm 0.47\text{mg/100g}$ ). Trypsin inhibitors interfere with the physiological process of digestion through interference with the normal functioning of pancreatic proteolytic enzymes in non-ruminants, leading to severe growth depression (Nwala, et al., 2013). The seeds also had very high level of phorbol esters ( $318.13 \pm 0.31\text{mg/100g}$ ), although, this value is lower than the one reported by Chivandi et al. (2004).

## Conclusion

The various treatment methods adopted in this study reduced to the barest tolerable levels, the content of the various anti-nutrients in the sample. Trypsin inhibitors and phorbol esters which are the major anti-nutrients in *J. curcas* seed were reduced to about 98.13% and 97.49% respectively.

In conclusion therefore, these treatment methods are considered very effective and may be adopted as effective methods for the detoxification of *J. curcas* seeds that may form part of the materials in animal feed formulation.

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**Prevalence and Patterns of Infertility among Women of Child Bearing Age Attending Gynaecology Clinic at Port Harcourt Teaching Hospital Rivers State, Nigeria**

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**Abstract**

Infertility remains a global problem which affects both the social, mental, and psycho-social state of couples. Infertility is defined as the inability of a couple to conceive within two years of regular and unprotected sex. This study was conducted to determine the Prevalence and Patterns of Infertility among Women of Child Bearing Age Attending Gynaecology Clinic at the Port Harcourt Teaching Hospital Rivers State, Nigeria. A sample of 350 respondents was selected for this study using systematic sampling technique. Descriptive cross-sectional research design was employed; structured and validated self-administered questionnaire with reliability coefficient of 0.76 was used. Result was analyzed with the statistical packages for social sciences (SPSS) version 23, Cronbach Alpha were used to establish the reliability coefficients of the questionnaire. Data were presented in tables. According to the result, the prevalence perceived to be associated with infertility was 15.1%, while the patterns of infertility revealed that primary infertility has the percentage of 10.0% while secondary infertility has the percentage of 5.10%. Based on the findings, the researcher concluded that the prevalence of infertility is high among women who attended Gynaecology Clinic in UPTH while both primary infertility and secondary infertility patterns were recorded with primary infertility higher than secondary infertility. The researcher therefore recommended among others that women generally should take preventive measures against pelvic inflammatory disease, sexually transmitted infection, complications from abortion, intrauterine device, and perforation of the uterus.

**Keywords:** Perception, factors, associated, infertility, women, child bearing age

**Introduction**

Infertility is a global problem that affects both the social, economic and psychological wellbeing of couples. Reproductive Health Outlook, RHO (2003), posited that infertility is a worldwide issue which affects about 8-10% of couples everywhere throughout the world. Inhorn and Van Balen, (2002) explained that about a third of the problem of infertility is referred to as female infertility, another third is also associated to the male which is referred to as male infertility, the remaining third affects both the man and the woman and/or from unknown causes (idiopathic).

As indicated by World Health Organization WHO (2004), female infertility is the inability of a woman of reproductive age to conceive and carry a pregnancy to live birth within two years of exposure to the risk of pregnancy. Men and women are assumed to have the same level of equal probability of being infertile (Hollos, Larsen, Obono, & Whitehouse. (2009). Makar and Toth(2002) exposed that there are many causes of infertility, including some that medical interventions can treat. Estimates from 1997 suggested that worldwide about five percent of all heterosexual couples have an unresolved problem with infertility. Many more couples however, experience involuntary childlessness for at least one year as estimates range from 12% to 28%. According to ART fact sheet (2014) 20-30% of infertility cases are due to male infertility, 20-35% are due to female infertility, 25-40% are due to combined problems in both parties, while in 10-20% of cases, no cause is found. The most common cause of female infertility is ovulatory problems



which generally manifest themselves by sparse or absent menstrual periods while male infertility is commonly due to deficiencies in the semen and semen quality used as a surrogate measure of male fecundity (Cooper *et al.*, 2010). For most women in Africa, the desire for children is sometimes stronger than self interest in beauty and figure, and may be stronger than the claims of a career. This is because women receive more blame for reproductive setback and suffer personal grief and frustration, social stigma and serious economic deprivation. Infertility is deeply associated with socio-cultural and health related factors (Akpore, Fadare&Adebusuyi, 2016). The health related factors which are blocked fallopian tube, absence of menses, milky discharge, pain during sex, irregular menstrual cycles, pelvic inflammatory diseases *etc.* have been complained by many women (Cooper *et al.*, 2010).

Fertility trends in most of the developed world in the late 1990s showed a substantial decline to two children or fewer from the traditional six children per woman (Oluwayemisi, Olusanya & Olaomi, 2017). In 2003, the TFR was 5.7; this dropped to 5.5 in 2013, which depicts a decline in the fertility pattern. However, this is relatively high compared with Latin America and Asia where fertility declined from 5.9 to 2.6 and less rapidly in North Africa and Western Asia from 6.6 to 3.5 births per woman. The transition is slowest in sub-Saharan Africa, especially in Nigeria where fertility declined by 1.3 only, from 6.8 to 5.5 children per woman. Considerable evidence from economically advanced countries indicates that reduced fertility rates foster economic development and social well-being of the citizenry. The fertility level is undoubtedly conditioned by the cultural, health, political, demographic and socio-economic setting (Oluwayemisi, Olusanya & Olaomi, 2017). Proximate and socio-demographic determinants of fertility such as current marital status, polygyny, age at first marriage, first sexual intercourse and recent sexual activity, postpartum amenorrhea, abstinence, age at first birth as well as use of contraceptives, education, place of residence and wealth index have been found to significantly affect fertility patterns. Model-based analyses are becoming important sources of global information, largely because of the absence of reliable national-level empirical data in most developing countries like Nigeria. Fertility pattern is usually measured by the number of children ever born (CEB), which using count data is a measure of a woman's lifetime fertility. Women who are fertile experience a natural period of fertility before and during ovulation, and they are naturally infertile for the rest of the menstrual cycle. Fertility awareness methods are used to discern when these changes occur by tracking changes in cervical mucus or basal body temperature (Cooper *et al.*, 2010).

Cultural, environmental and economic factors influence the prevalence of infertility especially countries where poverty and infections are widespread. The major preventable cause of infertility in many parts of the world is Pelvic Inflammatory disease (PID) this is caused by sexually transmitted diseases (STDs) and post-partum and post-abortion infections (RHO, 2003). Gijssels and Mgalla (2001) stated that evil forces are often thought to be the cause of infertility. These misconceptions eventually lead to practices ranging from the absurd post-coital exercise of standing on one's head to the unpleasant and dangerous traditional remedies of eating feces and inducing vomiting in Tanzania (Daniluk, 2001)

The following research questions were framed to guide the study:

1. What is the prevalence of infertility among women of child bearing age attending Gynaecology Clinic in UPTH?
2. What are the patterns of infertility among women of child bearing age attending Gynaecology Clinic in UPTH?

### **Study Design**

This study adopted a descriptive cross-sectional survey design.



## Study Area

The study was conducted in University of Port Harcourt Teaching Hospital located in Obio-Akpor Local Government Area of Port-Harcourt, Rivers State, Nigeria, (Googles, 2014). The Hospital which is situated along the East-West Road of the city, is one of the major tertiary health institutions in the Niger Delta Region of Nigeria. It is a major tertiary-care teaching and research facility in Rivers State. It delivers services at primary, secondary and tertiary levels and has over 300 nursing staff and treats over 150,000 outpatients, over 10,000 inpatients and performs over 3,000 surgical operations per year.

University of Port Harcourt Teaching Hospital is managed through a three-tier managerial system consisting - the Board of Management, Hospital Management Committee (HMC) and the Departments. Nearly 200,000 patients are seen annually in both outpatient and inpatient settings, as well as over 3000 surgical operations a year. Average bed occupancy rate in 12 months has risen above 70%. Besides offering medical services, the hospital tends to provide clinical education and training to students, nurses, and other healthcare professionals. Over the years, many research activities and results from its organized units have appeared on several major national and international medical and scientific journals. The hospital has thirty five departments, but special attention was drawn to the Obstetrics and Gynecology department because of their relevance to the study. Thus, the obstetrics and gynaecology is the main clinic where the targeted population and sample size was drawn.

## Study Population

In this study, **Study Population** refers to the women of child bearing age with or without the problem of infertility attending gynaecology clinic at the time of this study. The total population at the time of the study is three thousand clients as adopted from the obstetric and gynaecology department.

## Inclusion Criteria

All women of child bearing age irrespective of whether they are or had been pregnant before or not.

## Exclusion Criteria

Women too ill to answer questions and women who are psychologically unprepared to be respondents

## Sample Size Determination

**From the target population, sampling of participants was done in the Gynaecology clinic in Port Harcourt Teaching Hospital. Women were selected and this made up the sample size for the study. The sample was calculated by using Fishers' formula as adopted from the early work of Polit and Beck (2016);**

$$n = \frac{Z^2 pq}{e^2}$$

Where :

$n$  = the desired sample size

Z = content 1.96 at 95% confidence interval

P= estimate prevalence of infertility from a previous study (9.6% = 0.096)

q=1-p ( 1-0.096)

e =absolute of 5% (0.05)

Therefore;

$$n = \frac{Z^2 pq}{e^2}$$

$$\begin{aligned} n &= \frac{1.96^2 \times P \times (1-P)}{(0.05)^2} \\ &= \frac{3.8416 \times (0.30 \times 0.70)}{(0.05)^2} \\ &= \frac{3.8416 \times 0.21}{0.0025} \\ &= \frac{0.806736}{0.0025} \\ &= 322.6944 \end{aligned}$$

Apprx = 322.

Non response rate of 10% =32.2

Therefore minimum sample size = 323 + 32.2 = 354.2

Estimate: 350

### Sampling Procedures

For this study, simple random and **systematic random sample was used in the selection of the respondents from the university of Port Harcourt teaching hospital, gynaecology clinic.**

**Step one;** simple random sampling was used to select the first name on the register which was the first participant that took part in the study. The person was the 3<sup>rd</sup> on the out -patient register.

**Step two;** systematic sampling method was used to pick the rest of the participant for the study. Systematically the 6<sup>th</sup> person was drawn followed by the 9<sup>th</sup> person and so on. This procedure is followed strictly until the sample size was completed.

### **Instrument for Data Collection**

**Semi-Structured** questionnaire titled perception and factors associated with infertility among women of child bearing age attending Gynaecology Clinic Questionnaire was administered (both self and interviewer administered). The questionnaire consists of 5 sections A – E which were used to gather information from the respondents. Section A was designed to elicit information on respondents' socio-demographic characteristics; Section B Obstetrics and Gynaecology History C- F were used to elicit information on the prevalence of infertility, the risk factors contributing to infertility, the probable effect of Infertility on women having infertile experience in the society respectively.

### **Validity of the Instrument**

The questionnaire items were validated by giving the draft copies to expert for criticisms and face validity.

### **Reliability of the Instrument**

The instrument is reliable for measuring the factors associated with infertility among women of child bearing age attending gynecological clinic in UPTH. The test re-test method was used to determine the reliability. The questionnaire was administered to twenty (20) persons of UPTH. The copies of questionnaire were collected after their responses. Within two weeks the same questionnaire were administered to the same persons again. The responses on the questionnaire from the first administration were correlated with the responses from the second administration using Pearson Product Moment Correlation and with 0.81 co-efficient. Again, Cronbach alpha was used to establish the inter-scale reliability of the questionnaire. The questionnaire had a reliability co-efficient of 0.70 above. The questionnaire was considered to be reliable and was used for the study.

### **Method of Data Analysis**

The data was analyzed with non-parametric method. The researcher adopted the use of simple percentage for analyzing the research questions while Chi-Square ( $X^2$ ) statistical technique was used to analyze the hypothesis with SPSS 23 version.

### **Ethical concentration**

Approval for the study was obtained from the department of Community Health. All participants were informed about the purpose of the study and the research methods that was employed. Informed verbal consent was obtained from all respondents. They were assured that their participation is voluntary and that they are free to pull out of the study at any stage.

### **Results**

A total of 350 questionnaires were administered to female patients attending the gynaecology clinic of University of Port Harcourt Teaching Hospital. A response rate of 100% was recorded. This result represents 350 completed copies of questionnaire.

**Table 1: Socio-Demographic Characteristics of Respondents.**

Variable		Frequency (N)	Percentage (%)
<b>Sex</b>			
	Female	350	100.0
	<b>Total</b>	<b>350</b>	<b>100.0</b>
<b>Age Distribution</b>			
	15-19	14	4.0
	20-24	56	16.0
	25-29	91	26.0
	30-34	84	24.0
	35-39	56	16.0
	40-44	28	8.0
	≥45	21	6.0
	<b>Total</b>	<b>350</b>	<b>100.0</b>
<b>Marital Status</b>			
	Single	40	11.4
	Married	203	58.0
	Divorced	10	2.9
	Co-habiting	89	25.4
	Widow	8	2.3
	<b>Total</b>	<b>350</b>	<b>100.0</b>
<b>Highest Level of Education</b>			
	None	21	6.0
	Primary	49	14.0
	Secondary	182	52.0
	Tertiary	98	28.0
	<b>Total</b>	<b>350</b>	<b>100.0</b>
<b>Religion</b>			
	Christianity	344	86.4
	Islam	26	6.5
	Traditionalist	24	6.0
	Other	4	1.0
	<b>Total</b>	<b>398</b>	<b>100.0</b>
<b>Occupation</b>			
	Formally Employed	252	72.0
	Self Employed	70	20.0
	House Wife	28	8.0
	<b>Total</b>	<b>350</b>	<b>100.0</b>
<b>Mean Age: 31 ±8</b>			

From the table above, all the respondents (100%) were female, with a mean age of 31 ±8. Most of the respondents are between 25-29(26%) and 30-34(24%). Majority of the respondents are married (58.6%) or co-habiting (26.0%) and they mostly have secondary level of education (52%) as their highest level of education. Christianity (86.4%) is the prevalent religion and they are mostly formally employed (72.0%).



**Table 2: Obstetrics and Gynaecology History**

Variable	Frequency (N)	Percentage (%)
<b>Age at Menarche (years)</b>		
<10	14	54.0
10-14	259	74.0
15-19	77	22.0
<b>Total</b>	<b>350</b>	<b>100.0</b>
<b>Duration of Menstrual Flow</b>		
<4 days	63	18.0
4-7 days	287	82.0
<b>Total</b>	<b>350</b>	<b>100.0</b>
<b>Cycle Length</b>		
<21 days	35	10.0
21-30 days	294	84.0
>30 days	21	6.0
<b>Total</b>	<b>350</b>	<b>100.0</b>
<b>Any Menstrual Anomalies</b>		
Yes	203	58.0
No	147	42.0
<b>Total</b>	<b>350</b>	<b>100.0</b>
<b>Have you been Pregnant Before?</b>		
Yes	278	79.4
No	72	20.6
<b>Total</b>	<b>350</b>	<b>100.0</b>

Of all the respondents, 74.0% (n=259) attained menarche between the ages of 10-14 years, 287 (82%) have a 4-7 days menstrual flow, 84% (n=294) have a 21-35 days cycle, 58.0% (n=203) have menstrual anomalies, and 79.4% (n=278) have been pregnant before

**Table 3: Prevalence and Pattern of Infertility**

Variable	Frequency (N)	Percentage (%)
<b>Age Are you currently looking for a baby?</b>		
Yes	53	15.1
No	297	84.9
<b>Total</b>	<b>350</b>	<b>100.0</b>
<b>Have You been Pregnant before?</b>		
Yes	18	65.7
No	35	34.3
<b>Total</b>	<b>53</b>	<b>100.0</b>
<b>If yes, was the pregnancy carried to term?</b>		
Yes	8	44.4
No	10	55.6
<b>Total</b>	<b>18</b>	<b>100.0</b>

<b>If yes, was the Child alive at birth?</b>		
Yes	5	62.5
No	3	37.5
<b>Total</b>	<b>35</b>	<b>100.0</b>
<b>Have you undergone any form of fertility treatment in the past?</b>		
Yes	22	41.5
No	31	58.5
<b>Total</b>	<b>53</b>	<b>100.0</b>
<b>Incidence of Infertility</b>	53	15.1
<b>Incidence of Primary Infertility</b>	35	10.0
<b>Incidence of Secondary Infertility</b>	18	5.1

From the table above 60.0% (n=210) of the women are currently looking for a baby. The prevalence of Primary infertility in this population is 10.0% (n=35) and that of secondary infertility is 5.1% (n=18).

### Discussion of Findings

The main aim of this study was to determine the Prevalence/Patterns of Infertility among Women of Child Bearing Age Attending Gynaecology Clinic at university of Port Harcourt Teaching Hospital Rivers State, Nigeria. According to the result (Table 3), the prevalence perceived to be associated with infertility was 15.1%. This was a pointer that the prevalence infertility is high. This finding is in line with Kumar (2007) who studied the prevalence of female infertility and its socio-economic factors in Tribal Communities of Central Indian The results of the study shows that the prevalence of female infertility was 14.2%. Larsen (2000) also studied estimates of infertility prevalence in less well developed countries (20 countries in Sub Saharan Africa, China, Chile and India) in surveys involving 120,160 women. Larsen's result showed that the prevalence of life time infertility ranged from 5.0 to 25.7%, the lowest estimated rate of childlessness in the first 5-8 yrs of marriage was 1.3% in China, where as the highest estimated rate was 16.4% using average in Sub Saharan African Countries. The range of infertility prevalence was 8-28% for the 28 countries (Larsen, 2000).

Concerning the patterns of infertility, the result of this study (Table 3) revealed that primary infertility has the percentage of 10.0% while secondary infertility has the percentage of 5.10%. According to Mokhtar, Hassan, Mahdy, Elkhowsky, & Shehata, (2006), females with the age of menarche more than 15 years were more risky to develop infertility than those with age menarche less than 15 years. In the present study, the subjects with menarche at >15 years were showed high amount of abnormal karyotype. Boomsmaet. *al.*, (2006) reported that female infertility varies worldwide ranging from 3% to 7%. Polycystic ovarian syndrome is a common condition estimated to affect 4-18% women in the reproductive age.

### Summary

This study was conducted to determine the Prevalence and Patterns of Infertility among Women of Child Bearing Age Attending Gynaecology Clinic at Port Harcourt Teaching Hospital Rivers State, Nigeria. Descriptive cross-sectional research design was employed, structured and validated questionnaire with reliability coefficient of 0.76 above the test retest method was used to analyse the research questions for analysis of the results with the statistical packages for social sciences (SPSS) version 23. According to the result (Table 3), the prevalence perceived to be associated with infertility was 15.1%, while the patterns of infertility revealed that primary infertility has the percentage of 10.0% while secondary infertility has the percentage of 5.10%. Based on the

findings, it was revealed that the prevalence of infertility is high among women who attended Gynaecology Clinic in UPTH while both primary infertility and secondary infertility patterns were recorded with primary infertility higher than secondary infertility.

### Conclusion

Based on the findings of the study, it was concluded that the prevalence of infertility is high among women who attended Gynaecology Clinic in UPTH while both primary infertility and secondary infertility patterns were recorded with primary infertility higher than secondary infertility.

### Recommendations

Based on the findings of this researcher, the researcher recommended that women generally should desist from acts that may lead to fallopian tube blockage as this could lead to failure to ovulate and which can cause infertility. They should also take preventive measures against pelvic inflammatory disease, sexually transmitted infection, complication from abortion, intrauterine device, perforation of the uterus and absence of menstruation. As much as possible women should guide against factors that can constitute emotional/occupational stress, issues involving sexual abuse/trauma such as rape, feeling of depression and abnormal fear of sex. Infertile women should stay away from where they have been stigmatized. They should also desist from alcohol and late marriage of over 45 years and guide against overweight.

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## **Effect of Students' Reading Habit on their Academic Performance in External Examinations in a Tertiary Institution In Rivers State**

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### **Abstract**

This study was carried out to investigate the effects of Students Reading Habits on their Academic Performance in External Examinations in Rivers State College of Health Science and Technology in RumuemeObio/Akpor Local Government Area. The population of 300 final year student who are due for external examination in the school of community health in Rivers State College of Health Science and Technology, Port Harcourt with a sample size of 150 students were selected from 3 departments in the college. A researcher made questionnaire was used to elicit data from respondents. The questionnaire consists of two sections "A" and "B". Section A was designed to elicit information on respondents' Socio-demographic characteristics while Section B elicited information on the effects of students reading habits on their academic performance during external examinations. The research instrument has a 6-point rating scale and 28 items based on the study variables. The Pearson Product Moment (PPM) correlation coefficient of 0.82 ascertained the reliability of instrument for use in the study. After the administration, the data obtained were subjected to mean analysis. The entire null hypothesis was tested at 0.05 level of significance using t-test. Based on the results of this study, it was concluded that final year students in community health department in Rivers State College of Health Science and Technology Obio/Akpor Local Government Area Rivers State differ significantly in terms of Academic Performance in external examination based on reading habits, Availability of facilities for the promotion of good reading Habits, facilities that affect the reading habits of students, the most effective reading habits, the effects of reading habits on external examination, suggestion that can help promote good reading habits among students under study. It is recommended that school library should be well equipped to encourage reading habits of students and enhance the academic performance of students. ICT facilities should be available in schools to promote reading habits of students.

**Keywords:** Effect, students, reading habit, academic performance, external examinations

### **Introduction**

Reading is a worldwide phenomenon that has the capacity to promote development as well as instill discipline on the individual. For one to play a significant role in contemporary society, the ability to read and write must be there. The survival of any society therefore is a function of the extent to which that society is involved in reading (Anyanwu, Obichere & Ossai-Onah 2012). Becoming a skilled and adaptable reader according to Igwe (2011) enhances the chances of success at school and beyond. He views reading as not just for school but for life. He further buttressed reading in its entirety and variety as vital to being better informed, having a better understanding of us as well as others.

Findings of the reading revealed a positive correlation between reading habit and academic achievement. Similarly, Onwuegbuzie (2001) conducted a series of studies to find out the relationship between academic success and reading habit and reported positive relationship between the two variables. Reading habits determine the academic achievements of students to a

great extent. Both reading and academic achievements are interrelated and dependent on each other. Students often come from different backgrounds and localities with different levels of academic achievement. Therefore, they differ in the pattern of reading habits. While some students have good reading habits, others tend to exhibit poor reading habits (Bashir & Mattoo, 2012).

In spite of the importance of reading as a culture, it has become obvious that Nigerian children no longer read. Makotsi (2005), pointed out that less access to books or other learning resources, and without proper access, debilitates reading culture. The school libraries are expected to help in promoting reading culture among Nigerian children. The School library and school administrators can use various strategies to promote reading culture. As pointed out by Gbadamosi (2007), reading requires books, it goes to mean that good reading habit promotes effective use of library book resources and effective use of library book resources has the inherent/advantage of promoting good reading habit. Since Nigeria cannot be regarded as a reading nation because the younger generation of Nigerians does not consider reading a leisure activity; it becomes imperative for libraries to explore book talks, story hours and exhibition as a means of promoting reading culture. There is need for libraries/school libraries to devise an effective means of promoting reading culture since school library are custodian of school information resources. In which case, librarians must make effort to take the book back to the people through book talks, story hours and exhibition (Anyanwu et al., 2012)

Adeniji (2006) sees school library as the heart and soul of the educational system, thus, the role of school library in any school in Nigeria cannot be overemphasized as the library provides the necessary impetus to all categories of learners in schools from the slowest learner in the kindergarten to the most intelligent senior in the high school through the provision of print and non print materials to aid learning. Daniel (2004) observes that the library remains the power house of educational institution and that an education institution without a library is like a motor car without an engine and a body without a soul. Smith (2002) opines that the school library is the backbone of functional education without which academic excellence cannot be achieved. The library therefore complements the school by encouraging private study, which is required by students and teachers who want to attain an academic height. The school library thus, stands as a symbol for the truthful expression of man's knowledge and experiences. The extent to which many young people will be creative, informed, knowledgeable and exhibit the trait of a well cultured individual within their own years will be shaped by the boundaries of the content of the library resources available within the support of the school. The school on its own cannot achieve the laudable goals of Nigeria education without the library (Busayo, 2011). The issue at stake is that libraries are faced with challenges since the trend of reading as noble act is non-existing in our contemporary society. With the advent of information technology, where students are always online either to chat or watch film, reading is no longer seen as part of our culture (Anyanwu et al., 2012).

### **Statement of Problem**

Academic performance is perhaps the most imperative meter for measuring adolescents' well-being. Ajayi (2006) stated that it is the marker for successful college and university enrolment, scholarship awards and future job success. Nyarko (2011) placed much emphasis on education because it is believed to be the only avenue for national development in Nigeria. Opare and Dramanu (2002) posited that if students who are the stronghold of learning get actively involved in academic activities it will enhance their academic performance.

Due to the increasing nature of poor academic performance of students, many educationists tend to shift the blame on the teaching methodology adopted by the teachers and lack of fund from the government to provide quality textbooks. However, these might not be the main reasons why students perform poorly in examinations. It is clear from all indications that most secondary school

students have poor reading habit which might lead to poor academic performance. Reading is a necessary skill when it comes to acquiring academic excellence. The benefits of reading are well known but there are still a large number of people with poor reading habits especially undergraduate students. Not every student acquires reading skills at the same rate, and so student develop different reading habit that suits them. It is against this backdrop that the researcher wishes to determine the effect of students' reading habit on their academic performance in external examinations in Rivers State College of Health Science and Technology, Port Harcourt.

### **Purpose and Objectives of the Study**

The purpose of this study is to determine the effect of students' reading habit on their academic performance in external examinations in Rivers State College of Health Science and Technology, Port Harcourt. The specific objectives are to:

1. Identify the reading habit of students under study
2. Identify the available facilities for the promotion of good reading habits among students under study.
3. Determine how the facilities affect the reading habits of students under study

### **Research Questions**

To achieve the identified objectives of the study, the following questions were raised to guide the study:

1. What are the reading habits of students under study?
2. What are the available facilities for the promotion of good reading habits among students under study?
3. How do these facilities affect the reading habits of students under study?

### **Hypothesis**

**Ho<sub>1</sub>:** There is no significant relationship between students reading habits and their academic performance in external examinations.

**Ho<sub>2</sub>:** There is no significant relationship between the available facilities for the promotion of good reading habit and students' academic performance in external examination.

### **Significance of the Study**

This study will be useful to many people who may want to know the effect of students' reading habit on their academic performance in external examinations. Therefore, it is significant in this regard.

1. It attempts to combine reading skills with reading habit and how they both affect academic performance of students.
2. It will provide valuable information about the effects of poor reading habit on the academic performance of students.
3. It will serve as resource materials for others who want to carry out research in related field.

### **Scope of the Study**

This study focused on the effect of students' reading habit on their academic performance in external examinations in Rivers State College of Health Science and Technology, Rumueme, Port



Harcourt. It is aimed at all final year students in Rivers State College of health science and technology, Port Harcourt due for external examination but was limited only to the school of Community Health in the college due to time, finance and other factors.

### **Study Design**

The research employed the used of descriptive survey design.

### **Study Area**

This study was carried out in Rivers State College of Health Science and Technology, Rumueme, Port Harcourt. Rumueme is a small settlement which lies just a few minutes' drive from the heart of Port Harcourt city. The affairs of Rumueme town is managed by the traditional ruler known as the Apiti of Rumueme. There are a number of notable landmarks and attractions that can be found within and around Rumueme community such as TCM Library, the Rivers State University Port Harcourt, several restaurants, small businesses and leisure centres.

The community has social amenities such as primary health care centers, four primary school, one government secondary school and one private secondary school, link road to neighbouring communities, Electricity and Market.

### **Population of the Study**

The population of this study included all final year students who were due for External examination in the school of Community Health in Rivers State College of Health Science and Technology, Port Harcourt. There are three departments in the school of community health. The total number of the final year students who constituted the population of this study was three hundred (300) comprising both male and female.

### **Sample and Sampling Technique**

Sampling of potential participants was done from the 3 departments in the college. One hundred and fifty (150) students were selected for the study through simple random sampling technique. This constituted 50% of the total population of the study.

### **Instrument for Data Collection**

A structured questionnaire was used for data collection in this study. The questionnaire consists of two sections 'A' and 'B'. Section A was designed to elicit information on respondents' socio-demographic characteristics while section B elicited information on the effects of students reading habits on their academic performance during external examinations.

### **Validity of Instrument**

The researcher's supervisor and two other experts from the Department of Educational Management, University of Port Harcourt determined the suitability of the face and content validity of the instrument. Their comments and suggestions were incorporated into the final development of the instrument to ensure its validity.

### **Reliability of the Instrument**

The test retest method was used to measure the reliability of the instrument. It was administered to students and their responses were scored after an interval of two weeks, same questionnaire was re-administered to the same students and their scores of the first and second attempts were correlated using Pearson Product Moment Correlation Coefficient. The result obtained was 0.82 which was good enough to confirm the reliability of the instrument.

### **Method of Data Analysis**

Data collected was presented in tables and analyzed using mean statistics to answer the research



questions while the null hypotheses were tested using independent t-test at 0.05 level of significance.

## Result

**Table 1: The Reading Habits of Students (Mean Scores on the Reading Habits of Students)**

S/N	Items	SA	A	D	SD	Total	Mean	Remarks
		4	3	2	1			
1	Do you like reading as a hobby	75	45	18	12	150	3.22	Agreed
2	Reading for recreation or relaxation	25	30	55	40	150	2.26	Disagreed
3	Concentration reading	65	40	25	20	150	3.0	Agreed
4	Reading outside your profession	60	55	20	15	150	3.0	Agreed
5	Reading other materials to improve on a course rather than notes books	50	60	15	25	150	2.90	Agreed
	Grand mean						2.88	

Table 1 shows the mean scores on the reading habits of students. Their mean responses reveals that majority of the respondents agreed on the items in the table with mean scores greater than the criterion mean score of 2.5. This implies that majority of the respondent like reading as hobby with mean score of 3.22. sixty five (65) like concentration reading with mean score of 3.0, then 60 likes reading outside their profession with mean score of 3.0 and 50 likes to read other materials to improve on a course rather than note books with mean score of 2.90.

**Table 2: Available Facilities for the Promotion of Good Reading Habits among Students**

S/N	Items	SA	A	D	SD	Total	Mean	Remarks
		4	3	2	1			
1	Books promote good reading habit	68	52	16	14	150	3.16	Agreed
2	Provision of a well equipped library can promote good reading habits among students	48	42	30	20	150	2.65	Agreed
3	ICT facilities promote good reading habits	60	45	23	22	150	2.95	Agreed
4	Audio-visual resources can also promote good reading habits	62	53	24	11	150	3.10	Agreed
	Grand Mean						2.97	

Data in Table 2 shows the mean scores on the available facilities for the promotion of good reading habits among students under study. Their mean responses reveals that majority of the respondents agreed on the items in the table with mean scores greater than the criterion mean score of 2.5. This implies that the availability of books promote good reading habit with mean score of 3.16, provision of a well-equipped library promote good reading habits among students with mean score of 2.65, ICT facilities promote good reading habits with the mean score of 2.95 and Audio-visual resources also promote good reading habits with mean score of 3.10.

**Table 3: Effect of Reading Facilities on the Reading Habits (Mean Scores on the How ICT Facilities Affect the Reading Habits of Students)**

S/N	Items	SA	A	D	SD	Total	Mean	Remarks
		4	3	2	1			
1	ICT facilities enables the students to develop good reading habit	58	60	16	16	150	3.0	Agreed
2	It exposes the students to a variety of materials	48	52	30	20	150	2.85	Agreed
3	It encourages group reading	60	45	23	22	150	2.95	Agreed
4	It increases comprehension of materials	60	55	24	11	150	3.0	Agreed
5	It motivates the students in the area of research	68	52	16	14	150	3.16	
	<b>Grand mean</b>						<b>2.99</b>	

Data in Table 3 shows the mean scores on how ICT facilities affect the reading habits of students under study. Their mean responses reveals that majority of the respondents agreed on the items in the table with mean scores greater than the criterion mean score of 2.5. This means that ICT facilities enables the students to develop good reading habit with the mean score of 3.0. It exposes students to variety of materials with mean scores of 2.85, encourages group reading with mean score of 2.95, increases comprehension of materials with mean score of 3.0 and also motivates the students in the area of research with mean score of 3.16.

**Hypothesis Ho<sub>1</sub>:** There is no significant relationship between students reading habits and their academic performance in external examinations.

**Table 4: t-test of Significance on the Relationship between Students Reading Habits and their Academic Performance**

Variables	No	Mean ( $\bar{x}$ )	SD	Df	t-cal	Result
Reading habits		2.95	1.47			
Academic performance	150	3.0	1.59	148	.000	Sig.

Table 4. reveals that  $p < 0.05$ , means there is a significant relationship between reading habits and academic performance of students in external examinations. Hence, hypothesis one is rejected.

**Hypothesis Ho<sub>2</sub>:** There is no significant relationship between the available facilities for the promotion of good reading habit and students' academic performance in external examination

**Table 5: t-test of Significance on the Relationship between Available Facilities for the Promotion of Good Reading Habit and Students' Academic Performance in External Examination**

Variables	No	Mean ( $\bar{x}$ )	SD	Df	t-cal	Result
Reading habits		3.2	1.66			
Academic performance	150	2.98	1.39	148	.000	Sig.

Table 4.8 reveals that  $p < 0.05$ , means there is a significant relationship between available facilities for the promotion of good reading habit and student's academic performance in external examinations. Hence, hypothesis two is rejected.

## Discussion

### Reading Habits of Students

On research question 1, it was shown that concentration reading, reading outside your profession and reading other materials to improve on a course rather than book notes are the reading habits of students. One of the reading habit purposes is concentration. Concentration implies that the readers acknowledge their reading process to understand the meaning of a passage. Reading for concentration is recommended for use in school by stakeholders; this reading habit purpose shows positive result in student's achievement in school. The finding is in agreement with Thanuskodi (2011) who noted that concentration reading stimulates both taught and emotion.

### Available Facilities for the Promotion of Good Reading Habits

Table 2 showed that the availability of books promote good reading habit, provision of a well-equipped library promote good reading habits among students and ICT facilities promote good reading habits respectively. Library plays an important role in the promotion of reading habits among students. School libraries are fundamental to the design, implementation and attainment of educational excellence. Libraries are integral parts of the educational development of secondary school students. According to the findings of NPE (2004) who noted that libraries provide access to reading materials and improve students' skills.

### The Effects of Reading Habits on Student's Academic Performance

The result of analysis also five reveals that reading habits increases student skills and understanding, widens students experience and knowledge, makes students to work independently during external examinations and increases academic performance of students. Reading habit is powerful and long lasting in the development of student's academic success. The implications of applying reading as habitual activity as students can expand their knowledge and increase focus and concentration. The finding is in agreement with Jack (2008) who mentions that reading habit

help the mind performs effectively, helps in developing good vocabulary, boost intellectual curiosity and psychological activity.

### Summary

This study was carried out to investigate the effect of students' reading habit on their academic performance in external examinations in Rivers State College of Health Science and Technology, Port Harcourt, Rivers State. Three objectives and three corresponding research question were posed to guide the study. Descriptive survey design was adopted for the study. Discussion of findings was reviewed under the following sub-headings: concept of reading habits, factors affecting reading habit of students and strategies that can be used in promoting reading habits among students. The total population of respondents used in the study was 300 students. A sample size of 150 students were selected for the study through simple random sampling technique. Data analysis method used was mean to answer the research questions while independent t-test was used to test the hypothesis at 0.05 levels of significance.

### Conclusion

Based on the findings, the study concluded that the availability of books promote good reading habit, provision of a well-equipped library promote good reading habits among students and ICT facilities promote good reading habits respectively. Concentration reading are the most effective reading habits among students. Reading habits increases student skills and understanding, widens students experience and knowledge, makes students to work independently during external examinations and increases academic performance of students. Good reading habits can be promoted by the provision of a well-equipped school library and ensuring adequate utilization of the library by the students *etc.*

### Recommendations

Based on the findings and conclusions on the study, the following recommendations are made by the researcher:

- (1) School library should be well equipped to encourage reading habits of students and enhance the academic performance of students.
- (2) ICT facilities should be available in schools to promote reading habits of students.
- (3) Government should create an enabling environment for students in order to promote good reading habits among students.
- (4) Teachers should be competent in using ICT resources to promote reading habit among students of tertiary institution.

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## **Design and Construction of an Electronic Blind Walking Stick Using Arduino and Ultrasonic Sensor**

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### **Abstract**

Generally, blind people use a traditional cane (known as white cane) for moving from one place to another. Although, white cane is the international symbol of blindness, it could help them to detect place and to avoid obstacles. In this paper, we represent a model of walking stick for blind people. It consists of Arduino, ultrasonic sensor and buzzer. This stick can detect place and obstacles. Position detection part was done with ultrasonic sensor for detecting obstacles. The buzzer produces two types of sound. When the blind reaches his/her destination, buzzer buzzes continuously and when the blind faces any obstacles, buzzer buzzes discontinuously. By hearing this two types of sound, blind can be confirmed about his destination and also can avoid obstacles in front of him/her. The whole system is designed to be small, light weight and is used in conjunction with the white cane so that it could ensure safety of the blind. It is recommended to be used by the patient with visual impairment.

**Keywords:** Arduino, Sensor, Blind Walker

### **Introduction**

Independence is the building methodology in achieving dreams, goals and objectives in life. Visually impaired persons find themselves challenging to go out independently. There are millions of visually impaired or blind people in this world who are always in need of helping hands. For many years, the “white cane” became a well-known attribute to blind person's navigation and later efforts have been made to improve the cane by adding remote sensor. Blind people have big problems when they walk on the street or stairs using “white cane”, but they have sharp hepatic sensitivity. More convenient means of life can be achievable by the use of electronic walking stick for the blind according to Chaurasia & Kavitha, 2014. A person who has been clinically determined to have a visual acuity of 20/70 or less in the stronger eye is diagnosed as visually impaired, while a person who is legally visually impaired is defined to have a visual acuity of 20/200 or less in the stronger eye according to Rangsipan, Manaspaibool, Khaiprapay & Plienjai, 2010). Visual impairment according to World Health Organisation (2011) is a decreased ability to see to a degree that causes problems not fixable by usual means, such as glasses. Some also include those who have a decreased ability to see because they do not have access to glasses or contact lenses (WHO, 2011).

A Global Positioning System (GPS) based blind stick with ultrasonic and proximity sensor for detecting obstacle was developed, (Chumkamon, Tuvaphanthaphiphat & Keeratiwintakom, 2008). A similar mobility aid for the blind and partially sighted people which is linked with a GPS

module to pin point location of the user was also created (Nour, 2013). This aid also used ultrasound sensor for detecting obstacles. Another system for detecting obstacles was created, using a wheeled stick, (Maberley, *et al*; 2006). When it detected obstacles, it automatically steered around and made the user to follow the obstacles free path without any conscious effort (Shraga, Ulrich & Borenstein., 2003)

### **Statement of the Problem**

According to WHO, blindness has become prevalent in the society today due to many environmental and biological factors and the population of the blind is increasing daily with all the burden on the blind and their care givers whom ensures their mobility. The blind sorely rely on other people for mobility, and if they are not available, their mobility would be restricted, this work would solve the problem envisaged due to moments of unavailability.

### **Aims and Objectives of the Study**

The aim of this work is to design and construction of an electronic blind walking stick using arduino and ultrasonic sensors.

### **Specific Aims/Objectives**

- To design and construct an electronic blind walking stick using arduino and sensor
- To construct an affordable equipment for the visually impaired persons for walking
- To replace the conventional walking stick with a smart sensor that detects obstacles

### **Materials Used**

White cane and some electronic components are used. The electronic components include Arduino uno, ultrasonic sensor, buzzer and battery of 9 volts respectively. This can be represented in a block diagram of the system hardware components.

### **Electrical Components Used**

**Arduino uno:** it is use for building digital device and interactive objects that sense and control objects.

**Ultrasonic sensor:** it is a device that can measure an object by using sound waves.

**Buzzer:** it is also called a beeper; it is an audio signaling device which may be mechanical, piezoelectric or electro mechanical.

**Resistors:** is an electronic component use to resist excess current in a circuit.

**Transistor:** is a semi-conductor device use to switch electronic signal and electrical power.

**Capacitor:** is a passive two terminal electrical component that stores electrical energy in an electric field.

**Battery (9v):** this is an electro chemical cell that can charge electrically to provide statics potential for power when needed.

**Vibrator motor:** is a motor that vibrates when it senses an object or obstacle.

**Switch button:** is a device used to control the range of the sensor. When switch are open (Off), sensor operate at their half range and when closed (On) sensor operate at their full range.

### **System Block Diagram**

The following section describes the block diagram of the system hardware components

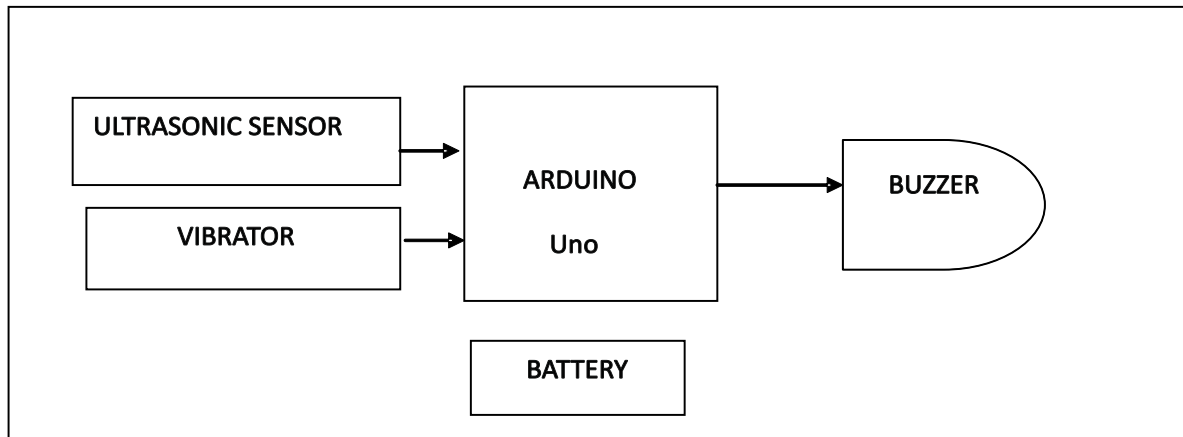


Figure 1: Block Diagram of Arduino System

As shown in fig. above, the block diagram of the system consists of 5 essential components: Arduino Uno, Ultrasonic sensor, vibrator, buzzer and battery, (Manaspaibool, *et al*; 2010). The longitude and latitude of the movement of the blind are programmed on the arduino, is connected with a battery. When the blind walk with the stick connected with ultrasonic sensor continuously indicate his current longitude and latitude. So, the Arduino has the programmed value and connected ultrasonic sensor shows the current value of the user's location. When these two values become equal to each other, buzzer buzzes continuously. It means that, blind has reached to his destination (Shraga, *et al* 2003). By hearing this type of continuous sound from the buzzer, blind person will be aware that there is an obstacle in his direction, (Shraga, *et al*; 2003).

### System Circuit Diagram

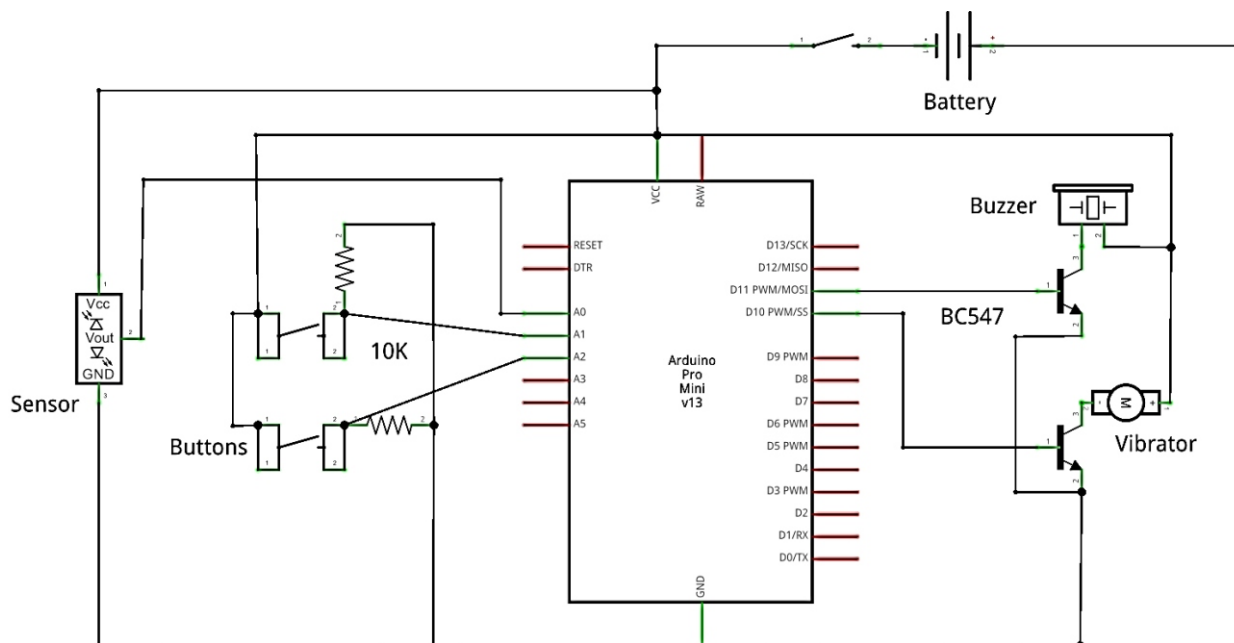


Figure 2: Circuit Diagram of Arduino System

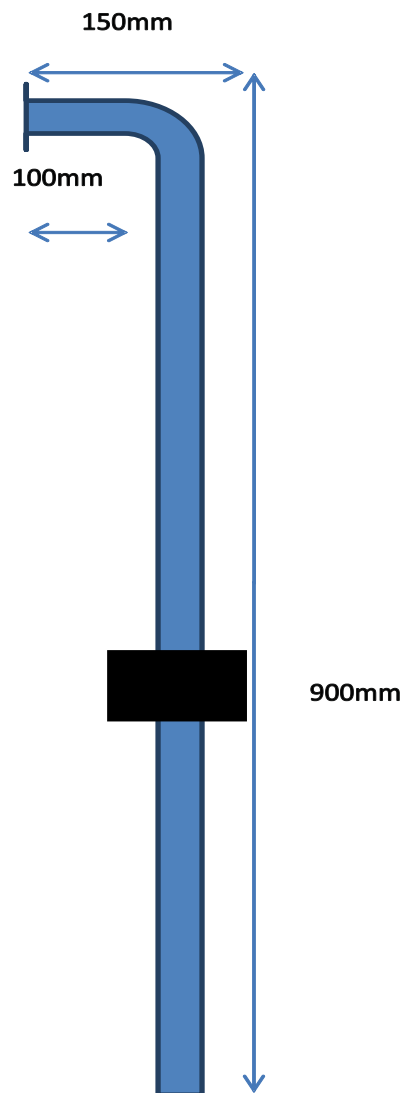


The figure above describes the schematic diagram of the entire project. Arduino uno in the middle, acting as the processing unit and all the components are then connected to it. A BC547 NPN transistor was used each for the buzzer and vibrator because the output pins on arduino are not able to provide enough current, then, the transistor acts as an amplifier. 10K represents a 10 kilo-ohm resistor which is necessary to ground the buttons. The pins marked with an 'A' represent analog pins which are mostly used for input while the pins marked with a 'D' represent digital ones which are used for digital output.

### **Precautionary Measure Applied During Construction**

- Wear your correct personal protective equipment
- Ensure the circuit does not get powered when working on it
- Test all components before soldering
- Place the soldering iron in a safe place to avoid burn

### **Design Outline**



**Figure 3: Design Outline of the System**

### **Construction Procedure**

In the construction, the following procedures were properly considered,

- I. Purposing of the entire materials/components needed
- ii. Resistance check of the components bought with the help of ohmmeter before making the necessary connection with the components
- iii. Drafting out a schematic diagram or how to arrange the materials/ components.
- iv. Testing the completed system to see if the design works and
- v. Finally, implementation of design of the project.

### **Assembling of Units**

The sections or units were properly laid out and assembled into the casing where the general coupling and linkages into the peripheral devices took place. After the assembly and coupling; the indicator was displayed to show when the system is powered. Switch was brought out for powering the system, buzzer and sensor, was also brought out of the casing.

### **Packaging**

This is a very important aspect of the design work. It is the appearance given to the final work.

After soldering on the Vero board, we do not leave the work like that; it has to be cased. Packaging could serve two major functions.

1. Serve to protect the components used for the design.
2. Serve to make the finished work look attractive.

A portable wooden casing covered with leather was used in packaging the work. The wooden case retain the heat generated by the bulls since wood is a poor conductor of heat and electricity. The dimension and design of the box was arrived at after considering various factors such as the width and length of the Vero board

The dimension for the casing as used in the construction were

Length --- 31.5 cm and 26.5cm

Height -- 14.cm

### **Procedure for Mounting**

The battery was bolted directly to the bottom of the case. This was followed by mounting of the power section of the circuit board. A gap was made between one mounting and the successive ones. This is necessary to avoid overcrowding. The Vero board is also mounted at the upper side of the case. The resistors, transistors, and other components used were mounted on the Vero board. Accessories were tightly affixed to avoid slacking during operations.

The mounting is shown thus:



**Figure 4: Mounting of the System**

## **Results**

### **Testing of the Constructed System**

Testing is one of the important stages in the development of any new product or repair of existing ones. Because it is very difficult to trace a fault in a finished work, especially when the work to be tested is too complex. For the purpose of this project, two stages of testing are involved.

- i. Pre-implementation testing
- ii. Post-implementation testing.

### **Pre-Implementation Testing**

It is carried out on the components before they are soldered to the board. This is to ensure that each component is in good working condition before they are finally soldered to the board. The components used in this design are grouped into two, namely Discrete components e.g. resistors, light emitting diodes, capacitors, transistors and Arduino components. The discrete components are tested with a millimetre by switching the meter to the required value and range corresponding to each discrete component to check for continuity.

### **Post-Implementation Testing**

The different sections of the complete constructed system were tested to ensure good operating condition. A continuity test was carried out to ensure that the circuit or components are properly linked together. This test was carried out before power was supplied to the circuit. Finally, after troubleshooting has been done on the whole circuit, power was supplied to the circuit. Visual troubleshooting was also carried out at this stage to ensure that the components do not burn out.

During testing all the three sensors were on flat surface such that ultrasonic beam emitted by them is horizontal. Make sure there are no obstacles in front of any sensor up-to a distance of 1 meter. Slowly come close to the centre sensor until the buzzer starts beeping. For obstacles found by the centre sensor there are two quick beeps. Now move slowly towards the right sensor also

make sure there is no obstacle in front of the front sensor. For obstacles sensed by right sensor it will give three quick beeps. The results obtained during the construction states after necessary troubleshooting were satisfactory. The system was able to respond to its operation. A picture of the device is as shown below:



**Figure 5: The Constructed Arduino System**

## **Discussion**

### **Economic importance of the Project**

Although this project has not been given due recognition yet, whenever this equipment finds its use, the case is relatively cheap with a good efficiency and improves on its reliability. Due attention should be given to the viability of this project, reliability, maintainability and also the evaluation. This construction project will help bring to light a more precise method of making electronic walking stick that will ease movement in people that are blind or visually impaired.

### **Reliability**

In the design of the device, reliability is taken into consideration to improve on the system performance. Here the concept of reliability has been associated, in a qualitative way with good design endurance consistence quality and dependability in recent years. However, the much greater complexity of the line selector and the seriousness of a failure in the system have made it necessary to attempt not only to improve the reliability of the equipment but also to assess it in qualitative terms.



### **Operating Principle**

- 1 Hold the walking stick at the handle**
- 2 Put on the switch**
- 3 Walk with the stick in front of you**

### **Maintainability**

It is very important to note that maintainability is another area or aspect taken into consideration since high initial or production cost will lead to a low maintenance cost. This device has a high input output performance, but relatively cheap, easy and with low maintenance cost. Therefore maintaining device will give its operational effectiveness within a given period of time when the maintenance action as performed with respect to the prescribed procedures”.

### **Maintenance**

#### **Daily**

- 1 Clean the stick with a damp cloth**

#### **Weekly**

- 1 Check the battery**
- 2 Check the switch**

#### **Monthly**

- 1. Check the Arduino circuit board**
- 2. Check the sensor**
- 3. Check the buzzer if beeping correctly**

### **Troubleshooting**

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Sensor not working	Connection	Check connection
	low battery	Replace battery
	faulty sensor	Replace battery
No buzzer sound	Faulty buzzer	Replace buzzer
	Faulty sensor	Replace sensor
No power	No switch	Replace switch
	Drained battery	Replace battery

### **Precautions**

- 1 Do not leave the switch on when not in use**
- 2 Only use by the visual impaired person**
- 3 Do not use as a fashion material**

### **Conclusion**

The method employed was able to produce the desired and expected result, with a good efficiency of the blind walking stick. This device has a high input / output performance with easy and low maintenance cost. The result revealed that the device is reliable since with its help, people can improve more than 15 - 20% travel speed, reduce minor collision, maintain their way, and increase safety when compared to unaided equipment. This construction project will help bring to light a more precise method of making electronic walking stick that will ease movement in people that are blind or visually impaired since a smart sensor walking stick for the visually impaired is to

eliminate the problem of the traditional walking stick by designing, building, and testing a smart sensor cane for the visually impaired that utilizes computer and sensory technology to provide object detection capabilities and freedom of physical range. Finally, the method used was successful and environmentally friendly.

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## **Primary Health Care Strategies as Inevitable Tools in Achieving Health Care in Nigeria**

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### **Abstract**

The Alma Ata declaration on Primary Health Care (PHC) which was made in 1978 is meant to address the main health problems in communities by providing promotive, preventive, curative and rehabilitative services. Nigeria was among the 138 signatories to this invaluable idea. Subsequently several re-organization of the Nigeria Health structure to align with the new vision was made. The implementation of PHC, Primarily through services provided at the primary health centres, vary based on the type of PHC facility in Nigeria, several other PHC services within the health precinct include Community mobilization services, service integration and selected PHC programmes under the auspices of international collaborators. This review therefore looks at the primary health care strategies as inevitable tools in achieving health care in Nigeria.

**Keywords:** community mobilization, advocacy, strategies, primary health care.

### **Introduction**

Primary health care as conceptualized by the Alma-Ata declaration of 1978 is a grass-root approach towards universal and equitable health care for all (World Health Organization- United Nations Children Fund. WHO-UNICEF, 1978). The strategy is meant to address the main health problems in the community providing promotive, preventive, curative and rehabilitative services (Olise, 2007). It is the first level of contact of individuals, families and communities with the national health system, bringing health care as close as possible to where people live and work, and constitute the first element of the continuing health care process (Obiome, 2007). A primary health center was described by Maurice king as a unit which provides a family with all the health services, other than those which can only be provided in a hospital (Federal Ministry of Health Nigeria. (FMOHN),2004; Raids, 2008). It fundamentally takes services outside its own precinct to the homes of people within its jurisdiction. In Nigeria essentially, three types of primary health centers are recognized within the health system. These include: The Comprehensive Health Centers (CHC); The Primary Health Centers (PHC) and The Basic Health Center (BHC) (Obiome, 2007)

PHC is the latest expression of a belief that can be traced to the 19th century pathologist, Rudoff Virchow & Alenoghena 2004 states that the solution to major human disease problems resided not only in the best science available, but also in brave political proposal for social justice and improvements in the life of the poor (McNeely, 2007). Nigeria is one of the dignitaries to the Alma \_Ata declaration of PHC in 1978. But t is interesting to note that prior to the 1978 Alma-Ata declaration, the country had set the ball rolling with the implementation of the Basic health services scheme (1975-1980), which was Nigeria's first serious attempts at the implementation of PHC. This scheme concentrated on the provision of health facilities, training of health workers and paying little attention to community participation intersectoral cooperation to community participation, intersectoral cooperation or use of local technology (Obionu, 2007). In 1988, the

National health policy of Nigeria was launched and is seen as a collective will of the government and people of Nigeria

In 1992, PHC implementation started with the commencement of PHC programs in the Local Government Area (LGAs). Nigeria therefore, became one of the few countries in the developing world to have systematically decentralized the delivery of basic health services through local government administration (Obionu, 2007; Cucto,2005) in order to ensure the sustainability of PHC in Nigeria, the federal government by decree number 29 of 1992, set up the National Primary Health Care Development Agency. This body was charged with the responsibility to mobilize support nationally and internationally for PHC programs implementation (FMOHN, 2004; Raids, 2008; Magawa, 2012).

#### **Strategies for Implementation**

The implementation of PHC is achieved through services carried out at the primary health centers and home visits. These services are specifically related to the component of PHC which include education concerning prevailing health problems and methods of preventing and controlling them, promotion of food supply and proper nutrition and adequate supply of safe water and basic sanitation, maternal and child health care including family planning, immunization against the major infectious diseases, prevention and control of locally endemic and epidemic diseases, appropriate treatment of common diseases and injuries and provision of essential drugs (WHO-UNICEF, 1978). These services are carried out primarily at the primary health care facilities. As it is in other parts of the world, Nigeria has its own peculiarities characterizing the health care system. These peculiarities are related to her cultural, religious and sociopolitical diversities. Thus strategies to implement primary health care must be evolved to meet the challenges associated with these diversities. These strategies include community mobilization and advocacy, service integration, health research, capacity building, and international and non-governmental collaborations.

#### **Community Mobilization and Advocacy**

Community mobilization is the process of arousing the interest of the people and encouraging them to participate actively in finding solutions to their problems (Olise, 2017). It is the gateway to providing effective health care services to individuals, families and groups within the communities concerned. Community mobilization engenders community participation and community ownership and ultimately guarantees sustainability of health programs (Magawa, 2012). In addition, it enhances resource mobilization and usage is particularly crucial in resource-poor setting for the implementation of primary health care. Important aspects of community mobilization include community entry, community dialogue, and advocacy, in community entry, important stakeholders are engaged to obtain necessary permission for health programmes and services, while community dialogue provides opportunity for community members to channel their inputs into the planning, implementation and evaluation processes. Advocacy means providing active verbal support for primary health care by making information available to those who are in a position to act on them. In practical terms, advocacy for primary health care involves community and opinion leaders, political leaders, policy makers and other important stakeholders.

Beyond verbal support, ordinary community members want to see their leaders patronize and utilize primary health care services. They also want to see health workers including doctors, utilizing PHC facilities for their health needs and that of their families. Community mobilization helps to galvanize support for the development and deployment of primary health care services.

#### **Service Integration**

Service integration in primary health care has been described as the process of including either the



elements of one service or an entire service into the regular functioning of another service (NPHCDA, 2012). It implies providing two more primary health care services on the same platform by the same team and often simultaneously. This strategy enhance efficiency, prevents duplicity and waste of resources, and improves availability and accessibility of a wide range of health care services, service integration is the principle that underlines the integrated maternal newborn and child health week (MNCHW) and the immunization plus days (IPDS), (Federal Government of Nigeria, FGN, 2007)

### **Health Research**

Health research provided a means of systematically identifying health related problems and their determinants so as to evolve ways to solve them. It entails identifying community health needs and their areas of strength and weakness in order to appropriately deeply and utilize available resources efforts have been initiated globally to emphasize the importance of evidence based programming through the application of research findings in policy making processes (Uneke et al 2010) Nigeria's national strategic health development plan (NSHDP 2010-2015) identified research for health as a priority area aiming to utilize research for informed policy making and programming, as well as improve health achieve nationally/international health related development goals and contribute to the global knowledge platform, according to the NSHDP the government of Nigeria at all levels is expected to invest 1% of her health expenditure (about #6.77bn) on health research annually (FMOH, 2010). However, a quick review of Nigeria federal budget on PHC research as a proportion of PHC budgets over the past three years (2011-2014), in the same vein, the annual budget for most states does not have provision for health research. The implication is that PHC strategic and operational planning has been speculative rather than evidence-based. Therefore, investment in health research is an important and yet neglected strategy for implementing primary health care in Nigeria.

### **Capacity Building**

Manpower development is crucial to quality health care delivery. It is required to be a continuous process in order to effectively deal with the constantly evolving health care workers and manages needs to be trained and retrained on regular basis through workshops, seminars, special courses and in some cases, in higher degrees. The essence is to maintain a vibrant workforce. Health care workers offering PHC services are no second-class practitioners, and thus must receive government's attention in the area of capacity building.

### **Non-Governmental and International Collaborations**

The burden of providing health care services to the people at the grassroots need not to be borne by the government alone. The role of non-governmental organizations (NGOs) has been recognized in promoting primary health as noted by the World Federation of Public Health Association (WFPHA, 1978) and continues to be advocated to fills up important gaps (Health system Trusts, 2013). NGOs and international partners are relevant in supporting PHC programmes with funding, capacity building, operational research and technical assistance. Prominent NGOs and international partners currently supporting PHC services in Nigeria include the society for family Health, United Nations Children Fund (UNICEF). Achieving Health Nigeria Initiative (AHNI), and pathfinder's international among others. These organizations should be encouraged to do more in enhancing primary health care.

### **Constraints to Primary Health Care Implementation in Nigeria**

Though PHC centers were established in both the rural and urban areas in Nigeria with the intention of equity and easy access, regrettably, the rural populations in Nigeria are seriously

underserved when compared with their urban counter parts (Abdulraheem et al 2012). This singular observation points to the shortcomings being experienced in the process of implementing primary health care system in Nigeria. These constraints will be discussed along the planes of governmental/system factors. People/client factors and other factors that are not far between. The governmental factors include lack of political will, inadequate funding/misappropriation of funds, inadequate inter-sectoral collaboration, and conflicts between local and state governments.

The people/clients factors include community perceptions of poor quality and inadequacy of available services in PHC centers, under/low utilization of PHC services, and poor community participation. Other factors include lack of motivation in the workplace including poor remuneration, unhealthy rivalry between various categories of health workers, non-involvement in private health sector in the planning and implementation of PHC, and poor management of information system, heavy dependence on initiatives funded by foreign donors like UNICEF and USAID. Mismanagement of resources such as project vehicles, generators and other equipment to the detriments of planned programmes, such issues as pilfering of drugs and poor maintenance of equipment as indicated by Wunsch et al (1996).

### Conclusion and Suggestions

In Nigeria environment, as it is in many developing countries in Africa, the implementation of primary health care is still faced with many challenges. The following points may be useful in overcoming some of these identified constraints:

1. Government at all levels in Nigeria should be charged to re-orient prospective political office holders on the importance of the health of her citizens, especially pregnant women and children under the age of five years and the current classification of countries based on its health indices.
2. The Federal and State Government should put more effort in ensuring that all the foreign donors and UN agencies provides logistics support for the operationalization and implementation of comprehensive PHC as against the selective PHC concept with its attendant draws back.
3. Health education should be carried out at all levels for proper understanding of the real meaning of primary health care and the usefulness of community participation in its implementation.
4. The legislative arm of government should ensure that the right bills for example, the national health bill which empowers the employment of more qualified health personnel at primary health care facilities, is passed into law and fully implemented.

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## **Job Satisfaction Among Pastors in Nyo-Khana District of Khana Local Government Area of Rivers State.**

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### **Abstract**

The aim of this study was to investigate job satisfaction among Pastors in Nyo-khana District of Khana Local Government Area of Rivers State. The study employed descriptive survey design and correlational survey design. All the Pastors except Assistant Pastors constituted the population for this study. Since the population of 520 Pastors was not too large to be studied, the whole population was studied. A structured questionnaire whose reliability co-efficient was 0.81 was prepared and used to gather data for the study. Also, data collected for the study were analyzed with the use of descriptive statistics of frequency distribution tables and percentage while hypothesis was tested with Pearson Product moment correlation co-efficient set at  $P > 0.1$  (2-tailed). Crombach Alpha was used in calculating the reliability of the research instrument. The study revealed 80% level of job satisfaction among Pastors in Nyo-khana District. Most of the Pastors were satisfied with condition of service, career development and attitude of church members to welfare. On the contrary, most of the Pastors were dissatisfied with working condition, time pressure, community attitude towards pastoring, relationship with members of church council, growth of church and general living condition. Again, the study noted significant positive relationship between job satisfaction and occupational stress among Pastors in Nyo-khana District. The study recommended that there should be improvement in support structures for Pastors, church planting should go with adequate support for Pastors, there should be positive attitude by community members to Pastors serving in their communities, there should be adequate management of time, there should be taking time off from usual pastoral activities to sleep well, relax, recreate and observe annual leave as ways of making better job satisfaction among Pastors in Nyo-Khana District of Khana Local Government Area of Rivers State.

**Keywords:** pastors and job satisfaction

### **Introduction**

The importance of job satisfaction to any field of human endeavours cannot be overstressed. According to Spector (cited in Bullock, 2015), individuals who are satisfied with their jobs exhibit greater psychological well-being, physical health, commitment and life satisfaction. For the organization, job satisfaction is significantly related to customers satisfactions and loyalty, productivity, performance, turnover, organizational citizenship behavior and workplace safety. The church and the pastor are not left out of the aforementioned benefits. Job satisfaction of the pastor positively affects the wellbeing of the church including the community where the pastor serves. Therefore, job satisfaction



concerning pastors should not be treated with levity. As noted by Ray (2018), employees spend a majority of their waking hours in the workplace; they need more than a pay-check to satisfy them as their talent, engaging them in challenging project, offering incentives, and creating friendly and respectful environment with low stress are among the reasons your staff will be glad to show up each day to contribute to the company's ultimate success. It should be pointed out that the position of Ray may not be different when we consider what pastors need to perform their jobs well.

Having said that, what is job satisfaction? Job satisfaction is the pleasurable emotional state that results from positive appraisal of one's job and work-related experience (Locke cited in Bullock, 2015). Similarly, Business Jargon A Business Encyclopedia (2009) defined job satisfaction as the feeling of contentment or a sense of accomplishment, which an employee derives from his/her job. It is a result of appraisal that causes people to attain their job values or meet out their basic needs.

Continuing, the Encyclopedia noted that job satisfaction helps in determining to what extent a person likes or dislikes his/her job. When a current work situation generates good feeling, it can be said to be job satisfaction (Bullock, 2015). The importance of job satisfaction, as stated earlier in this article, brings about a number of positive outcomes that are necessary for both Pastor and church.

While considering the facets of job satisfaction, Business Jargon: A Business Encyclopedia (2003, p.160) opined that, "the essential aspects of job satisfaction include:

1. Job content facets: Work characteristics, Amount of work, Compensation
2. Job context facets: Co-workers, Colleagues, Supervisor, etc, Working conditions, Growth and development opportunities, Policies and rules of organization.

The Encyclopedia observed that there are instances when an employee's feelings concerning one facet may spill over and affect another facet, meaning that if an employee is unhappy with the amount of work, he/she will likely become unhappy with the compensation received. Moreover, each facet of job satisfaction is linked to the respective work environment and cognitive component of the employee's attitude (Business Jargon A Business Encyclopedia).

Looking at the level of Pastor's job satisfaction, CT Pastors (2018) reported the view of the Chicago Tribune which stated that Pastors are the happiest people on earth. Collaborating with the view of Chicago Tribune, was a research done by the University of Chicago's National opinion Research Centre (In CT Pastors) which found out that clergy ranked highest in job satisfaction and "General happiness", and that they even out- ranked highly paid professionals such as doctors and lawyers. According to the report, eighty seven percent (87%) of pastors said they were very satisfied" with their work compared with an average forty-seven (47%) for all workers. Continuing, the source added that sixty-seven (67%) of pastors reported being "very happy", compared with an average thirty three percent (33%) for all workers. The main reason for the high level of job satisfaction among pastors as stated by CT Pastors is that pastors look at their occupation as a calling.

Similarly, Miller (2018) reported that 91% of pastors say they feel "very positive" or "positive" about ministry and that nearly all the pastors who said they were "very positive" or "positive", about ministry, 75% said they, "definitely want to stay". The statistics also indicated that most of the pastors studied were truly satisfied with the job of ministry. It

should, however, be noted that the statistics come from Christianity Today's surveys, which usually print questionnaires and sent to 500 or more randomly selected names of church leaders (pastors). Miller submitted that over the years, a pattern had been observed, as 12-15% of pastors indicate distress-financial, emotional and so on. There are a number of factors that contribute to job satisfaction. Among them is to find a job where you get to do what you love to do most, follow your heart; don't settle for any job you are not passionate about (Segal, 2017). In spite of the high level of stress associated with pastors' job, it may not be wrong to say that the very high level of job satisfaction found among them may not be unconnected with the fact that they have found a job that they are passionate about.

In the same vein, Spicer (2010) identified ten (10) factors that bring about job satisfaction to include interesting jobs, job security, full appreciation of work done, good wages, promotion and growth in the organization, personal or company loyalty to employees, feelings of being in on things, tactful discipline, good working conditions, sympathetic help with personal problems. However, Spicer added that the top three (3) factors among the aforementioned factors included interesting job, job security, and full appreciation of work done. Similarly, according to the views of All Newsimagesvideos:(2018:19), the following are top factors contributing to job satisfaction: Appreciation for your work, Good relationships with colleagues, Good worklife balance, Good relationship with superiors, Company's financial stability, Learning and carrier development, Job security, Attractive fixed salary

Another factor that contributes to job satisfaction according to Kuehner-Hebert (2018) is when workers can use mobile apps to further develop their careers, but just half of employers are doing a good job at providing such digital tools, according to Randstad US study. Besides, Hill (2018) stated that some factors that affect employees' job satisfaction include working conditions which he said is important for companies to try to optimize working conditions by ensuring spacious work areas, adequate lightening, comfortable work stations and providing productivity tools such as upgraded information technology to help employees accomplish tasks more efficiently. Hills added that for employees to be satisfied on their jobs, there should be opportunity for advancement, workload and stress level should not be too much, there should be respect for co-workers, there should be acceptable relationship between workers and their supervisors and there should be adequate financial reward.

Again, Larue (1996) studied how pastors and their spouse feel about money in Illinois, the research made the following revelations;

1. Most pastors feel that they are fairly paid, two-third (65%) of pastors say their pay is fair, and 3 percent even considered themselves over paid. It is not surprising to learn that the more pastors are paid, the better they feel about pay.
2. Most pastors have difficulty negotiating a raise. An overwhelming 90% of pastors think that it is appropriate to ask for a raise, but only 35 percent have ever done it.
3. Pastors who ask for a raise usually get one. If pastors knew the success rate of those who ask for a raise, they would immediately ask for one. Our study showed that 87% of pastors who asked a raise got one. Two-third received the amount requested, while one out of five get less than requested ..it pays to ask.

4. Spouses tend to be more considered about finances. A slim majority of pastors are content (46% content, 7% very content) with their current finances. By contrast, the same percentage of spouses are discontent (42% slightly discontent, 11% very discontent) about financial matters. Two thirds(7%) of pastors feels some anxiety about their financial future, while three-fourth (75%) of pastors' spouses say they are truly anxious.
5. Greener pastures tempt a lot of pastors. At least half (49%) of our respondents said that at least once a year they consider leaving the ministry to find a better pay job. About half of those (26% of the total) consider having two or more times a year.

Still on job satisfaction and occupational stress, Pulpit and Pew (2008) published selected findings from National Clergy Survey in America, studying responses from leaders in over eight different denominations and faith groups with the aim to provide a comprehensive of America's religious leaders. The study noted that clergy are highly satisfied with many aspects of their work. At the same time, however, they are relatively less satisfied with other aspects, that in itself is not surprising. What are somewhat surprising. Pulpit and Pew noted, are the things that receive high marks and those that are in the less satisfied list and some questions that these two sets of items raised. Among those things with which clergy are most satisfied are their current positions, their family life, their relationships with lay leaders in the congregation, and with other staff members where this is relevant for each of those. Over 70% said that they were very satisfied. As might be expected, satisfaction was higher in relation to the longer one has been served in ministry. On the less satisfied list with or fewer indicating satisfaction are the following characteristics; relationships with other clergy, opportunities for continuing education, support from denomination officials, one's current salary and benefits, one's spiritual life, of overall effectiveness as a pastor. The findings suggest that support structures for clergy should be taken seriously by congregations to boost clergy morale.

Parkers work cited in O-Donnell (2002) stated that there is little relationship between work, family and leisure other than income, arguing that a person with an interesting job may be absorbed in it and not distinguished easily between work and non-work. For example, doctor attending a patient out of official hours which is similar to Karl Max's view cited in Moore (2002) which suggested the term “alienation” to describe where workers experience work as something to be hated. Max argued that, in an ideal world, our work ought really to be an extension of our personality, yet for majority of the population, this is simply not true. When people are exposed to factors that are opposed to their personality, they are no doubt, exposed to stress which may affect their health adversely. However, to effectively handle stress at work, the advice of Pope Benedict the 16<sup>th</sup> in his address cited in Larve (2008) to the forty metropolitan Arch. Bishops who received their Pallium on Sunday accompanied by some family members becomes apt, that, “The condition of service for all pastors is love for Christ, which must come before everything”.

It is necessary to point out at this juncture that many scholarly works have been done on job satisfaction among the clergy worldwide. Results of such studies indicated very high level of job satisfaction among them. However, in the midst of very high ranking which job satisfaction receives, are some factors like salary, inability to continue with one's education and so on that have become thorns in the flesh of some pastors. In the area of the



study, Nyo-khana District, studies on job satisfaction among the clergy is almost not available. It is in the light of this, that this study was put in place to study job satisfaction among pastors in Nyo-khana District of Khana Local Government Area of Rivers State.

### **Statement of Problem**

Observation has revealed that the rural areas of Nigeria which Nyo-khana District is one of them lack basic infrastructure coupled with low standard of living among the people. It is not an understatement to state that the quality of life outside the churches in Nyo-khana District seems to affect the standard of living of pastors that are serving in the area. Some pastors in the area do not even live at the church premises because of non availability of accommodation. They live in rented apartments outside their churches, some of them with their families, and some of the apartments are too some small when compared with the size of their families.

Apart from that, most of the pastors in the area are pastoring churches whose sizes are too small in terms of memberships. It should be pointed out that the more members there are in the churches, the more assistance the pastors get. Infact, among the members of some of the churches are people that are looking for help from their churches. Also, some of the pastors do not have other sources of livelihood than their churches.

Close contacts with pastors in Nyo-khana give them away as people who are full of inadequacies concerning what to eat; how to raise money to pay their children school fees and so on. Those Pastors that are bold enough seek assistance from those who are not even members of their churches to enable them meet some basic necessities of life. General Living condition of some of the pastors in the area suggests that all is not well for most of the Pastors.

### **Objectives of the Study**

The following research objectives were formulated to guide the study:

1. To determine the level of job satisfaction among pastors in Nyo-khana District.
2. To identify factors that determine job satisfaction among pastors in Nyo-khana District.
3. To explain the relationship between job satisfaction and occupational stress among pastors in Nyo-khana District.

### **Research Questions**

The following research questions guided the study:

1. What is the level of job satisfaction among pastors in Nyo-khana District?
2. What are the factors that determine job satisfaction among Pastors in Nyo-khana District?

### **Research Hypothesis**

There is no significant relationship between job satisfaction and occupational stress among Pastors in Nyo-khana District?

### **Population of the Study**



The population for this study was made up of all Pastors in Nyo-khana District of Khana Local Government Area of Rivers State. The study did not, however, include Assistant Pastors as they seemed to lack the necessary experience on the job.

### **Sample Size and Sampling Techniques**

A sample size of 520 pastors which consisted of the whole population was used for the study. The entire population of Pastors in Nyo-khana was used for the study as it was not too large to necessitate sampling. To this end, Eke (2004 in Gbeneneh, 2017) stated that the whole population of the study can be used as sample for the study when it is not too large.

### **Instrument for Data Collection**

A structured questionnaire was used in carrying out the study. The instrument had two sections: A and B. Section A of the instrument dealt with demographic data of respondents, and section B of it handled questions that concerned the main research work. It should be noted that modified likert scale questionnaire type was used in framing some of the questions in section B which had the response format of Strongly Agree (SA) Agree (A), Disagree (D), strongly Disagree (SD). The ranking was done in the order of 4,3,2 and 1 depending on the whether the questions were positive or negative. In the questionnaire, were also questions with “Yes” or “No” response format among others.

### **Method of Data Collection**

Copies of the questionnaire raised for the study were served by the research through personal contact. A total of 520 copies of the research instrument was served to respondents to reflect the sample of the study. Out of the copies served, nine (9) copies were not properly filled, eleven copies could not be retrieved, thereby bringing the total number twenty (20). Therefore, the actual number of copies of the questionnaire used for analysis was 500 instead of 520.

### **Method of Data Analysis**

The data for the study were analyzed through the use of descriptive statistics of percentage and frequency distribution tables. Also, correlational statistics in Pearson Product Moment Correlation co-efficient was used to test the only hypothesis of the study-set at 0.01 level of significance. Finally, the reliability coefficient (r) for the study was arrived at through the use of Crumbach Alpha.

### **Results**

The results presented in Table 1 – 3 were strictly based on the research questions and research hypothesis of the study.

Table 1: Level of job satisfaction among pastors in Nyo-khana

Item	S/N	Response	Frequency	Percentage
In general, how are you satisfied with your job as a pastor?	1	Very dissatisfied	0	0.0
	2	Not satisfied	100	20.0
	3	Satisfied	300	60.0
	4	Very satisfied	100	20.0

**Table 2:** Factors that determine job satisfaction among pastors in Nyo -khana District (N = 500).

Item	Response, frequency and percentage				Total Frequency	total Percentage
	Very satisfied	Satisfied	Not satisfied	Very dissatisfied		
Condition of service	123 (24.6%)	152 (30.4%)	136 (27.2%)	89 (17.8%)	500	100
Working condition	0	100 (20%)	400 (80%)	0	500	100
Time pressure	0	100(20%)	400(80%)	0	500	100
Community attitude towards pastoring	0	0	300 (600%)	200 (40%)	500	100
Career development	400 (80%)	100 (20%)	0	0	500	100
Relationship with members of church council	0	100 (20%)	200 (40%)	200 (40%)	500	100
Attitude of members to welfare	400 (80%)	100 (20%)	0	0		
General living condition	0	0	100 (20%)	400 (80%)	500	100
Growth to church	0	100 (20%)	400 (80%)	0	500	100

From Table 2 above, for condition of service, 89 (17.8%) respondents said they are very dissatisfied. 136 (27.2%) respondents said not satisfied, 152 (30.4%) respondents said they are satisfied and 123 (24.6%) respondent said they are very satisfied. Also, for working condition, 400 (80%) respondents said they are not satisfied while 100 (20%) respondents said they are satisfied. Besides, for time pressure, 400 respondents said they are not satisfied while 100 of them said they are satisfied. For community attitude towards pastoring, 200 (400%) respondents said they are very dissatisfied while 300 (60%) respondents said they are not satisfied. For career development, 400 (80%) respondents said they are very satisfied and 100 (20%) respondents said they are satisfied.

For relationship with members of the church council, 100 (20%) respondents said they are satisfied 200 (40%) respondents said they are not satisfied and 200 (40%) respondents said they are very dissatisfied. For attitude of church members to welfare, 100 (20%) respondents said they are very satisfied. For general living condition, 400 (80%) respondents said they are very dissatisfied while 100 (20%) of the respondents said they are not satisfied. Finally, for growth of church, 400(80%) respondents said they are not satisfied as against 100 (20%) respondents who said they are satisfied.

**Table 3.** Relationship between job satisfaction and occupational stress in Nyo-Khana District.

Variable	N	MEAN	SD	(r)	Comment
Job satisfaction	500	1.6		0.530	There is a significant relationship
Occupational stress	31.6	3.203			
Correlation is significant at 0.01 level (2-tailed)					

Table 3 above which tested the relationship between job satisfaction and occupational stress among pastors in Nyo-khana District is significant with r-value of 0.530\*\* set at 0.01 level of significance. Therefore, the null hypothesis is rejected and the alternative which states, "There is significant relationship between job satisfaction and occupational stress among pastors in Nyo-khana District" accepted.

## Discussion

As shown by the results of the analysis of the data collected, it is crystal clear that the level of job satisfaction among pastors in Nyo-khana District of Khana Local Government Area of Rivers state is very high with 20% of the population of the study saying that they were satisfied with their job and 60% of the pastors stating that they were very satisfied with their job as pastors. Therefore, it is correct to say that the job satisfaction level of pastors in Nyo-khana District is 80%. This finding is in line with the findings of CT pastors (2018) who reported the view of the Chicago Tribune that pastors are the happiest people on earth. Collaborating with the view of Chicago Tribune is the finding of a research done by the University of Chicago's National Opinion Research Centre (in CT Pastors) that clergy ranked highest in job satisfaction and "general happiness" and that they even out ranked highly paid professional such as doctors and layers. According to the study, eighty-seven percent (87%) of pastors said they were "very satisfied" with their work compared with an average forty seven (47%) for all workers. The reason for the high level of job satisfaction among pastors, according to CT pastors, is because pastors see their occupation as a calling.

As for factors that determine job satisfaction among Pastors in Nyo-khana District, it was disclosed by the findings of the study that while some of them brought about job satisfaction, others actually brought about job dissatisfaction and job stress. Factors that brought about job satisfaction as indicated by the study include condition of service, career development and attitude of church members to welfare of pastors. Among factors that produced job dissatisfaction among pastors in Nyo-khana District were condition of service, working condition, time pressure, community attitude towards pastors, relationship with members of church council, general living condition and church growth. These findings are in agreement with the opinion of Ray (2018) who stated that employees spend majority of their waking hours in the workplace. They need more than a pay-check to satisfy them as their talent, engaging them in challenging project, offering incentives, and creating a friendly and respectful environment with low stress are among the reasons your staff will be glad to show up each day to contribute to the company's ultimate success. Another view that lent itself to these findings is that of Segal (2017) who said that one thing that contributes to job satisfaction is to find a job where you get to do what you love to do most, follow your heart and do not settle for any job you are not passionate about. A careful consideration of the outcome of this study in relation to some factors that determine job satisfaction among Pastors in Nyo-khana District has shown that pastors are satisfied with their job despite some obvious job characteristics that say otherwise. It is because they are passionate about their job.

The study also disclosed that there was significant relationship between job satisfaction and occupational stress among pastors in Nyo-khana District with r-value, put at 0.530. It should, however, be noted that the relationship between the two going be the



test result, was slightly positive. This implies that despite the fact that pastors are satisfied with their job, occupational stress exists side by side with it. This finding is supported by the needs of the National Opinion Research Centre (2007) which posited that members of the clergy are both most satisfied with their jobs and happiest over all while Pulpit and Pew (2018) said those characteristics which pastors were less satisfied with included relationship with other clergy should be taken seriously by churches to reduce the amount of stress pastors are exposed to while doing their job.

### **Conclusion and Recommendations**

The study has made it abundantly clear that the level of job satisfaction among pastors in Nyo-khana District was very high (80%). Concerning some of those factors that determine job satisfaction among pastors in the District, it was discovered that almost all the pastors were satisfied with the attitude of church members to welfare, career development and condition of service while most pastors were dissatisfied with working conditions time pressure, community attitude towards pastoring, relationship with members of church council, growth of church and general living condition. Again, the study noted that there was significant positive relationship between job satisfaction and occupational stress among pastors in Nyo-khana District. Therefore it has become necessary to make the following recommendations to better job satisfaction among pastors in Nyo-khana District of Khana Local Government Area of Rivers State and even beyond:

1. The support structures for pastors in the District should be improved upon by providing Pastors with decent accommodation, scholarship for their children and enhanced take home pay. If these are done, Pastors in the area will not only be satisfied with their job but will also be indeed happy for working as Pastors.
2. Church planting is good, however, it should be done side by side with good welfare packages for Pastors that oversee newly planted churches. A situation where some pastors are left at the mercy of few persons, who themselves are begging for assistance, to cater for is not fair, while founders of such churches “live big” in townships. Where churches know that they do not have what it takes to maintain their pastors in the rural areas, they should stop sending pastor to each of those churches, instead one pastor may be made to oversee two or more of those churches to minimize cost and suffering.
3. The attitude of community members to pastors serving in their areas should be improved in terms of seeing any pastor serving in their community as their own. This can be demonstrated by giving them gift and opening their doors to them when the need arises.
4. Since for now, the assistance most pastors in the area are getting is grossly inadequate, pastors themselves can better their living conditions by doing small scale businesses or going into farming to augment whatever their churches are giving to them as salary. After all, it is not a wise decision to put one's eggs into one basket.
5. Pastors should endeavor to effectively manage their time by having schedules of their activities. In so doing, they will be able to attend to both church activities and private activities with less stress. No doubt, the pastoral ministry is very stressful,



- however, that can be cut down upon through good time management.
6. Taking some time off pastoral activities is not a sin. Therefore, pastors should find time to relax, have adequate sleep for at least 6-8hours a night, recreate and observe annual leave.
  7. Pastors should endeavor to keep the flag-flying by maintaining and promoting those things they have done that have brought about very high level of job satisfaction among them even in the face of some factors that would have said no to that.

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## **Geoelectric Measurement for Overburden Thickness and Groundwater Potential in Parts of Obio/Akpor Local Government Area, Rivers State, Nigeria**

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### **Abstract**

This research work was aimed at measuring the earth resistivity, overburden thickness and the groundwater potential. Electrical sounding involves measuring the resistivity of the various layers of the earth penetrated. For the method to be effective, there has to be significant contrast between the porosity, sanity and degree of saturation of the earth materials. All the earth materials above the water table to the surface of the earth are referred to as overburden. The thickness of this lump of earth is the overburden thickness. Groundwater is the water that is found beneath the earth's surface. The work was limited within the Obio/Akpor Local Government Area. The vertical electrical sounding (VES) method was employed. The Schlumberger array was preferred with Abemterrameter SAS 3000B. A total of ten (10) VES points were taken randomly within the study area. The current electrodes separation ranged from 200m to 800m. A 1-D software program (ipi2win) was used for the data analysis. The aquifer units penetrated consisted mainly of fine, medium, coarse sands and gravel. The overburden thickness ranged between 0.5m to 143m. The resistivity values ranged from 1.7 Ohmmeter to 18564 Ohmmeter. Layers with high resistivity values are the probable aquifers for potable water production. Generally, the study revealed that the area under review is a potential zone for prolific fresh water supply, considering the value of the resistivity across the entire area. We recommend the use of other geophysical methods such as seismic refraction and gravity methods to evaluate the subsurface and compare with the existing information about the study area. This combined information will help to proffer a more quality and reliable interpretation of the subsurface parameters of the area.

**Keywords:** overburden thickness, aquiferous zone, potable water.

### **Introduction**

The study area, parts of Obio/Akpor Local Government Area, lies within the Niger Delta region. Groundwater rather than surface water is the major source of potable water supply in the region, following its availability at shallow depth in the study area. Although some locally hand dug wells exist, the need to employ geophysical method for exploration and exploitation of groundwater has become indispensable. This is because of the teeming population, resulting in increased industrialization and commercial activities within the area. Schlumberger electrode configuration was used to map out the water potential because it has greater advantage over Wenner array. Many authors have extensively discussed the qualitative and quantitative

interpretations of earth resistivity measurements. The interpretation of applied here for apparent resistivity guideline was achieved using the ipi2winsoftware which revealed the layer thickness and resistivities of the formations penetrated. This study is therefore paramount as it will help to address the issue of potable water supply in the area.

### **Physiography: Geology, Hydrogeology and Climatic Condition**

The Niger Delta region which is predominantly sedimentary rocks houses mangrove swamps, beaches and barrier bars. The Delta has been delineated into three distinct units which include the Akata Formation, Agbada Formation and Benin Formation. Akata Formation is the basal sedimentary unit, dominated by marine shale. It is the source rock for the Delta and ranges in thickness from about 600m to 6000m (Etu-Efeotor, 1997).

The Agbada formation is intercalated with sands, sandstones and siltstones. The presence of sands in this unit makes it the “home” of hydrocarbon. It has a thickness of about 2,880m to 4,200m. The upper unit of the Delta is the Benin formation, dominated by unconsolidated and highly porous sands. It is the freshwater bearing unit of the delta and has a thickness of about 3,000m to 9,730m. The deltaic plains and Benin Formation are the main aquiferous zones in the area. The area is characterized by both confined and unconfined aquifers at various depths. Groundwater is very high in the area because of high permeability, high recharge potential and high thickness of the aquifers in the area.

The Niger Delta lies predominantly in the tropics with two seasons- the dry and wet seasons. The dry season is a very short period of about January/February and December while the wet season spans from February/March to November. The mean annual rainfall decreases from about 4500mm near the coastal margin to about 2000mm near the northern part of the Delta. The average relative humidity in the northern and southern parts of the delta are 80% and 85% respectively (Adejuwon, 2012). The Niger Delta is one of the largest deltas in the world. It is located in the southern part of Nigeria, covering a land mass of over 29,100km<sup>2</sup> and lies between latitudes 4° and 6° and longitudes 6° and 7°.

### **Basic Concept of Electrical Resistivity Measurement**

The electrical resistivity method is usually based on the measurement of the electrical resistivity of the ground which is dependent on porosity, density, temperature, fracturing, degree of saturation and salinity of the pore water (Akpokodje, 1999). On themselves, minerals do not conduct. As a result, a significant contrast must exist between those physical properties mentioned above in order to have a meaningful measurement. This method is mainly used to determine the thickness of sand or aquifers overlying bed rocks, and to delineate freshwater and saltwater interface (Ekine & Asobonye, 1996; Akpokodje, 1999).



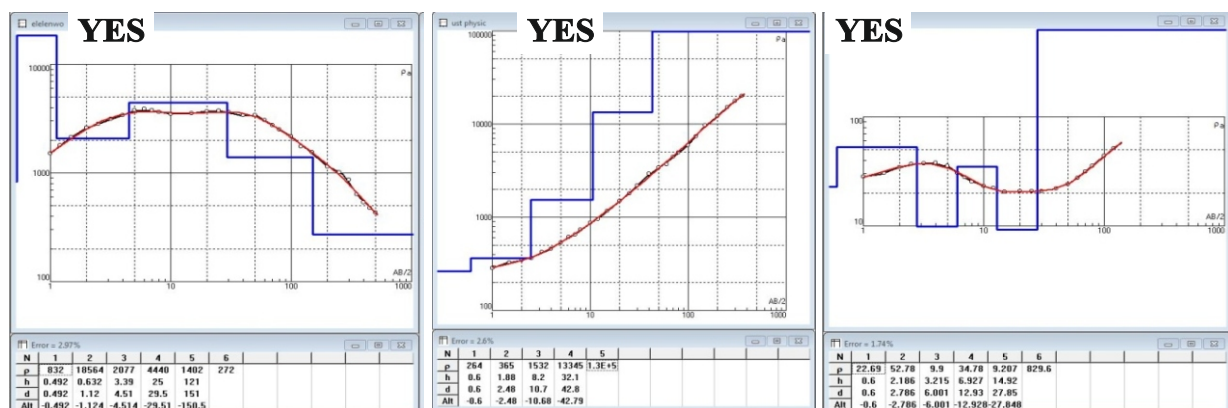
During field survey, low frequency, direct current is introduced into the ground through the current electrodes and the potential difference created by the current is then measured by the potential electrodes. Usually, the values of current and potential difference are in the order of milliampere (mA) and millivolts (mV) respectively. The current and potential difference is then used to calculate the apparent resistivity.

The depth of penetration is directly proportional to the electrodes spacing. Hence, the greater the electrodes spacing, the greater the depth of penetration. Different formations have their resistivity values. For instance, silt, clay and shale have the lowest resistivity values; sand and gravel with freshwater have moderate to high resistivity values while the highest resistivity values are found in sandstones and limestone saturated with freshwater.

### Equipment and Fieldwork Procedure

The data acquisition was made possible by the use of the following instruments-the Signal-Averaging-System (Abem Terrameter, 300B model) for earth resistivity measurements, A 12 volts D.C power source, four stainless steel electrodes for introducing current into the earth. Others include the cable reels, tapes and hammers. The earth resistivity (ER) survey was carried out with the use of the Schlumberger array. The Schlumberger array is more convenient to manage in the field than any other array.

In the Schlumberger array, the potential electrodes ( $P_1$  and  $P_2$ ) separation is increased in steps assured to be less than  $1/5^{\text{th}}$  of the current electrodes ( $C_1$  and  $C_2$ ). (i.e.  $P_1P_2 < C_1C_2/5$ ). The depth of penetration in Schlumberger array is between one-third to one-fifth of the electrodes spacing. A total of ten (10) VES were sounded with the Schlumberger configuration. The current electrodes separation ranged from 200m to 800m, probing a depth of about 40m-160m. In each VES point, the Signal-Averaging-System equipment displayed the resistance of the various subsurface layers penetrated. With some mathematical model, the apparent resistivities of the various layers were calculated. The measurement for the Schlumberger array begins with



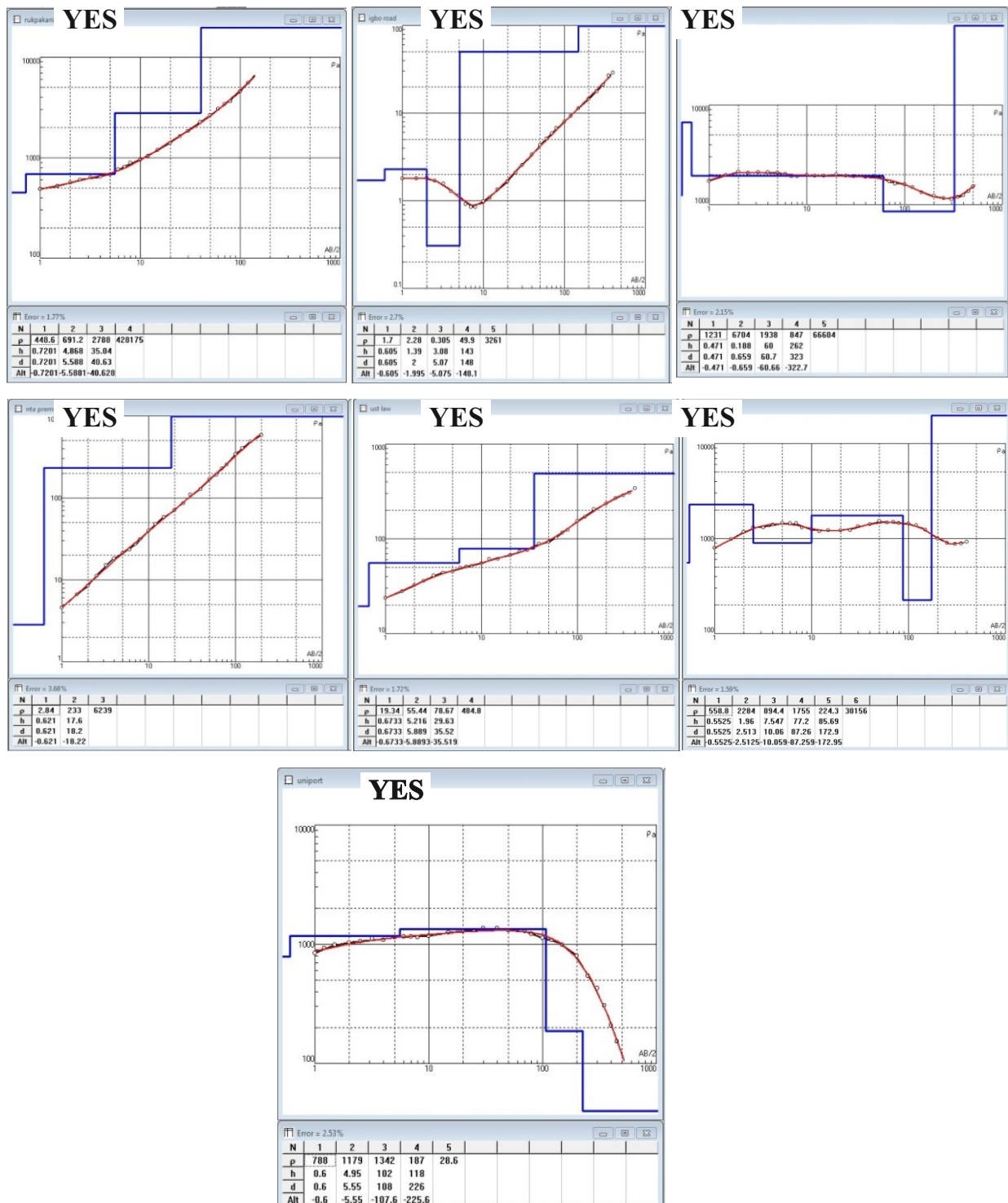


Figure 2: Vertical Electrical Sounding Profiles

### Geoelectric Section of the Study Area

A geoelectric section is a diagrammatic section of stratified layers which is deduced from the electrical resistivity values and depth of probe. Such sections are useful in

predicting water table levels and to determine whether the water is fresh or saline, based on their resistivity values. The geoelectric section reveals that fresh water can be found between the 4<sup>th</sup> and 5<sup>th</sup> layers, considering their resistivity values.

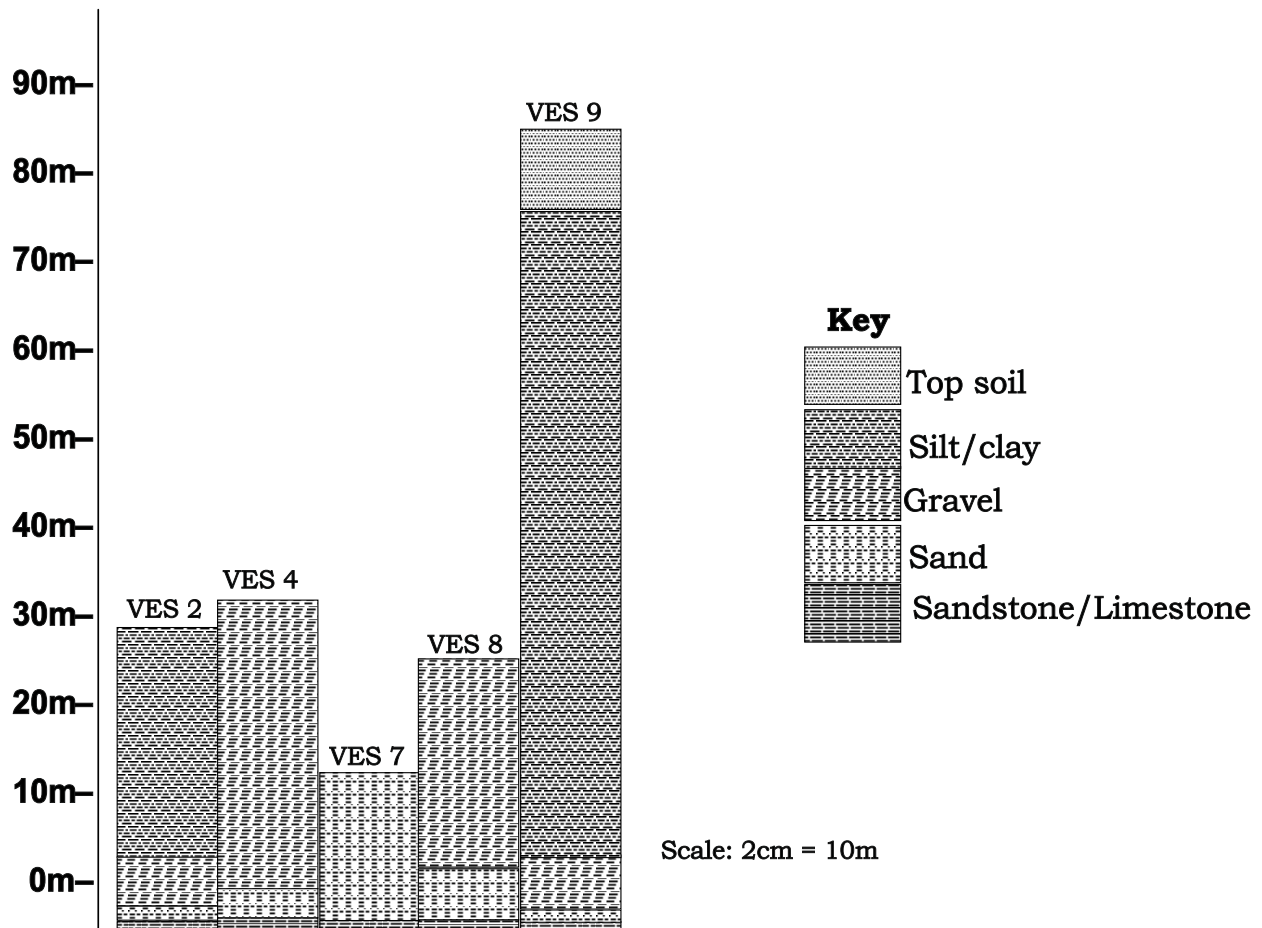


Figure 3: Geoelectric section of some VES points in the study area

The results of the VES resistivity values reveal the following curve types;  
 VES 1, located at the Eastern part of the study area, has a KH- curve type.  
 VES 2, located at the Western part of the study area, has an AA curve type.  
 VES 3, located at the Western part of the area, has a KH curve type.  
 VES 4, located within the Southern part, has an AA curve type  
 VES 5, found within the Western region of the study area, has an AA curve type.  
 For VES 6-10, located within the Western, Western, Northern, Southern and Southern parts of the study area have their curve types as KH, A, AA, KH, and AK respectively.  
 Summarily, the study area consists mainly of the KH and AA curve types.

**Table: Summary of Results from Computer Modeling for all Sounding Stations**

VES Station No.	No of Layers	Resistivity of layers (O.m)								Thickness of layer (m)					
		1	2	3	4	5	6	7	8	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub>	h <sub>6</sub>
01	6	832	18564	2077	4440	1402	272	-	-	0.492	0.632	3.39	25	121	-
02	5	264	365	1532	13345	1385	-	-	-	0.6	1.88	8.2	32.1	-	-
03	6	22.69	52.78	9.9	34.78	9.207	829.6	-	-	0.6	2.186	3.215	6.927	14.92	-
04	4	448.6	691.2	2788	428175	-	-	-	-	0.7201	4.868	35.04	-	-	-
05	5	1.7	2.20	0.305	49.9	3261	-	-	-	0.605	1.39	3.00	143	-	-
06	5	1231	6704	1938	847	66604	-	-	-	0.471	0.188	60	262	-	-
07	3	204	233	6239	-	-	-	-	-	0.621	17.6	-	-	-	-
08	4	19.34	55.44	78.67	484.8	-	-	-	-	0.6733	5.216	29.63	-	-	-
09	6	558.8	2284	894.4	1755	224.3	30156	-	-	0.5525	1.96	7.547	77.2	85.69	-
10	5	788	1179	1342	187	28.6	-	-	-	0.6	4.95	102	118	-	-

From the table above, it is obvious that the study area is dominated with a five layer model. The resistivity values ranged from 1.7 $\Omega$ m at VES 5 to 66,604 $\Omega$ m at VES 6. The area shows overburden thickness of between 0.5m at VES 6 to an anomalous thickness of 121m at VES 1. Generally, the 3<sup>rd</sup> and 4<sup>th</sup> layers seem to indicate the zones of aquiferous and potable water supply in the study area. It is imperative to point out some anomalous observations in the area. Benin Formation is the water bearing formation. Anomalous depths of 121m, 143m and even 85.7m can hardly be realized for just groundwater exploitation. The resistivity value of VES 5 seems to suggest that it will be difficult to get good water within the location.

### Conclusion/Recommendation

The result reveals that the study area is more of five layers model. The overburden thickness has a minimum and maximum value of 0.5m and 143m respectively. The variation in the overburden thickness could be as a result of erratic estimation and local geology of the area. The aquiferous zone is within the third and fourth layers. The water-bearing aquifers are composed mainly of sands, gravels and weathered rock materials. The result of this work can serve as a first hand guide about the area in



terms of borehole drilling.

Some of the locations explored show abnormal values of resistivities and thicknesses. These abnormal results call for more thorough geophysical investigation of the subsurface of the area. Hence, we recommend that other methods of geophysical exploration such as seismic refraction and gravity methods be used to investigate the subsurface properties of the area. To achieve a more reliable result or interpretation, we recommend a combination of several ideas such as layer correlation of various sounding curves and information based on drilling within the study area.

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## **Trump Withdrawal from Climate Change Paris Agreement: Implications to Global Environmental Reforms**

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### **Abstract**

The Paris Agreement is a turning point for global climate policy, since it brings the entire globe under the same policy framework, rather than only placing mandates on industrialized nations. The Agreement's central aim is to strengthen the global response to the threat of climate change through lowering global temperature rise well below 2 degrees Celsius while pursuing efforts to limit the temperature increase even further to 1.5 degrees Celsius. However, the sudden withdrawal of the United States orchestrated by President Trump leaves a large gap in the climate aid that the developed countries have promised to developing countries on the one hand. The biggest impact lies in the U.S. absence from future negotiations. This paper examines the consequences of Trump's decision as it affects global climate reforms. Having examined enormous impacts including on global trade, politics and environmental governance, the authors suggested that a EU-China coalition should take up the leadership challenge, should the United States continues to abstain. Amongst others, the paper recommends that there should be domestic consultation process in the lead-up to submitting a proposed national contribution, to build a national consensus and legitimize the contribution toward any future international deal or treaty to be signed by all, and proposed a unique model for stakeholders' inclusiveness to guide against the overbearing interests of National governments in global environmental treaties.

**Keywords:** Paris Agreement, Climate Change, Environmental Governance, Environmental Politics.

### **Introduction**

The increased production of greenhouse gases such as CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, and tropospheric O<sub>3</sub> caused by human activities has introduced a new environmental threat, climate change. Today, climate change is a defining issue in global politics and environmental sustainability. As a response to this contemporary global problem, the Paris Agreement evolved. The Paris Agreement reflects a global consensus on the need to confine global temperature rises to “well below 2°C above pre-industrial levels” (United Nations Framework Convention on Climate Change (UNFCCC), 2015). The agreement is the first universal climate change agreement, covering 99% of global emissions. Reflecting strong political momentum, the Paris Agreement became one of the fastest multilateral agreements ever to enter into force. According to Wolfe, Procter, Kreienkamp and University

College London (2018), the Paris Agreement also represents a fundamental shift away from the 'top-down' governance model of its predecessor, the Kyoto Protocol. Historically, Edeh, (2016) remarked that the Agreement is the main outcome of the Paris Climate Change Conference which took place from 30th November to 11th December 2015, in Paris, France; and its goal is to strengthen the global response to the threat of climate change. Of particular importance for countries most at risk from climate change was the adoption of an additional aspirational target to "limit the temperature increase to 1.5 °C" (Slaughter, 2015). Thus, this climate deal can be theorised as an experiment in a hybrid, a more flexible approach to global cooperation, combining 'bottom-up' mechanisms of national target-setting with 'top-down' oversight and stocktaking procedures. Yet, many of the controversies that were overcome in Paris are re-emerging in higher dimensions including the abrupt withdrawal of the US Government.

The United States had committed to these aims by signing the agreement. This was under the President Obama's administration in 2016. Before this, there was a national commitment to reduce emissions by the introduction of the Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units under the Clean Power Plan (CPP). In this action, the Environmental Protection Agency (EPA) established emission guidelines for states to follow in developing plans to reduce greenhouse gas (GHG) emissions from existing fossil fuel-fired electric generating units. Amidst these sustainable progresses, on 1 June, 2017 the U.S. President, Donald Trump announced that the U.S. would withdraw from the Paris Agreement and immediately cease implementing the agreement including implementing the Nationally Determined Contributions (NDCs) and financial contributions. Mr. Trump's decision to back out had attracted vitriolic aspersions both within and outside the United States. World leaders, international organizations, civil societies, and media in Africa, North America, Asia, Europe, Middle East and others voiced disappointments and indifferences.

On 4 August, 2017, the U.S. State Department notified the United Nations that the U.S. would be leaving the agreement, and crucial questions have been raised about the withdrawal decision: Why did Mr. Trump eventually decide to back out when he was staying on the fence about the deal, knowing that his withdrawal decision would be subject to extensive criticisms both home and abroad? Notably to ask also, can the ambitions of the deal be met even if the United States continues to abstain itself from this noble objective? How should we structure future international deals on climate change and environment to avoid the influence of changes in government? Can we develop a plan and suggest key players that should be part of future agreements and treaties? These are the key questions this paper seeks to address and provide the answers and solutions for a sustainable global environmental policy development.

## **Conceptual Issues**

### **The Paris Agreement**

The Paris Agreement known in French as the Accord de Paris is an agreement within the United Nations Framework Convention on Climate Change (UNFCCC). The central tendency of the Paris Agreement is to combat climate change and adapting to its effects, with enhanced support to assist developing countries to do so, charting a new course in the global climate effort. The Agreement's central aim is to strengthen the global response to the threat of climate change through lowering global temperature rise well below 2 degrees Celsius while pursuing efforts to limit the temperature increase even further to 1.5 degrees Celsius. The conference is the twenty-first session of the Conference of the Parties (COP) and the eleventh session of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP) (United Nations, 2016).



### **Rationale of the Paris Agreement**

The goal of the Paris Agreement is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels, to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius and to strengthen the ability of countries to build capacities and manage the impacts of climate change. UNFCCC (2016) summed these up in Article 2 as follows:

- (a) Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change;
- (b) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production;
- (c) Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

The Paris Agreement was opened for signature on 22 April 2016 (Earth Day) in a ceremony in New York City and as of November 2016, 193 UNFCCC members have signed the treaty, 103 of which have ratified it. The Paris Agreement entered into force on 4 November 2016, thirty days after the date on which at least 55 Parties to the Convention accounting in total for at least an estimated 55 percent of the total global greenhouse gas emissions have deposited their instruments of ratification, acceptance, approval or accession with the Depositary (United Nations, 2016).

### **Impact of Trump's Withdrawal on Global and US Environmental Policies**

#### **Weakened Enforcement of US domestic Climate Policies and Regulations**

The United States as a leading polluter in the world seconded by China, had pledged to reduce total greenhouse gas emissions by 26% to 28%, from 2005 levels, by 2025 (Clemencon, 2016). The bulk (80%) of that total is energy-related carbon emissions, the remainder coming from other gases such as methane. The U.S. pledge to reduce emissions by 26% to 28% by 2025 (from 2005 levels), and the Core element of the U.S. pledge is the Environmental Protection Agency's new rules for coal-fired power plants and support for renewable energy technologies. Now the stance of President Trump on the Paris Agreement and change of leadership of EPA means a repeal of the efforts of Obama's Administration and relegation of successes achieved by EPA on climate change before Trump era. It will mean carnage and weak enforcement of most US domestic policies and regulations on climate change and environmental protection and this is not good for the United States both from environmental and business point of view at a global scope.

#### **Declining International Co-operation against Climate Action**

Trump position on climate change has the potential to affect the Paris Agreement and international co-operation efforts in cutting emission and protecting the environment from climate change. The first effect could be in demotivating other parties to the agreement who look to the US to lead in this effort as is applicable in other spheres. The agreement differs from the Kyoto Protocol mainly by the universal participation of both developed and developing countries the agreement has (Rosenzweig, 2016). This diminished participation reduces its universality and may undermine its credibility and ability for general governance and enforcement.

#### **Effect on industrial competitiveness and International Trade**

One major consequences of US withdrawal are undermining global policy, especially the impact of



climate change policy on industrial competitiveness and international trade. If the costs of energy are substantially lower in the US than they are in countries that are actively fighting against climate change, one can imagine the temptation to relocate to the US, as well as proposals for trade restrictions (border tax adjustments) on imports from the US. This topic has been part of the UNFCCC negotiations for some years and is very contentious, not least because the decision to relocate is based on many considerations, only one of which may be environmental regulations. However, the issue will be less important to the extent that low carbon energy becomes competitive with fossil fuels. This means that the withdrawal will exert considerable impact on international policy agenda on climate and Renewable energy especially the Sustainable Development Goals (SDGs). It may impact negatively on meeting Goal 7, target 7.1-7.3 of the Sustainable Development Goals of ensure access to affordable, reliable, sustainable, and modern energy for all by 2030 which can increase substantially the share of renewable energy in the global energy mix by 2030 (Edeh, 2016).

### **Impede Climate Mitigation Actions and Associated Financial Aids**

The Agreement came with set goals for emission reduction, financial flows and technology improvement all geared towards the bolstering the global response to climate change threats. The US decision to withdraw stand to impede efforts towards mitigating these threats at the US national level and make it almost impossible to achieve the agreement's universal goal. This is especially true considering that the promised financial aid and other assistance for developing countries towards this effort will not have the U.S. contribution.

This decision to withdraw will definitively affect the momentum to combat the threats of climate change. A lull in the drive is inevitable in the short run as financial, leadership and other inputs expected from the US will not be forthcoming. The US has always led in technological research in the area of climate change studies. Among all the papers published on climate change, 23% are from the U.S., which is far more than any other country (McSweeney, 2015). Funding is essential in the climate change adaption drive. But in this instance the contributions expected from the US will not be available for the effort. These will cause drawbacks that may delay the delivery of the agreement goals or at worse compromise the goals at this crucial time in the fight against climate change.

### **Hindrances to Global Green Culture and Organic Choices**

Clemencon, (2016) observed that many of the free market approaches have advanced as effective solutions to the climate crisis – emissions trading and free trade, hoping that market forces will solve the problem with little need for forceful regulation. Prior to Trump's withdrawal, the world had begun to go green with many food companies wiping out the use of single-use plastics such as straw to minimize impact of plastic pollution, increasing sales of Tesla energy-efficient cars, solar power utilization in Africa, and a rising explosion in green food markets and products in Asia countries e.g China, Thailand etc. Therefore, Donald Trump's decision on the Paris Agreement could hinder green policies, choices and attitudes at individual, corporate and national levels across the globe. It can cause the U.S, Argentina and Brazil to fight more over shares in the expanding export markets for beef in emerging economies like China and India that are now encouraged to change their vegetarian diets to a wasteful and much more carbon-intensive Western-style diet which endangers the environment Wolfe, et al (2018). It has been estimated that due to uncertainties in policies, the total investment and its returns in renewable energy in 2016 were down 18% from the 2015 level (FS and UNEP, 2017).

### **Non-Environmental Consequences on Community of Nations**

The USA's withdrawal from a community of nations that seeks to fight climate change will have consequences that go beyond the environment. Richard Morningstar and David Koranyi (Atlantic Council) as cited by Caro, (2017), are also of the opinion that Donald Trump's decision on the Climate Agreement is a geostrategic error. They believe it will hinder cooperation with America's friends and allies on many critical issues relating to foreign policy and national security. It could also damage the country's economic interests Ashish (2017); which in turn can affect the governance and management of the environment.

### **Possible Repeal of US Air Pollution Control Plans**

It was estimated that the CPP would cut electric sector's carbon pollution by 32% nationally, relative to 2005 levels by the year 2030, according to EPA projections, while saving \$20 billion in climate-related costs. A successful repeal of this plan will wipe out the opportunity of realising any of the above potential gains. The US has always led in world affairs and countries have always looked up to US for leadership. By taking this step of withdrawing from the agreement a leadership vacuum is being created. Success of this agreement or indeed any other is largely dependent on the leadership provided in pushing through the set goals.

### **The Way Forward if the United States Continues to Abstain**

An important aspect of the agreement is its goal of strengthening the ability of countries to deal with the impacts of climate change through appropriate financial flows, a new technology framework and an enhanced capacity building framework. These lofty ambitions of the deal can still be met even if the United States continues to abstain itself from this noble objective.

1. The first step in achieving this is identifying the possible impacts the abdication of roles by the US will have on the global effort. At the top of the list is the leadership vacuum that immediately opened up at President Trump's announcement of the intention to withdraw. The past administration led by President Obama had played the role of championing the efforts of climate change adaption both at home and at the global level. A clear demonstration of this can be seen through the CPP he put in place. If the Paris Agreement will succeed despite the withdrawal of the US, then the leadership vacuum created must be competently filled. There must be an emergence of a capable party to lead and play the role hitherto played by the US. The EU though strong in pushing global effort on environmental responsibility, are currently embroiled in BREXIT negotiations and its attendant hassles. China is being looked at as a possible candidate to fill this gap. But China though a rising world power is yet to attain the level where it can handle sophisticated global leadership responsibility especially in the area of environment.

2. A more realistic plan would be to have a group of performing parties form a leadership bloc.e.g. the EU-China Coalition . There have been joint reaffirmations of commitment in recent times by China and the EU, the G19- which includes all G20 countries except the US among others. A leadership coalition bloc of this nature would minimize the pressure a particular party will undergo if leadership was thrust on it solely at this time. (Zhang et. al, 2017) suggested a Climate 5 (C5) partnership that comprises China, the EU, India, Brazil, and South Africa should be a good option in this regard. The incoming UNFCCC COP 23 President called for a "Grand Coalition" of actors to effectively implement the Paris Agreement in his speech in November, 2017 (Baer et al, 2017). This is an indication of the direction the promoters believe will be best suited given the circumstances

3. There is a need to mainstream the climate change efforts. This idea has found success in the financial arena as a Joint Statement was issued by the Multilateral Development Banks at Paris, COP21. These development banks along with 17 other multilateral, bilateral, national and

commercial finance institutions have pledged support towards the Voluntary Principles for Mainstreaming Climate Action within Financial Institutions. These Principles are intended to guide their climate-smart development priorities, and provide a platform for learning and knowledge sharing. According to the joint statement, much needed funding efforts were pledged by the development banks as follows:

4. The African Development Bank announced that it would triple its climate financing to reach nearly US\$5 billion annually by 2020. The Asian Development Bank announced that it would more than double its annual climate financing, up to US\$6 billion by 2020. US\$4 billion will be for mitigation, US\$2 billion for adaptation. The European Bank for Reconstruction and Development indicated that it would increase the share of environment/ climate financing from 25 percent to 40 percent of annual commitments by 2020; this will provide US\$20 billion over the next five years, versus US\$20 billion over the last ten years. In a related development, bilateral and multilateral financial institutions can play a key role in distributing climate finance. UNDESA, (2016) noted that most finance is not distributed directly by governments to end-users but through government agencies and development banks. Bilateral development agencies mostly rely on public money, while development banks typically leverage public money with debt financing.

5. It is very important if the agreement will succeed to continue to engage the US albeit through various stakeholders within the country. Some of these stakeholders in the US including state governors, city mayors, industry leaders, leaders in academia, major investors, activists members of the civil society among others have formed a coalition committed to the Paris Agreement as a reaction to the unpopular decision by President Trump to withdraw from it. Zhang, Dai, Han, Lai, Wang, (2017) pinpointed that though the US has written to formally withdraw from the Paris Agreement, they are still part of the United Nations Framework Convention on Climate Change (UNFCCC) and still intend to be part of meetings and deliberations. It therefore makes sense that the US is engaged continuously in a bid to morally sway the government to the side of reason and possibly get them to return to the agreement.

### **How to Structure Future Climate Agreements**

Future international deals on climate change should indeed be structured to avoid the influence of change in government on status of agreements. The withdrawal of President Trump from a deal conscientiously entered into by his predecessor, has thrown up concerns in this regard. Local politics in countries should not be allowed to affect international deals that were deliberately entered into by responsible governments. There should be domestic consultation process in the lead-up to submitting a proposed national contribution, to build a national consensus and legitimize the contribution toward any international deal or treaty to be signed by all. There should be a presentation of proposed contributions internationally in an agreed consistent format, allowing a systematic comparison across countries. This approach will foster domestic ownership of any agreement by national governments.

As a follow up, countries should be given reasonable time for extensive deliberations by involved stakeholders before signing their consent. The terms of the deal should then be such that parties cannot summarily extricate themselves from the bounds of the deal. This is important as it is not right that an international agreement would be open to being withdrawn from by a new government for any flimsy reason that may range from personal bias by the new head of government to change in party ideology. If there was robust consultation before entering the agreement, it would be fair to assume that all areas would have been covered. Withdrawing from the agreement would therefore not be acquiesced to or legally be allowed save for fundamental issues that the party must be able to demonstrate or are easily seen.



### **The Role of Stakeholders in Weakening Dependence on National Governments**

It is imperative not only to have multi-facet stakeholders, and also multi-lateral agreements to weaken the dependence on governments. There is something wrong with a system that allows governments enter international agreement and exit at the whim of the person at the helm of government. There should be a robust structure put in place to give these agreements some level of sacrosanctity. This can be achieved by layering the structure with other important stakeholders. These stakeholders should be part of the multiplayer structure of the agreement. Besides the national governments, we consider the inclusion of the following stakeholders as crucial in signing multi-lateral agreement.

- a) 2 representatives from the Governor's council or Forum (one from the ruling party and one from the opposition)
- b) 2 representatives of Mayors of cities of each ratifying country (one from the ruling party and one from the opposition)
- c) 1 representative each from all sectors of the economy - academia, finance, manufacturing, extractive etc.
- d) 1 Representative each from NGOs, Civil Society, Labour Union and General public
- e) 2 Students leaders from leading tertiary institutions in a Country.
- f) 2 representatives of Youth Organizations in a country.
- g) 1 Senior Civil servant in the Federal Civil Service.

This proposed structure should make for a balanced representation that will ensure various interests are considered in brokering the deals. These multiplayer will also be co-signatories to these multilateral agreements.

### **Conclusion**

The Paris agreement is a turning point for climate policy, since it brings the entire globe under the same policy framework, rather than only placing mandates on industrialized nations. It is also a triumph of the concept of multilateralism, and a demonstration that countries with wildly differing interests can in fact come together to address a common concern. But the sudden withdrawal of the United State orchestrated by President Trump leaves a large gap in the climate aid that the developed countries have promised to developing countries on the one hand. The biggest impact lies in the U.S. absence from future negotiations (Schreurs, 2017). It can exacerbates implementation and compliance to climate change and environmental policies domestically and at a global scale; and diminish the US status in global leadership equation. The U.S. has caused substantial loss to other members by pulling out of the Paris Agreement, and it is in every country's interest to fix the vacuum. But can the U.S. alone single-handedly dismantle an international institution? The vacuum created town cries for the most important factor – leadership. Leadership is everything. Could this be an opportunity for China and the European Union (EU) to exert their leadership on the other hand (Kemp, 2017). China only is expected to emerge as the global leader on climate change (Hilton and Kerr, 2017) even when they seems not strategically prepared for global leadership.

Crucially, future deals can be restructured in a way that do not deliver so much power to a single nation, or allow national political leaderships alone signing international treaties. The role of multiple stakeholders' engagement and involvement in ratification cannot be underscored. Students, labour union, civil societies, public service, counties or state governments, the academia, and other core sectors of the economy must be engaged and made to participate in its ratification to ensure inclusiveness, sustainability and avert the consequences of a withdrawal of a national president.



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## **Adulterated Kerosene Utilization Among Women in Aluu Community, Ikwerre Local Government Area of Rivers State**

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### **Abstract**

This study examined adulterated kerosene utilization among women in Aluu community, Ikwerre Local Government Area of Rivers State. A cross sectional survey design was used for the study. The population for the study consisted of 1641 women from which a sample size of 321 women was drawn. A structured, validated and pre-tested questionnaire was used to collect data. The data obtained were presented with frequency tables and analyzed using simple percentages and minimally with averages. Among the findings were roadside hawkers as the most frequent source of adulterated kerosene supply, a very high proportion (88.1%) of utilization, moderate awareness (57.7%) of adulterated kerosene but minimal knowledge of specific characteristics (15.5%) and complication of the product. The study recommended that local chiefs should be contracted to maintain, monitor and provide securities to protect pipelines within their communities. Others include: all petroleum tanks should be colour coded, adequate sensitization of the masses on the dangers associated with the use of adulterated kerosene, government should rehabilitate and repair refineries and roads and to ensure kerosene is adequately and regularly supplied.

**Keywords:** Adulterated kerosene, utilization, rural women.

### **Introduction**

Adulterated kerosene and its resultant fire outbreak/explosion have constituted a public health issue worldwide. Globally, estimated 500million households still rely on kerosene or other liquid fuels for lighting, corresponding to 7.6billion litres consumed annually (Mills, 2010). Its impact on individuals, families, communities and the society at large cannot be over emphasized. These include burns injuries of various degrees, disfigurement from scars, loss of valuables and lives etc. Four million women suffer severe burns from kerosene fire in the world yearly (WHO, 2012). World Health Organization (WHO) also noted that fire related burns were responsible for 238,000 deaths in the year 2000 and burns were the eight commonest cause of mortality. The related burns injuries have been increasing and tend to be a major cause of admission in many Nigerian hospitals (Obaki, 2011; Nottlemann, 2015).

Kerosene is a combustible hydrocarbon liquid (Anon, 2009) or a hydrocarbon fuel distilled from petroleum. The early production of kerosene was distilled from oil extracted from shale and bitumen (Zayn, 2015). Today, kerosene is distilled in modern refineries as one of the numerous products of crude oil. Kerosene is of two grades: the domestic kerosene which is called the Household Kerosene (HHK) and the jet kerosene which is called the Aviation Turbine Kerosene (ATK). Kerosene is a versatile product. When in a very pure state, kerosene is used to power jet engine as air craft (or jet) fuel and some rockets, it is called ATK. When it is used as a domestic fuel for lamps, stove etc, it is known as HHK. When the product can be adopted for both purposes, it is known as Dual Purpose Kerosene (DPK). Kerosene is a colourless thin mineral oil whose density varies between 0.75 and 0.85g/cm<sup>3</sup>. It has been described as a mixture of carbon that contains between 6 and 16 carbon atom as molecules. (Mills, 2010) While kerosene is miscible in petroleum

solvents, it is not miscible in water. The flash point of kerosene is between 37°C and 65°C and its auto ignition temperature is 220°C (Anon, 2009). The volatility of kerosene is very low. Hence, a lighted match stick if thrown into a pool will quench. If not properly combusted as fuel indoor, it produces unpleasant odour and emits fumes which becomes poisonous in sufficient concentration. (Elijah, 2013; Oladele & Olabanji, 2016) Kerosene has many uses. In Nigeria, it is the main fuel used for cooking and lighting especially by the poor rural dwellers who are in majority, as an alternative to electricity and gas. Other uses are: fire breathing and other fire performances, powerful antidote for snake bite, poured on the surface of stagnant pond of water as local insecticide, local disinfectant to treat cuts, athlete foot, ringworm, haemorrhoids and haemorrhage, as a solvent in engineering for the removal of hard mucilage candle wax on glass (Obaki, 2011).

In Nigeria, the three popular petroleum products that are in general used are: premium motor spirit (PMS) or petrol/gasoline, automotive gas oil (AGO) or diesel and Household Kerosene (HHK). By legislation their transportation lines, vessels and storage tanks are to be colour coded (NNPC, 2001). Unlike gasoline kerosene only expands and contracts very slightly with ambient temperatures; and because of this less volatile nature, it is safe to store it in plastic containers and any steel tank which is provided with a vent or some head space left in the tank (Miles, 2011). In most countries, kerosene is readily purchased at filling stations or delivered at homes. In Nigeria, kerosene consumers have unhindered access to the product from various outlets which include: NNPC licensed and unlicensed petroleum products filling stations, unlicensed surface tank operators who locate surface tanks of various sizes within their residential houses, roadside hawkers and the small mobile hawkers. (Lawal, 2011; Udemé, 2011; Doyle, 2016)

Adulteration usually refers to mixing other materials of an inferior and sometimes harmful quality in food or drinks intended to be sold (Doyle, 2016) but kerosene adulteration denotes the act of mixing kerosene with other substances which may be liquid or gas. In Nigeria, kerosene adulteration comes from the addition of water, PMS, AGO, gas condensate depending on the price differential between the product and the adulterant. Ajuonuma (2011) reported that some unscrupulous kerosene dealers in the country have cultivated the habit of adulterating HHK in their bid to make excess profit from the sale of the product. He further discussed the sources of adulterated kerosene under two broad headings: deliberate and inadvertent sources. Adeniran (2010) noted such acts in a recent survey.

The effects of burns injuries resulting from the use of adulterated kerosene are often very pronounced. There have recently been reported cases of burns injuries related to adulterated kerosene use especially in University of Port Harcourt Teaching Hospital with the most vulnerable persons being the poor rural women and children. The researchers had noted high prevalence of this condition in Aluu community through observation and statistics gathered from health facilities in Rivers State, and that despite the public awareness campaign/health education programme on adulterated kerosene usage, majority of the populace there still use it. Therefore, the study was undertaken based on this note.

### **Specific Objectives**

Specifically, the objectives of the study are:

1. To identify the sources of kerosene used by women in Aluu community in Ikwerre Local Government Area of Rivers State.
2. To determine the proportion of women in Aluu community who utilize adulterated kerosene in Aluu community in Ikwerre Local Government Area of Rivers State.
3. To investigate the knowledge level of women in Aluu Community regarding adulterated kerosene in Ikwerre Local Government Area of Rivers State.



## Research questions

The following research questions were essential in this study:

1. What are the sources of kerosene used by women of Aluu Community?
2. What is the proportion of women in Aluu Community who utilizes kerosene?
3. What is the knowledge level of women in Aluu Community regarding adulterated kerosene?

## Methodology

A cross-sectional survey has been applied in the work. Multi-stage sampling techniques were used in this study. A guided estimated population of 1641 women of Aluu Community by the community development committee in the absence of community breakdown from 2006 national population census was taken (National Population Commission, NPC, 2016). Next a sample size of 321 was derived from it. Stratified random sampling was used based on the eight villages of Omuigwe, Omuoko, Omueke, Omuoda, Mgbodo, Omuahunwo, Omuchiri, Omuwhechi in Aluu Community. The participants were selected from the eight villages of Aluu using simple random sampling technique. A constructed questionnaire was used as an instrument for data collection from 310 respondents. Out of a total of 321 copies of questionnaire administered, 310 copies were retrieved while 11 were either not returned or incompletely filled, hence discarded. Relevant literatures were reviewed and information derived therefrom. The responses were presented in frequency tables, analyzed and interpreted.

## Results

The results have been arranged in Tables 1-3. The information in these three Tables co-relate directly with requirement of the three specific objectives set out by us to achieve (along with their corresponding research questions). Apart from these Tables' information our study has shown that 137 (44.2%) respondents opined that the distance between fuel station and their home is very far and 112 (36.1%) stated it is far. We also found that 25 (8.1%) respondents opined that the state of roads in Aluu Community is very good, 73(23.5%) felt that it is good, but 131(42.3%) noted that it is bad while 81(26.1%) of them observed that the state of roads is worse. The average of 'very good' and 'good' road  $(25+73 \div 2) = 49$  compared to that of 'bad' and 'worse' road  $(131+81 \div 2) = 106$  points to the fact that the state of Aluu Community roads is in overall consideration worse.

**Table 1: showing the sources of kerosene used by women in Aluu community**

Item	Response Frequency	Percentage (%)
Fuel station	58	18.7
Tank drivers	94	30.3
Roadside hawkers	158	51.0
<b>Total</b>	<b>310</b>	<b>100</b>

Source:Offiah and Kalu Fieldwork, 2018

Table 1 indicated that 158 (51.0%) of respondents buy kerosene from roadside hawkers, 58 (18.7%) buy from fuel station and 94(30.3%) buy from tank drivers.

**Table 2: Proportion of respondents using kerosene in their homes with purpose of usage**

Variable	Response		%
	Classification	Frequency	
Use kerosene in one's home	Yes	273	88.1
	No	37	11.9
	<b>Total</b>	<b>310</b>	<b>100</b>
Usage purpose	Yes	169	54.5
	No	104	33.6
	<b>Total</b>	<b>273</b>	<b>88.1</b>
Use kerosene to see at night	Yes	92	29.7
	No	181	58.4
	<b>Total</b>	<b>273</b>	<b>88.1</b>
Use kerosene as a local disinfectant	Yes	50	16.1
	No	223	72.0
	<b>Total</b>	<b>273</b>	<b>88.1</b>

Source: Offiah and Kalu Fieldwork, 2018

Table 2 showed that 273(88.1%) of respondents use kerosene in their homes and 37(11.9%) do not use kerosene in their homes; and out of those using it, 169(54.5%) use kerosene for cooking, 92(29.7%) use kerosene to see at night while 50(16.1%) use it as a local disinfectant.

**Table 3: Showing the knowledge level of women in Aluu Community regarding adulterated kerosene, its characteristics and effects.**

Variable	Response		Total
	Yes (%)	No (%)	
Heard about adulterated kerosene before	179 (57.7)	131 (42.3)	310 (100)
Had knowledge of its specific characteristics like choking smell, yellow colour and fast burning	48 (15.5)	262 (84.5)	310 (100)
Aware of impact of kerosene explosion	53 (17.1)	257 (82.9)	310 (100)

Source: Offiah and Kalu Fieldwork, 2018

Table 3 reveals 179(57.7%) of respondents as having heard about adulterated kerosene while 131(42.3%) have not heard about adulterated kerosene before with mere 15.5% having knowledge of its specific characteristics. Majority (82.9%) of the women are not aware of the effect and complication of adulterated kerosene.

## Discussion

This section discussed the findings gotten from inference drawn on results of analyzed data from respondents. The result on Table 1 showed that 158 respondents buy kerosene from road side hawkers and 94 respondents affirmed that they buy it from tanker drivers. The above findings indicated that majority (158, 51.0%) of women in Aluu community buy kerosene from roadside hawkers. The result is supported by Ogun (2010), who stated that some marketers adulterate

kerosene in their tank farms. It further agreed with the study of Asimiea (2012) who opined that there is link between local retailers and fuel filling stations as the major sources of kerosene adulteration.

Table 2 showed that 273 (88.1%) respondents use kerosene in their homes for various domestic purposes including cooking, to see at night and as a local disinfectant. The findings above showed that majority of the respondents use kerosene in their homes. This is in agreement with Obaki (2011), as greater number of the respondents use kerosene for domestic purposes.

Result from Table 3 revealed that majority of the respondents had heard about adulterated kerosene before and some could identify adulterated kerosene. This goes on to support the work of Edward (2014), that consumers identify adulterated through its choking smell. This is in contrast with study of Schiemann, Scott and Gabriele (2008), who opined that consumers lack knowledge of adulterated kerosene.

Greater number of the respondents (297) affirmed the presence of fuel station in Aluu Community. All the respondents (310) opined that they do not always have kerosene in the fuel station. Majority of the respondents (264, 85.2%) affirmed that government policy and activity contribute to adulterated kerosene utilization by women of Aluu Community while 245 respondents stated that they pay transport before purchasing pure kerosene. In another finding we observed 137 (44.2%) respondents who stated that the distance of fuel station from their home is very far and 112 respondents affirming that the distance is far, but only 60 respondents agreed that the distance is close. Therefore, the majority of Aluu inhabitants were living far away from fuel station which was found to rarely have fuel. Another associated factor for continued use of adulterated kerosene by Aluu women has been noted where as at the time of this research the state of roads there was worse. This agrees with Odumodu (2015) who opined that infrastructural constraints such as bad roads increase the cost of transportation to reliable or non-adulterated source of kerosene and so influences usage of adulterated ones (product).

## **Conclusion**

This work has shown that kerosene adulteration has become prevalent in Nigeria and inadequate HHK supply encouraged adulteration. It was observed that only few women (respondents) are aware of the resultant consequence that follows utilization of adulterated kerosene. Little or no government commitment to solving remote causes of the problematic situation is cause for concern. In the same vein, far distance and having to pay transport fare before reaching the source of pure kerosene for a purchase are other reasons for continued utilization of adulterated kerosene.

## **Recommendations**

Based on the findings from this research, the researchers made the following recommendations.

1. The local chiefs should be contracted to maintain, monitor and provide securities to protect pipelines within their communities. The regulatory agencies responsible for the monitoring and enforcing standards should harness synergy in the checking and enforcement of standards in the management of petroleum products.
2. All petroleum storage tanks and transporting trucks should be properly colour coded. The public should be educated on these colours and security agents should enforce compliance.
3. Adequate sensitization of the masses on the dangers associated with using adulterated kerosene should be continually and vigorously pursued.
4. Government should rehabilitate and repair refineries.
5. Government should supply kerosene adequately.
6. The rehabilitation programmes of the Niger Delta ex-militants should be regularly reviewed.

7. Standard state of road and other infrastructural facilities need to be regularly maintained.

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## **Impact of Health Education Programmes on the Spread of Communicable Diseases in Umuagbai-Ndoki Community, Oyigbo Local Government Area of Rivers State**

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### **Abstract**

The research was carried out to assess the “impact of health education programmes on the spread of communicable diseases in Umuagbai-Ndoki Community, Oyigbo Local Government Area of Rivers State”. Descriptive survey was used for the study. The community population which was the study population had been projected at 14130 by 2017 from the 1996 projection. A sample size of 353 was drawn from it with adult members responding. The instrument used was a pre-tested structured questionnaire along with key informants' interview. The data obtained from the field were coded and presented using frequency tables and analyzed using simple percentage. The study revealed various and intermittent health education programmes against communicable diseases were on-going in the community leading to observed decrease in many of such communicable diseases, reduced morbidity and mortality from these diseases among the populace with improved life expectancy. The researchers had recommended improved timelines of treatment in health care service delivery and need for these to be closer to the communities especially those found in the remote and endemic areas of the diseases adding that surveillance should be beefed up in every community to determine causes of diseases or deaths as well as reviewing implementation measures for disease control for optimum performance. Further studies like **similar ones in different communities of various LGAs of Rivers State were suggested.**

**Keywords:** Impact, Health Education Programmes, Spread of Communicable Diseases

### **Introduction**

Health education is a profession of educating people about health. It bases on the use of communication strategies to inform and influence individual and community decision that enhance healthy living for the entire public improvement. Health education can take many forms both written and verbal which can be directed towards individuals, communities or entire nation.

Health literacy is a relatively recent conception for communicable disease in terms of its application to communicable disease prevention. There is considerable evidence that health literacy can be effective in improving the management of diseases and can affect disease outcomes. Begoray (2009) opined that health literacy has a footing in the medical, health and educational sector and draws extensively from each other. The medical perspective is mainly clinically, the health perspective, mainly community and also health educational perspective mainly school-based. Thus it may be seen as a setting approach, applicable to many different types of behaviour relating to communicable disease. The medical approach to health literacy is largely focused on patient literacy, disease understanding, education compliance and other biomedical aspects (Rowland, 2009).

Many of the ill-health that occurred within the human populations is caused by infectious diseases. Disease as the lack of ease or absence of ease can be regarded as an abnormal condition, disturbance, malfunctioning or any pathologic condition of the body or mind. Diseases can manifest in the form of functional or organic disorder, mental ailment, infectious or degenerative impairment of the body. Generally a disease has no single cause because a number of factors may be involved in the initiation of disease. (Achal, 1998) Health education activities are increasing

and are being used to support the prevention and control of communicable diseases. However, the extent and nature of the use of these activities for controlling communicable diseases across the world were not previously known. Without such knowledge and without clarity as to the strengths, and weakness inherent in current places, health communication contribution to the promotion of public health is restricted.

Health education programme should be planned in order to improve a healthy standard of living. Health programmes such as those on malaria, tuberculosis and HIV should be established. Communicable disease area that clearly links health promotion approaches or works is very limited and mainly related to HIV/AIDS (Johnston, 2009). Berkman, Kubaje and Adjuik (2005) in addition, iterated that it is a key disease in terms of health education concepts because of the socio-cultural characteristics associated with people living with HIV/AIDS.

Malaria programme is an important public health programme management tool for countries to incrementally improve performance to scale up and sustain universal coverage with a mix of key interventions to all malaria risk populations. Malaria control programme Performance Review (MPR) is a periodic joint collaborative high level programme management process for evaluation of progress and performance of country programmes within the national health and development agenda. The aim of this programme is to improve the operational performance and the strategic direction for scaling up delivery of anti-malaria intervention in order to reduce malaria morbidity and mortality and overall transmission. The programme performance review help to build up effective and efficient malaria control programme by identifying major achievement as regards outcome and impact, best practices and lessons learnt, critical issues, priority problems and investigate the causes of problem and proposes solutions for more effective malaria service delivery. The MPR process has four different, distinct phases with several steps and activities, namely a planning programme review, internal thematic desk review, joint programme field review and final report and follow up of recommendations and updating policies, strategic and annual operational plans and programme design. (WHO, 2014)

The WHO global programme aims to advance a universal access to tuberculosis (TB) prevention, care and control, guide the global response to threat and promote innovation. The core function of the programme is to provide global leadership on matters critical and standard for tuberculosis prevention, care and control and monitor their implementation. WHO Regional and Country offices, provide technical support to member states, catalyse change and build sustainable capacity. The programme also monitors the global TB situation and measure progress in TB care, control and financial involvement. The approach also shape the TB research agenda and stimulate the generation, translation and dissemination of valuable knowledge and is financially facilitating and engaging in partnership for TB action. (WHO, 2014)

WHO (2018) noted hunger and the need for protein supplements that drive Nigerians to hunt for rats (from where they get the Lassa fever virus) adding that the uncontrolled outbreak of the epidemic of Lassa fever or any other chronic and life-threatening diseases will be worse and more expensive than a war of any sort, if and when preventive measures are not put in place to save the population. Achinge (2013) advocated encouraging good housekeeping to prevent the infected rodents from eating existing foodstuff in human kitchens. Eze et al (2010) asserted that the knowledge on infection control methods is necessary, especially for health care providers that come in direct contact with Lassa fever patients in the discharge of clinical duties. The reservoir or host, of the Lassa virus is a rodent called 'multi-mammate rat (*Mastomys natalensis*)'. Lassa fever disease is highly contagious, can rapidly spread, and can cause a potentially fatal illness; treatment is directed at addressing dehydration and improving symptoms (Senior, 2009). The antiviral

medication, ribavirin may be useful when given early adding that the public must be informed of these steps severally.

It has been broadly understood that communicable diseases continue to cause ill-health and death despite the health education programmes and advances in public health over the last hundred years. The intervention by both governmental and non-governmental organizations in reducing prevalence and impact of communicable diseases seem to yield little effort. Deficits still exist in the general public in terms of hygiene, sanitation, prevention strategies and awareness of how to curb the spread of communicable diseases. It is on this note that the researchers resolved to carry out this research as to what impact these health education programmes have on communicable disease spread in Umuagbai-Ndoki Community from 2014 to 2017 even with widened scope. There had not been any known study of this sort in Umuagbai-Ndoki Community as at 2018 when this retrospective academic project was done.

### **Specific Objectives**

The specific objectives are:

1. To investigate the status of implementation of health education programmes, focusing on communicable diseases in Umuagbai-Ndoki Community from 2011 to 2017.
2. To ascertain extent of morbidity from the three most common communicable diseases in Umuagbai-Ndoki Community during the last four years.

### **Research Questions**

1. What is the status of implementation of health education activities, focusing on communicable diseases in Umuagbai-Ndoki Community from 2011-2017?
2. What is the extent of morbidity from the three most common communicable diseases in Umuagbai-Ndoki Community during the last four years?

### **Methodology**

Research design used was a descriptive survey. The community population had been further projected from 8,669 of 1996 to 14,130 at growth rate of 2.8% and 3.2% in 2017 as the community breakdown in 2006 Population Census is no more available (National Population Commission, NPC, 1996 & 2016). In this work the total community population was being studied. Multi-stage sampling techniques were applied. A sample size of 353 was derived by taking 2.5% of 14,130. Any available adult (male and female) population could be a respondent. A pre-tested, structured questionnaire was used to collect data. Systematic sampling intervals were maintained during the simple random sampling for respondents. A total of 332 copies of the questionnaire were retrieved out of the 353 copies served. The data obtained in July, 2018 were coded, presented in frequency Tables and analysed using percentages.

### **Results**

The results were stated in Tables 1 and 2 with further analysis. Tables 1 & 2 address specific objectives 1 & 2 with their associated research questions respectively.



**Table 1:** Health Education Programmes observed and received by Umuagbai-Ndoki Community

PARAMETER	RESPONSE	
	Yes (%)	No (%)
Witnessed health education programmes	213 (64.16%)	119 (35.84%)
Educated on communicable diseases	204 (95.77%)	9 (4.23%)
Health education programmes witnessed:		
Malaria with ITN distribution	33 (15.49%)	
Immunization campaign	50 (23.47%)	
HIV/AIDS campaign	40 (18.77%)	
Other STI campaign	29 (13.61%)	
Cholera, Ebola and hygiene campaign	10 (4.69%)	
Tuberculosis and Leprosy education	31 (14.55%)	
Lassa fever	20 (9.39%)	
<b>TOTAL</b>	<b>213 (100%)</b>	

*Source: Offiah and Akoma Fieldwork, 2018*

Table 1 affirmed the presence of health education programmes on communicable diseases in umuagbai-Ndoki Community where 213 (64.16%) of their members witnessed them. Similarly, 204 (95.77%) of them got educated on health issues during such health education campaigns.

**Table 2:** Morbidity status and pattern of illness in Umuagbai-Ndoki Community

Disease / Ill- heath	2014	2015	2016	2017
Malaria	60	41	50	37
Enteric fever	33	25	18	13
Hypertension	38	21	40	42
Diarrhoea e.g. cholera	2	0	1	0
Dysentery	3	1	4	2
Measles	4	7	3	0
Diabetes	9	5	16	22
HIV/AIDs	2	0	2	2
Other STI	11	9	11	5
Hepatitis	1	0	2	1
Tuberculosis	0	1	0	1
Whooping cough	1	3	2	1
Poliomyelitis	0	0	0	0

*Source: Umuagbai-Ndoki Community PHC centre health records, 2018*

From Table 2 above, one could see the following: For malaria there was a trend of reduction except in 2016. For enteric fever there was a continual trend of reduction for the years under review. For Sexually Transmitted Infections (STI) including HIV/AIDS there was a trend of reduction except in 2016, which equalled 2014.

## **Discussion**

Gender norms and values that influence the division of labour, leisure patterns, sleeping arrangements, eating habits and participation in health programmes may lead to different patterns of exposure to communicable diseases in men and women. There are also gender dimensions in the assessment of treatment and care that leads to perfect preventive measures against the spread of these communicable diseases through vaccination and some avoidable measures. A thorough understanding of the gender related dynamics of treatment-seeking behaviour, as well as of decision-making, resource allocation and financial authority within households is key to ensuring effective disease control programmes. Therefore, gender and communicable disease issues are increasingly being incorporated into disease control strategies in order to improve their coverage and effectiveness in different contexts.

Table 1 affirmed the presence of health education programmes on communicable diseases in Umuagbai-Ndoki Community where a sizeable number, 213 (64.16%) of their members witnessed them with 204 (95.77%) getting educated on such health education themes. The regularity of health officers with health education programmes was also noted. The PHC centre health personnel stated that any particular health education topics were being done every week (on Thursdays). The research revealed that health education campaign mostly held is that of immunization (23.47%), followed by HIV/AIDS (18.77%) and malaria with ITN distribution (15.49%) according to the responses. WHO (2005) report added that selected health education strategies have been applied to increase prevention practices against communicable diseases in a number of settings, including the health care sector, child day-care centres, elementary schools and the domestic environment. Therefore, the presence of and on-going health education programmes in Umuagbai-Ndoki is really a blessing and in the right direction.

Table 2, presenting the morbidity status and pattern of ill-health in Umuagbai-Ndoki Community, showed extent of morbidity for malaria, enteric fever and STI including HIV/AIDS as being quite high for the period of 2014-2017. The high-ranking of enteric fever in this community that has pipe-borne water and a good flowing stream is baffling. Non-application of hand hygiene might be responsible. The condition of water-borne infection might also be due to breakdown of public water supply for the previous two years and the likely improperly treated numerous private borehole water sources. The awareness level of insecticide-treated bed nets, insecticide spray, access to good water, personal hygiene among the Umuagbai-Ndoki Community showed that some individuals or groups of people had no other preventive measures to reduce incidence of communicable diseases in the community than to adhere to health education campaigns even as reminder to some of them. The presence of certain morbid status could be due to socio-economic factors and physical/environmental factors which favour the mosquito breeding sites and other means of infection as well as ineffective implementation of disease control measures.

Despite the fact that the use of treated bed nets, boiling drinking water and personal protection were considered as the protective methods, most people still neglect the use of these methods due to certain factors like ignorance and over self-confidence in their lives. WHO (2005) through the study on intervention on communicable disease spread at various settings worldwide revealed that hand washing as a communicable disease interventions in infectious diseases is acknowledged as the most effective means of preventing the spread of many of these diseases like cholera, ebola and enteric fever (typhoid and paratyphoid). Furthermore, Ukoima and Offiah (2013), in their investigation of "factors associated with acceptability and use of insecticide-treated bed nets (ITNs) among women of reproductive age in Andoni Local Government Area of Rivers State, Nigeria had found high acceptability and low utilization of ITNs. The study also determined the relationship between ITN availability and the human population group most preferably protected against malaria using ITNs. In this study there is also low utilization of ITNs for malaria

control leading to sizeable number of the respondents expressing ailment from the disease and seeking health care. Further analysis of the information on Table 2 revealed an improved, positive impact on communicable disease spread from health education programmes.

### **Conclusion**

The project aimed at evaluating “impact of health education programmes on the spread of communicable diseases” was carried out in Umuagbai-Ndoki Community. Health records have shown communicable diseases observed in that community during this study. Other specific objectives of the concluded study achieved were/are the presence of earlier/on-going health education programmes, decrease in cases of some of the communicable diseases and reduction in morbidity levels among those community inhabitants. The resultant impact shall be overall improved life expectancy.

The findings of this study reflect on the facts that if control measures will be implemented appropriately then the intensity of certain diseases will continue to decrease. A re-strategizing on implementation measures for disease control would lead to optimum performance and maximum success.

### **Recommendations**

1. There is the need for a strong collaboration among major stakeholders including the executive and legislative arms of government, and Non- Governmental Organizations (NGOs) to sensitize the communities on diseases and in developing the holistic but effective methods for prevention and control of diseases.
2. Though the uses of insect repellents and Long-Lasting ITNs are identified as the major method of prevention due to their availability and affordability for many households, the implementation of these methods is still questionable. Therefore the implementation of these methods needs to be re-assessed by concerned authorities in order not to endanger the health of the people.
3. Efforts must be seriously made by the health workers in the health sector to make insecticide-treated bed nets (ITNs) and other disease control measures readily available in the communities for their use or the government should provide those preventive measures as it is stated by Alma Atta declaration of Human Right on health that government has the responsibilities for the well-being of their people.
4. In order to improve timelines of treatment, the healthcare service consequently needs to be closer to the communities especially those found in the remote and malaria endemic areas.
5. Surveillance should be beefed up in every community to determine causes of diseases and deaths. Carefully coordinated surveillance and response are required to address on-going, high-level transmission hot spots as well as acute outbreaks which will help to achieve disease control.

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## **Restructuring our Nigerian Environment for Sustainable Development**

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### **Abstract**

Out of human activities, negligence and ignorance in the Rivers State environment is undergoing destruction, giving room to difficulty in the engagement of professionals, for excellence in designs and layout plan of facilities with regards to feasibility study, environmental impact assessment for macro structures. Achievably, there will be conservation of the environment and a structured environment for delivery of utility service systems via economic boom of all facets of the economy. This is because all processing, production and productivity are all derivable from the environment as raw materials. In extension, this research work was undertaken to clear the confusion and misinterpretation surrounding the actual roles of the building construction project team members in project delivery in Nigeria. The study was necessary because of the need to minimize wastage of resources and to ensure that projects are delivered according to specifications, quality, on time and within budget requirements. The paper studied the roles of the professionals in the building project delivery by collecting and analyzing data gathered through seeking the opinions of stakeholders in the building construction industry. The study showed that supervising and managing building projects delivery are two different things that have clearly identifiable roles for each group of the project team members involved in building project delivery processes. It also showed that the person who should take the project manager position will depend on certain reasons that include the procurement method being used for a particular project. It is therefore hoped that the findings of this study will provide a better understanding for all the parties involved in the building project delivery in Nigeria, in other to encourage the achievement of stakeholders' objectives.

Key Words: Environmental, Assessment, Projects, Requirement, Specification.

### **Introduction**

A building as a shelter is one of the essential needs of man. Till this day, majority of people construct houses with mud, concrete, etc without soliciting the services of professionals. This is not totally because of poverty but negligence and ignorance to unlearned structure to the environment for learning utility service system. Consideration to structure of the environment in Nigeria is too poor. Nigeria is one of the countries in the whole wide world, that buildings are constructed on pipelines, underneath power lines, gas is flared, industries with impunity pollute the Nigerian environment, Toxic waste are disposed indiscriminately, water ways congested with bad rusty Cargo ships unfumigated, River banks pollution and dirt hip, high sociological problems of sea pirates going on unmitigated to a minimal level, bush burning, felling trees without replanting, destruction of aquatic life and habitats of other living things with Gamalin for the purpose of fishing, lack of feasibility studies before construction of micro factories, lack of environmental impact assessment for macro projects and the obnoxious land use decree. Even sometimes when Abatement notice is issued to defaulters by the environmental officers, Nigerians involved, will pay their ways through or pay deaf ears. The rhetorical question is "Why can't our own environment be structured for a running utility service system like the developed world-Germany" or turn to the days when the populace will tidy their environs before the coming of the environmental officer for clean up exercise.

Engineering has made significant contributions to the advancement of our standard of living; probably more than any other profession. Essentially all our daily activities are assisted by products, systems and services made possible by the engineer. Our utilities, heating and cooling equipment, automobiles, machinery and consumer products have been provided at an economical rate to the bulk of our national population by the engineering profession.

The engineer must function as a member of a team composed of other related and sometimes unrelated, disciplines. Many engineers have been responsible for innovations of lifesaving mechanisms used in medicine which were designed in cooperation with members of the medical profession. Other engineers are technical representatives or salesmen who explain and demonstrate applications of technical products to a specialized segment of the market. Even though there is a wide range of activities within the broad definition of engineering, the engineer is basically a designer. This is the activity that most distinguishes him from other associated members of the technological team (Amadi, 2013).

According to Anyanwu (2013), there is confusion and misinterpretation of the roles of some of the professionals in the management of construction projects in Nigeria. This could be attributed to many factors. One of the factors is the lack of proper working knowledge on the part of majority of people as to the roles of each professional in the industry. As a result of this, qualified and appropriate professionals are often not engaged for the design of projects as well as for the execution process of the projects. To compound the problem, there are no Building Regulations, until recently and laws to properly regulate the design and the construction phases of building project including their control and inspection during site execution.

As a result of these reasons, we continue to hear of such things like;

1. Design and details that cannot be economically constructed.
2. Over designing.
3. Inappropriate and inadequate specifications.
4. Poor workmanship.
5. Breaking up and re-construct
6. Collapse of building and so on.

These are waste of national material and human resources and a great loss to the economy of the Nigerian nation, which should not be the case in the first place. To a greater extent, qualified engineers and architects are now carrying out the designs of most of our buildings projects.

This has led to better and functional buildings being designed. The construction phase however, is not yet so lucky. In majority of cases, unqualified persons, who are artisans, craftsmen and technicians or people without any technological knowledge of the construction process, are carrying out the production process.

In order to provide clarity in the building project delivery, this report discusses the roles and conduct of professionals in the planning, design, execution and administration of building projects and the use of qualified and appropriate professionals for both the planning, design and the construction phases of building projects in Nigeria.

### **Meaning of Environment**

According to Gabriel Kalio, in his Occupational Health and Safety Management 2015 – P 146, defined Environment as thus:

- i. The circumstances or conditions that surround an organism or group of organism.
- ii. The complex of social or cultural conditions that affect an individual or community.
- iii. Man's immediate surrounding which he manipulates for his existence.

Environmental aspect means the process, systems, ways and methods through which the environment we are living gets polluted. Certain activities carried out by human being both in work

place, at home and everywhere that pollute the environment include; waste food particles, empty cars, pure water sachets, rags, waste oil, gas emission into the air through gas flaring, exhaust pipes, nuclear plants, generators etc.

### **Environmental Pollution**

Gabriel Kalio Occupational Health and Safety Management 2015, stated that environmental pollution is the act of introduction, by man, of extraneous substances or energy into the environment that induces unfavourable changes. These changes may affect man directly or indirectly by endangering his health, harming his living resources and ecosystem, or by interfering with legitimate uses of the environment.

Environmental pollution is also the contamination or other undesirable alteration of the physical, chemical and biological quality of environment. It is also defined as the release of potentially harmful substance into the environment.

### **Environmental Protection**

Another method used for saving the environment from being impacted adversely is environmental protection. Needs of society have to be met without harming ourselves and this is a legitimate requirement of any technological process. How the water, energy and several resources are destroyed, maintained dissipated or conserved, depleted or restored, has significant implication for human health. Hence, environmental protection is the protection and conservation of existing resources such as;

- i. Air quality
- ii. Water (surface and underground) quality.
- iii. Soil quality
- iv. Vegetation
- v. Wild life
- vi. Fisheries etc – (Gabriel Kalio – 2015).

### **Effects of Pollution for Non Structured Environment**

**i. Air:** Depending upon the lifetimes of the pollutants, the location of the source and the prevailing Air current, once air is polluted the likely effects are:

Respiratory problem, Ozone layer depletion, Green House effect (Global warming and excess heat), Acid rain, photochemical smog.

Air constitute about 80% of man's daily intake by weight. Human beings breathe nearly 22,000 times a day, in having about 16kg of oxygen. Hence, air pollution will surely affect the health of human beings and also have other consequences. Air pollution has adverse impact on human health.

**ii. Water:** This is known as any physical, biological or chemical change in water quantity and quality that adversely affects living organisms or makes water unsuitable for desired uses. Water pollutants includes:

Oil spills (drilling activities and pipe line damage), waste discharged from gasoline industrial plants, waste oil like grease, Sewage (toilet system and suckanag), acid rain, untreated effluents.

**iii. Land:** land is termed to be polluted when the soil is contaminated more than is normal, vegetation is diminished, crop yield is low and for natural resources, there are fewer species – (Yomi Oruwari, 2001).

Pollutants that can cause land pollution include:



Chemicals, Acid rain, Agrochemicals (aminonia, bush burning), oil spillage etc, which leads to reduced land use, reduced soil fertility, started growth in plant and public nuisance.

The value derivable from a structured ecosystem was not known to man. For this reason, most people still cultivate, construct and damage utility service lines (pipeline, powerline, pipe born water line, Telephone line gas line), Aqua life by the use of gamaline, other animal's habitat by felling trees without replacement, reduction of the soil's PH value by bush burning, cracking the ozone thereby increasing heat via acid rain in our environment introduction of black soot in the air, the result is that; the Air, water and land of our environment are polluted. Since the ecosystem is very essential to man's livelihood, thereby the structure to environment for learning service utility system, livelihood should be of great concern to citizens of Nigeria, Government in power, environmental scientist, Professionals and companies operating in Nigeria.

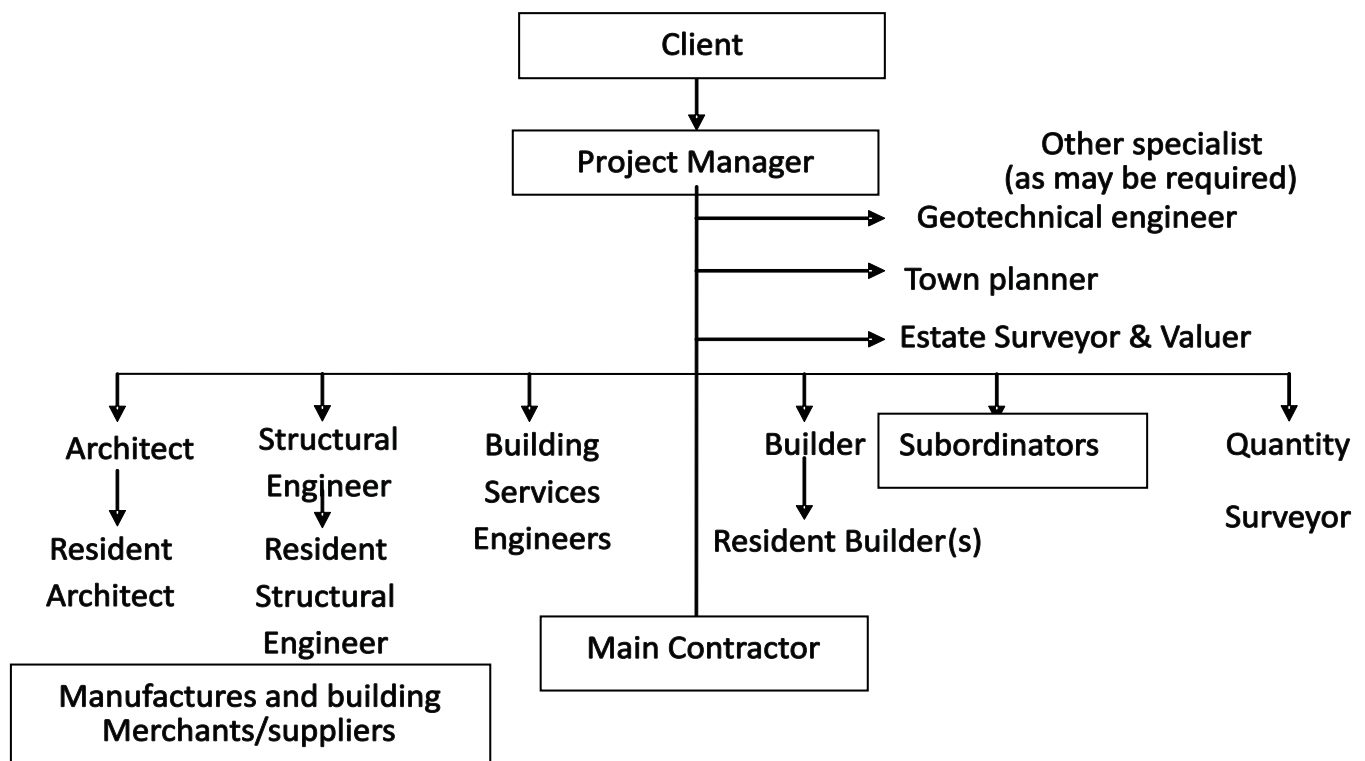
### Structured Environment for Productivity

The prosperity of any society or country is directly dependent upon the productivity of every activity of economic development. Higher the productivity, greater will be the prosperity and vice-versa and all the raw materials for production are solely derivable from the environment. Every country has limited input resources. So, in a world of competition, the only golden rule to survive is higher production and higher productivity with the given input resources. Hence, the given input resources must be utilized efficiently and economically.

### Roles of the Construction Team Members

While architects and some sections of the engineering profession carryout the designs of buildings, the execution is the role of builders, the project manager and the necessary technical supporting personnel.

In the light of the above, let us examine the specific roles and conducts of construction professionals in executing building projects.





**Figure 1.1: Typical Organogram of a public building project team members.**

**1. The Surveyor**

Surveyor is the custodian of land information. The size, topography, location, features on and beneath the land upon which any development is built, is determined first by surveyors. Without this information, no proper, adequate, effective and accurate planning, design and execution of building projects can be carried out.

**2. The Town Planner**

The town planner is responsible for the orderliness in the developmental layout to show the various land use master plan, layout etc prepared by a Town planner normally take into consideration the population, culture infrastructural facilities, socio economic, political, health and other human needs. During the execution stage, Town planners will also ensure that the orderliness in the layout is not distorted and that the approval given is also adhered to strictly. For some building projects, there are needs for environmental impact assessment, which may be carried out by a town planner who has developed knowledge in this specialized area. This exercise must be carried out in collaboration with other relevant professionals. Town planners also carryout Site Analysis Report for building projects.

**3. The Architect**

The architect may help the client to formulate his requirements in an understandable form, bearing in mind any statutory conditions that may apply. It will be advantageous to the client at this stage if he could be shown work of a similar nature so that he could obtain a visual impression of shape, type of materials, size etc. If this is not possible, pictorial sketches or model can be used but it is often difficult for the client to visualize the true structure from these very artistic representations. Secondly, under the traditional procurement method, the architect may need to help the client to bring together a team to give specific services such as that of a structural engineer, quantity surveyor, builder, mechanical/electrical engineers etc.

Upon assessing cost limits and time scaled, conceptual design can be produced for client to approve or otherwise, before more detailed drawings are prepared. The cost of the building will have been broken down against elements at this stage with appropriate values so that if cost are to be adjusted it can be done within elements eg substructure, superstructure, internal finishes, mechanical/electrical (M/E) Services and so on.

When general agreement has been reached between the client and the consultants, the architect can now start detail design and preparation of contract drawings, schedules and specifications to enable tenders to be obtained. It is worthwhile to note that the situation whereby architectural drawings would have been completed before the structural and building services engineer's designs are commenced and inputs from a builder are obtained is not ideal and should not be encouraged by any member of the building project team. With the completion of the tender documents, the architect and the other consultants will assist the client in selecting the contractors to be invited to tender for the construction of the building. During the construction stage, the architect should be visiting site periodically for inspections to ensure that in general, the work being carried out on site is in compliance with architectural design and specifications. Some project may require the services of resident architect(s) on building project site.

#### **4. The Engineers**

Engineers are very important members of the design team whose responsibilities are to assist in the overall design of the project within the scope of their specialist fields. Engineers such as geotechnical, structural, electrical, mechanical and so on, will carry out various analysis and calculations before arriving at the optimal design solution for a specific building.

Therefore, they will produce drawings, specifications, schedules and other relevant data that may be required for the overall design of the project and to assist the quantity surveyor in the preparation of bills of quantities and costing and the client in his assessment of the suitability of the project, regarding statutory requirements.

During project execution stage, engineers should visit the site periodically for inspections to ensure that in general, the work being carried out is in compliance with their engineering drawings, schedules and specifications.

They must also be available to modify or re-design their individual aspects as may become necessary. Also some projects may require the services of resident engineers on the building project site.

#### **5. The Quantity Surveyor**

A quantity surveyor should be called upon in the early stages of consultation by the client because of his expertise in construction costs. He should prepare first of all, a cost plan as soon as the brief is settled, an approximate cost from sketch drawings, elemental cost checks during design, so that, should the client's sum be exceeded, the designers can consider each element of the building project in reasonable isolation, enabling him to pair cost as necessary, within the total cost limit of the project.

Upon acceptance by the client of costs and scheme, a quantity Surveyor's task after the receipt of designer's drawings is to prepare a Bill of Quantities (B.O.Q) in accordance with the current Standard Method of Measurement (SMM). This is a very important section of the quantity surveyor's responsibilities and great care should be taken to ensure accuracy. The bill of quantities can only be as good or accurate as the drawings, schedules and specifications used for its preparation. During the preparation of the bills of quantities, the quantity surveyor has the opportunity to check dimensions and advice on alternative materials. The quantity surveyor could also advice the client on the appropriate form of contract to use. The quantity surveyor will definitely prepare the contract documents in close consultation with other consultants on a project.

When tender documents are sent out to contracts, the quantity surveyor must also price the BOQ and his priced bill of quantities must be submitted and opened at the same times as those of the tendering contractors. Once the tenders have been opened and recorded in the presence of the other consultants, the tendering contractors and the project manager client representative, the quantity surveyor must check all the tenders for accuracy and consistency in pricing etc to ensure that the contractors made no serious errors, which could cause complications at a later date. The quantity surveyor should then prepare a tender report on the contractor's tenders for consideration at the Contractor Selection Meeting.

During the construction stage, the quantity surveyor will carry out interim valuations, value variations, ascertain the amount of direct loss and/or expense incurred by the contractor, agrees fluctuations with the contractor, prepares the statement of retention's etc. all these should be done in conjunction with the contractor's quantity surveyor who should be allowed to be present at such times when physical measurement are being carried out on the site. In carrying out his duties, the quantity surveyor must remain completely impartial and without favour to either side and so

produce harmony in his role as a project cost manager. The quantity surveyor has a fiduciary responsibility to ascertain that the client obtains value for his money and the contractor an acceptable profit for work done.

On completion of the construction stage, the quantity surveyor should assist the project manager in discussions with the contractor as to extra contractual costs. The quantity surveyor must also prepare, with the aid of the contractor's invoices and other documents, the final account.

## **6. The Builder**

A builder is the professional at the centre of the physical construction of buildings. His role in building development process in general, is to construct the building. He does this by taking charge of the activities on a building construction site in translating designs, working drawings, schedules and specifications into a physical structure. He uses his production management expertise, coupled with the necessary resources such as money, manpower, materials, and machineries, in the site execution of building projects. His expertise in building production management is the main professional input that he renders on building projects. In constructing buildings, a Builder performs the following roles.

- Carry out Build ability and Maintainability analysis
- Prepare Production Management Documents
- Manage the production process on site.

The Builder's role in building development process starts from the planning/design stage but takes prominence at the construction stage. The function of the Builder is the main thrust of this book.

## **7. The Estate Surveyor and Valuer**

The Estate Surveyor and Value's roles in the planning of projects cannot be overemphasized. The features necessary to add economic and commercial values to any development are to be thoroughly analyzed by the estate surveyor and valuer. The input of the estate surveyor and valuer in the type of design or development that will suit a particular location is necessary to increase the sales or rentable value of a building after construction. There is no way one can say that the professional that will manage the estate after completion will not have meaningful input at the planning and execution of building projects. They should be involved at the early stage of building development process especially on commercial and speculative building projects, advising on current consumer trends, market demands and timing of entrance of the project into the market. The main task of the Estate Surveyor and Valuer on a building development project is to provide estimates for rental and capita] value as well as to identify potential buyers and/or occupiers and to organize and implement the disposal of the development.

At the very early stage, his initial valuation of the project is needed to assess the correct land price. Some important roles of the Estate Surveyor and Valuer on commercial building development are:

- The identification of potential buyers or occupiers-The demand market.
- The analysis of the requirements of occupiers and ensuring that they are incorporated into the design.
- The assessment of the rent or price that buyers or occupiers are willing and able to pay.
- The assessment of market: conditions and possible changes that may arise during and after the development period.
- The development and implementation of a marketing strategy.
- The monitoring of the effectiveness of the marketing strategy.
- The negotiations of lettings or sales.



## **8. The Project Manager**

While the responsibility for complying with specifications is firmly placed with the contractor, the unspoken assumption is made that unless a client maintains his own representative (the project manager) on the site to watch and inspect the works, the resultant structure or building will not be in conformity with specified-quality standard.

While one may agree with the statement, one will like to believe that it is in recognition of this statement of fact that all the standard form of building contracts always has a condition for the client to have a representative on site.

The role of the client representative on site is to inspect quality of materials and the workmanship to ensure that they all comply with drawings and specifications

The person capable of inspecting materials and the workmanship of works must be a professional that is well trained in building construction, and with training in project management. However, the size, type and complexity of a particular building project may make it necessary to have in addition to the project manager, a resident builder, resident engineers and a resident architect. When they are all on site representing the interest of the client, their roles are complementary. For example, while the resident architect will inspect those material's, and components specified by the project architect and also check dimensions physically on site, the engineers will equally inspect materials specified by each one of them (structural, electrical and mechanical) and their positioning in the works; the resident builder will have to ensure by way of continuous inspections the implementation of construction methodology and the project manager will ensure that the project quality management plan and stage of work is in conformity with the design.

The contractor should usually cooperate with the project manager and treat him as the senior member of the project team whose assistance and advice as to outstanding project execution information, interpretation of designer's intentions, contract conditions, and so on, cannot be done without. The project manager, as the client representative must submit reports periodically to the client.

## **9. Managing Building Project Delivery**

During the construction stage, some of the standard Form of Building Contracts allow for the appointment of supervising officers' project coordinators. Some of the supervising officer/project coordinator being appointed either by the Federal, State, or Local governments or Individuals/Corporate bodies for building' projects in Nigeria are either Architects or Engineers. This does not mean that Builders could not perform even better in necessary roles of supervising officer/project coordinator. The truth of the matter is that either a builder, architect, quantity surveyor or engineer can be the supervising project manager. The determinant factor for the selection of which of these professionals should include the following:

- The procurement method being used for a particular project.
- The relevant experience and seniority of an individual professional.
- The type and complexity of the particular building project.
- The emphases of the client (eg cost, quality, time, etc).
- Training in project management

The supervising project manager is the client's representative and his appointment is to ensure that, the project is carried out according to the contract documents. His duty is to coordinate the inputs and activities of the parties on the project and also administer the contract on behalf of the client. This is different from managing construction project process. While the role of the supervising project manager is more of administering (Administrative) the contract, managing the



construction process is purely technical.

It is wise and cost effective to ensure that the physical execution of building construction is carried out by builder(s). At site level, the builder will be the most senior construction team member for the contractor. Where there is no contractor on a building project the Builder will have to be engaged directly as a consultant by the client. His duty is to manage the physical site execution process of the building project. Builder is referred to as the "person-in-charge". The person-in-charge duties consist of supervising the day-to-day execution of the work on behalf of the contractor and giving instructions to the operatives. The professional that is specifically trained, through formal academic and practical experience, to manage the execution process of building projects on day-to-day basis, is the Builder. In view of this fact, contract documents, regulations/laws he should be referred to as the Builder in-Charge.

### **Conclusion**

This paper has in no doubt re-awakened the construction project team professionals and the interests of the general public about the issues of building project design and construction project processes as it should be carried out for the benefit of clients in Nigeria, This is what is obtained in developed countries and clients in developing countries deserve nothing less than real value for their investment

Supervising as oppose to managing building works has been briefly discussed and the roles of each group clearly identified for better understanding by all the parties involved in building project development process. It could be seen that the project manager's role is that of ensuring that what is on the drawings, specifications and schedules are actually constructed on site; and that contract conditions (eg. test samples, notice, etc) are complied with. Some of the tasks are carried out by periodic site visits for inspections by the supervising project manager.

Managing the execution process of building projects, on the other hand, is to do with the physical construction of the building projects by Builders A senior construction manager who undoubtedly, should always be a Builder will be on the site virtually all of the time, in order to carry out his role by way of implementing production management documents, good site practice, controlling and coordinating all the required resources and site activities towards cost effective construction of building projects that comply with specifications, completed on time and within construction budget. It must not be forgotten that managing the production process of a building project entails some elements of supervision. In other words, the builder and his supporting technical staff will supervise, on hourly/daily basis, the works of artisan, craftsmen, subcontractors and junior staff so that the task given could be carried out correctly at first attempt.

Environmental impact – June 2008 stated that the Niger Delta is the treasure base of Nigeria, since successive governments have decided to ignore other sustainable income sources that had sustained the nation before the discovery of oil in commercial quantities. The NEITI (National Environmental Initiative Transparency International) has done what could only have been dreamt of a couple of years ago. It is a bold initiative that is, seeking transparency in oil industry operations in a structured manner.

The minus in the NEITI equation is located in the fact that it is essentially focused on the end of the pipeline, where petro dollars roll out to fatten our national coffers. The transparency being sought has been largely with regard to payments and receipts of monies generated from the oil fields with scant attention to what is happening to the environment and the people who bear the brunt of these extractive activities. It is the position of this paper that for there to be transparency in the structure of the environment, the oil and industrial sector, operators and regulators must be seen to transparently adhere to environmental standards demanded both by national and international laws. A situation where oil corporations operate different standards in different climes cannot be

accepted.

### Findings

- i. Confusion and misinterpretation surrounding the roles of the building construction project team.
- ii. Slumbering of professionals in a public project construction team.
- iii. Negotiated tendering should be avoided by the professionals involved to erase prejudice on the part of client and all professionals.
- iv. Most professionals shy away from fieldwork, thereby cutting off opportunities for the acquisition of experiences.
- v. Lack of interest and poor economy on the part of professionals and Nigeria respectively.

### Recommendation

The following recommendations are proffered because of the findings made.

- i. All stakeholders should project the true picture of a public project team to the Nigerian populace to avoid confusion and misinterpretation etc.
- ii. Professionals should engage themselves in constant practice public building project teamwork.
- iii. Building engineers, surveyors etc should avoid shying away from team fieldwork, leaving the services to quacks that are inexperienced.
- iv. Remember how good or bad a building is constructed is depended on how good or bad a public project team is effective.
- v. Conservation of the environment must be initiated to avoid extinctions.
- vi. Obsolete laws must be expunge from our constitution especially, the Land use Decree.
- vii. Environmental standards demanded both by national and international laws must be adhered to by all environmental stakeholders.
- viii. Government, oil corporations and individual developers must proffer ways to reducing cost to achievements of structured environment.
- ix. Total adherence to environmental rules and regulations.
- x. All hands must be on deck for a cleaner and structured environment, as a requirement.
- xi. The populace must learn to solicit for the role of professionals in the design and construction of projects.

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## **Sedentary Work Pattern and Health Challenges of the Civil Servants at the Rivers State Secretariat Complex in Port Harcourt**

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### **Abstract**

Technological innovations have changed the work pattern of civil servants. These labour-saving innovations have paradoxically whittled down workers' health. This study investigated sedentary work pattern and health challenges of the civil servants at the Rivers State Secretariat Complex. The study adopted a cross-sectional survey by design, involving quantitative and qualitative methods. A multi-stage sampling technique was used to carry out the study. A cluster sampling technique was used to select two ministries from each block of the five blocks of A, B, C, Podium Block and Point Block. The respondents were stratified into male and female staff, junior and senior staff. A list of respondents was taken. A 64 item structured questionnaire was distributed proportionately to the ministries, while oral interview and focus group discussions were conducted with 10 respondents each who responded positively to five out of the thirteen health challenges under study. The health Belief model and ecological model of health behaviour were used to explain the study. Results showed that workers sit for 3-7hours each working day. Number of hours at work was significantly related to health challenges. Stress was the most common health challenge followed by eye problem, musculo-skeletal discomfort, but oral interview result showed musculo-skeletal discomfort as the commonest, other health challenges were present with lesser percentages. No significant association between gender and health challenges except diabetes which was more with men, no significant association with age. Work pattern was associated with organizational culture, work load, increasing reliance on technology and electronic system. Recommendation includes, modifications of current pattern by incorporating compulsory work out during break period, using the stair case instead of elevator and provision of assistive devices by the government.

**Keywords:** sedentary, work, pattern, health challenges.

### **Introduction**

The consequences of social illnesses, resulting from war, terrorism, rioting, ecological devastation, famine, drug abuse, suicide, unemployment and communicable diseases are becoming everyday news all over the world. Illnesses relating to occupation is poorly understood, ignored, and not resourced adequately. It is a major problem because some occupations tie workers down and reduce their chances of physical activities and increase their susceptibility to illnesses.

This is partly because over time technology used in work places has made many changes on how people work. Many workers spend a large part of working day sitting down, tethered to their desk in front of a computer screen or busy filling documents, reading and treating memos. The use of technology has also changed the way people work and play. With computers and the use of emails, the reason for which people used to move around the office no longer exists. Some of the tasks that used to be routine part of office work, such as hand delivery of documents, working over to co-workers to discuss issues or share work are now done with computers and telephones.



Prolonged sitting reduces body movement thereby making muscles more likely to pull, cramps or strain when stretched suddenly. It causes fatigue in the lower back and neck muscles by slowing the blood supply and put high tension on the spine and causes a steady compression on the spine leading to degenerative disease of the spinal cord. The most commonly affected are people that work on the computer every day (Healey, Lawler, Thorp, Neuchaw, Robson, Owen, & Duncan, 2012). Various researches have proven that too much sitting for prolonged stretches of time can be detrimental to health, regardless of how much exercise is done.

Sedentary life style is becoming increasingly common among workers, particularly those who work in office environment with more than 75% of the office work day spent sitting while more than 30minutes sitting at a time is said to be damaging to health. They are at risk of cardiovascular disease, anxiety, depression, cancer, diabetes and obesity (Davidson, 2014). Ford and Caspersen (2012) reviewed previous studies and came up with the fact that sedentary behaviour is mostly responsible for cardiovascular disease. Rohman (2017) also attributed the causes of heart disease to lack of exercise and that it increases death rate in men by 52 percent and women by 25 percent and equated it to abandoning an old car for a long time without use. The work pattern of the civil servants' fits into this description. From the drivers to the permanent secretaries, their work involves less of energy expenditure, long hours of sitting and repetitive job processes.

Bureaucratic organizations are bad for health. For example, one-third of the Canadian work force reported that work is a major stressor in their lives. Between 1995-1999, absenteeism due to stress increased by 316 percent and 25 percent of employees who remained on the job were actively disconnected. It leads to absenteeism, mental health problems, psychosomatic disorder like, heart disease and high blood pressure (Hornstein, & Deguerre, 2006). Bureaucratic organizations are associated with tight rules and regulations that guide the work processes and environment and it is obvious that the absence of control over one's own work is a powerful stressor that can show up either as a physical or mental disorder and the experience of the civil servants are not different since they also operate under bureaucratic arrangement.

Though occupational health is an important strategy for the health of the workers, it also ensures quality of products, increase productivity, job motivation, job satisfaction resulting in overall quality of life of individuals and society. But most organizations fail to recognize it as a booster for sustained economic growth. Business performance is not measured with regard to occupational health and safety; there is no incentive for stakeholders to improve on their workers' health as they view it as luxury that will reduce profit enhancement, (Meswani, 2008). A safe working environment would go a long way to increase the productivity of their employees and the profitability of the organization and become a source of competitive advantage for an organization.

But in Nigeria workers rarely complain about occupational hazards due to many contending issues about employments or ignorance of short-term and long-term effects of occupational hazards. WHO in (2014) reported that in many countries more than half of the workers are employed with no special protection for seeking health care and lack of regulatory enforcement of occupational health and safety standards. The report has that occupational diseases and psychological stress can aggravate other health problems and that conditions of employment, occupation and position in the work place hierarchy, working under stress or with precarious employment conditions affect health as well. Since it is obvious that economically active people spend an average of their live time at the work place, it is necessary to examine the effect of employment and working conditions on the social protection, personal development, physical and psychological development of the civil servants at the secretariat complex. The civil servants are the engine room of the government as they implement policies that affect the common man. The fact remains that the occupational needs of these group of workers and how it relates to their health or illnesses remain largely unexplored.

Occupational health and safety should have higher priority on the international agenda, but Luchini (2014) observed that occupational health and safety, infrastructural and systematic preventive approaches are low in industrializing countries, as majority of the workers do not meet the minimum standards and guidelines set by WHO and ILO. This may not be far from the experience of civil servants in Rivers State, especially at the secretariat complex who are faced with dilapidated infrastructure, irregular payment of salary, underemployment, inadequate staffing, and fear of retirement without social benefits, lack of infrastructure. These are enough problems that can affect one's health physically, socially, mentally and psychologically, yet literature or reports on these issues are scanty. Since the role of the civil servants in any administration cannot be ignored, this study stands to create awareness on the possible implication of sedentary work pattern and associated health problems. Umeokafor, Isaac, Jonesk, Umeadi (2014) stated that the federal ministry of labour and productivity (inspectorate division) is to enforce the factories Act of 1990, while the labour, safety and welfare bill of 2012 empowers the National council for occupational safety and health of Nigeria to administer the preceding regulations on its behalf. It is therefore necessary to investigate if these bodies are actually performing their duties.

### **Statement of the Problem**

The link between sedentary pattern of work and its effect on workers' health has become a concern that needs to be properly investigated and highlighted. Though rarely a subject of consideration during employment and collective bargaining in Nigeria, the morbidity rate of workers and the accompanying man-day loss due to illness in the civil service calls for a close look at the issue. Since after independence in 1960, various panels have studied and made recommendations for reforming the civil service, Morgan Commission of 1963, and the Udoji Commission of 1972-74, among others. The reforms are majorly about the organizational structure and financial benefits. The sedentary work pattern of their jobs has never received adequate attention or is largely unexplored.

Occupational safety and health is a fundamental human right as declared in Seoul in 2008 by international labour organization. But this right is not freely available to civil servants at the Secretariat Complex in Rivers State who are faced with worsening health and safety challenges with increased death rate. Record showed that from 2000-2015, 108 (one hundred and eight) people died while in active service, (Aminadoki, 2018).

Occupational health problem has increased in time and magnitude, especially in Rivers state because several, health issues have competed with occupational health. The disease burden in the state is mostly due to preventable diseases such as malaria and upper respiratory tract infection, hypertensive heart disease, diabetes among others. There is high morbidity and premature death rate as a result of environmental degradation, occasioned by oil exploration and gas flaring, illegal refineries and improper disposal of effluents. High maternal mortality ratio of 889 per 100,000 live births which is the highest in the country, infant mortality rate of 60 per 1000 live births, HIV prevalent, rate at 15.2% by 2015. Life expectancy for males, 54 years and females, 57 years (Rivers State Ministry of Health Sustainable Development Committee Report 2000-2015). Most of the previous studies were not focused on civil servants. It is obvious therefore, that there is a major empirical gap suggesting insufficient literature on sedentary work pattern and health challenges of civil servants in Rivers State especially those working at the secretariat complex which is housing all the ministries. Scholars have focused attention on low productivity, but attributed the problem to indiscipline, ineptitude, nepotism and not health challenges where as it is possible that health problems could play a major role in their poor performance. This study is aimed at investigating the health challenges of civil servants emanating from sedentary work pattern.

### **Aim and Objectives of the Study**

The aim of the study is to investigate sedentary work pattern and health challenges of the civil servants at the Rivers State Secretariat Complex, Port Harcourt. Specific objectives are to examine:

- the relationship between number of hours spent at work and health challenges of the civil servants.
- the relationship between position on the job and health challenges of the civil servants.
- the relationship between gender and health challenges of the civil servants.

### **Research Questions**

- How does the number of hours spent at work influence the health challenges of the civil servants?
- How does position on the job influence the health challenges of the civil servants?
- What is the relationship between gender and health challenges of the civil servants?

### **Research Hypotheses**

H1: The more the number of hours spent sitting, the more health challenges of civil servants.

H2: The higher the rank of the civil servants on the job the more sitting and health challenges.

H3: There is an association between gender and health challenges of civil servants.

### **Methodology**

The study design adopted was a cross-sectional survey design of both quantitative and qualitative methods. The study area was the thirty ministries (30) at the Rivers State Secretariat Complex with a population of 4,252, (Aminadoki, 2018). The sample size of 354 was derived by Taro Yamane formula. A multi-stage sampling technique was used. Stage one involves selecting two ministries from each of the five blocks by cluster sampling technique. Stage two involves stratifying the staff into junior and senior staff categories, male and female. Stage three involved making a list of respondents for the study. Stage four involved selecting 10 respondents each who agreed to having at least five out of the thirteen health challenges listed in the structured questionnaire for oral interview and focus group discussion. A 64-item structured questionnaire was distributed proportionately. Reliability test was done with test re-test method using 30 respondents whose ministries were not included in the project. The response was positive with a correlation coefficient of  $r=0.88$ ,  $p \leq .05$ . Out of the 354 questionnaire shared 330 were retrieved. The retrieved questionnaire data were analyzed using SPSS version 21 which produced the results in percentages and standard deviation, while NVIVO software was used to code the oral and focus group discussion.

### **Results**

**Research question 1:** How does the number of hours spent at work influence the health challenges of civil servants.

It was found that most of the respondents (34.2%)  $n=113$  spent 3-4 hours sitting at work. There was a statistically significant relationship between the number of hours spent at work and health challenges of respondents. Stress ( $P<0.001$ ), eye problem ( $P<0.001$ ), musculo-skeletal discomfort ( $P<0.001$ ), hypertension ( $P<0.001$ ), depression ( $P<0.001$ ), injuries at work ( $P<0.001$ ), diabetes ( $P<0.001$ ), obesity ( $P=0.005$ ) and cancer ( $P=0.025$ ).

**Research question 2:** How does position on the job influence the health challenges of civil servants?



Asthma and epilepsy were significantly related with position on the job. Among the respondents, 8 (34.8%) were junior staff and 15 (65.2%) were senior staff and this difference was statistically significant ( $P < .001$ ).

**Research question 3:** What is the relationship between gender and health challenges?

There was no significant relationship between most of the health challenges assessed. However, diabetes was found to be significantly more common among males than females at  $P = 0.026$ .

## **Discussion**

Findings to research question 1 showed that majority of the civil servants spent 3-7 hours sitting each day at work (34.2%) while 56.7% of the respondents reported that they left their desk about 2-3 times during working period. This study corroborates (Inyang & Okey-Orji, 2015). The present study showed that workers spent 15-35 hours sitting at work per week, 64% of respondents from previous study showed greater risk of cardiovascular impairment, while the present study showed significant association between the number of hours spent at work and the thirteen (13) listed health challenges. 30 minutes sitting at a time is said to be detrimental to health. Stress in this study recorded highest among the common health challenges 63.0%. It agreed with the study of Hornstein, & DeGurre, (2006) on Canadian work force who claimed that work is a major stressor in their lives that it leads to other diseases since they do not have control over what they do in a bureaucratic organization.

Chi-square test on position on the job and health challenges. Asthma 34.8% ( $P < .001$ ) for junior staff and 65.2% for senior staff  $P < 0.05$ . High ranking positions isolate workers from the rest while the junior workers move about easily and interact with both colleagues. High job demands or unrealistic deadlines and low decision control have predicted heart disease in white collar jobs (Kupar & Marmot 2003; Marmot, 2004).

There was no significant association between gender and health challenges except diabetes which was more among males 62%  $P < 0.026$ . Yin (2007) identified some health disparities between men and women. Men are more likely to suffer from diabetes.

## **Conclusion**

Sedentary work pattern is detrimental to health as all the health challenges under investigation were positive with stress being the most common. Civil servants sit for 3-7 hours a day at work and 15-35 hours a week. The sitting pattern is organizational culture, work load, increasing use of technology and electronics. Relationship between position on the job and health challenges asthma and epilepsy were recorded more with senior staff. Relationship between gender and health challenges, diabetes was more in men.

## **Recommendations**

1. The Rivers State Government should make adjustment in the organizational culture to accommodate compulsory break period for everyone to work out.
2. Recreational centre should be established within the secretariat and workers made to form sports teams.
3. A day should be set aside each week for recreational activities within the complex.
4. Workers to climb the stair case more than using the elevators.
5. Workers should develop individual coping strategies to curtail sitting pattern.



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## **Social Welfare Services: Appraisal of Traditional and Formal Methods in Ataba Community in Andoni Local Government Area of Rivers State, Nigeria**

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### **Abstract**

Social welfare services in Nigeria are undoubtedly among the worst in the world especially in the rural areas. While the urban dwellers are complaining of inadequacy of facilities and services the rural dwellers have the problem of total lack or poorly equipped facilities such as school, hospitals, clinics, lack of access roads, poor transportation system, problem of juvenile delinquency, drug abuse, militancy, marital instability etc. And so it was necessary to do a proper empirical appraisal of the traditional and modern methods of welfare services in the rural community. Ataba with its peculiar terrain of being an Island that has faced three intra-communal clashes was chosen for the study. The community is made of up 40 villages out of which 10 villages were randomly selected. The villages are, Ayama, Iyoba, Agbakoroma, Emenakini, Otuokoroma, Ibotmgbe, Oginyaja, Isita, Okuka, Ibotokama, Otungalage and Obiama. Due to the rural nature of the community oral interview and focus group discussion was used as instrument for data collection. 30 respondents were chosen purposively from the chiefs (10) Age grades (5) women groups (5) youths (5) females and (5) males. Result of the findings showed that 95.5% of respondents reported that the institution of the family, age grades, traditional rulers, social clubs and religious organizations are responsible for the provision of social welfare services in the community. 75.2% denied the presence of government in the area while 24.8% identified, 1 secondary school, 2 primary schools, one abandoned health center, the NDDC ongoing road project and dredging of the water front to prevent erosion as the only presence of government in the area. Coping strategies used during intra-communal clashes include running to nearby villages, family members in urban towns and settling the dispute themselves family by family while the case was in court until 2018 when it was settled. Government should provide police presence in the community without delay, rehabilitation of the existing facilities and adequate staffing, Provision of family welfare services to handle marital issues, delinquency especially with increasing cases of cultism are recommended.

**Keywords:** Appraisal, social welfare services, traditional, formal methods.

### **Introduction**

It is a common knowledge that welfare is usually interpreted to mean different thing by different people. While some people understand it to be the total wellbeing of the individuals, community or society in respect to their health, education, transportation, housing, water supply, sanitation, food security etc, others see welfare as any activity that promotes the wellbeing of the people especially those with special needs. Accepting these facts either way it is obvious that man is in need of these basic resources for survival and ultimate functions. The ability of humans to adapt to their natural environment is the most important influence in the modification of the physical environment and creation of new environmental conditions to which he has to live. Some of these processes alter the physical environment and can also cause some problems to man Stinson (2000) which need

solutions.

Alcock (2003) in Haralambos & Holborn (2008) identified some major sectors that carry out welfare services in contemporary period to include, the informal, voluntary, private, and the state. The informal sector involves the family, neighbours, and friends. Parents educate their children by teaching them their values, norms and tradition of their people (socialization). Neighbours and friends help out when they identify any need such as assisting a homeless person with accommodation. Though the sector is not organized and regulated but it is very important in the provision of welfare services especially in Nigeria. Voluntary sector is made of charitable organizations that target some social problems such as help for the aged, orphans, widows etc. This sector attracts donations from individuals and the government. Welfare services from private sectors are usually not free and in Nigeria they are the most expensive this include schools, hospitals, transportation etc. Lastly it is the state that is supposed to provide welfare services to the people. Nigeria being an industrializing nation can be said to be a welfare state Giddens (2006) in Haralambos (2008) op.cit by this it means that the state plays an important role in the provision of welfare services. The sector is to offer services and benefits that meet basic needs such as healthcare, education, housing, income and managing risks faced by people over their lifetime, sickness, disability, job loss, disasters and old age. How well is the system effective especially in the rural communities in Nigeria? It is observed that in Nigeria many individuals have different concept and perception when it comes to issues of morality, social obligations as they normally have a way of handling these issues their own way. According to Ida (2014) the concept of welfare involves an arrangement where people can obtain food, shelter, care, medical treatment, education, coverage in case of loss of job, unemployment, security but observed that citizens no longer trust the state for these functions especially rural dwellers that are faced with increased poverty and insecurity. Even in England where the poor law originated in 1601, there was a dominant view among the governing class that the state involvement in dealing with social issues and problems should be kept to a minimum Hill (2003) in Haralambos (2008) op.cit.

Before the advancement of social welfare services and structures by the government, people have been living in their different societies and meeting up with some basic needs through self-help. Irele (2011) explained that social welfare services in Nigeria evolved through traditional methods which include the family- for socialization of members, age grades- for provision of link road / bridges between communities, cleaning of streams as source of drinking water, digging and cleaning of well, sanitation of the community, discipline of ailing member, support of members in times of problem, council of elders and traditional rulers for dispute settlement and maintenance of peace, sharing of Land etc. The missionaries came with some welfare services such as hospitals, schools, their gospel messages led to the abolition of some cruel practices in Nigeria like killing of twins etc. The colonial administration also came with relative infrastructure in this area. From the narrative of the evolution of social welfare services in Nigeria, formal welfare service has come to stay but how real is it in the urban and rural areas.

It has been observed that issues of welfare have been tied to campaign slogans in that each incoming government will make promises which will diminish or get lost at the end of that administration. For example, in Rivers State Nigeria the administration of Dr Peter Odili (may, 1999- 29<sup>th</sup>, may, 2007) he made provision for free medical services for age 0- 6years and 60years and above for Rivers state indigenes. There was also free caesarean section for all pregnant women. Rt. Hon Rotimi, Chibuike Amaechi took over from (2007- 2015) and abandoned the previous programme came up with free medical services for all residents of the state, free primary –secondary education, scholarship to Rivers State indigenes to study abroad. Beneficiaries were later abandoned by the same administration and the schools were not given impress to run the free education programme.



The administration of Chief, Barr, Ezenwo Wike is very much interested in building infrastructure such as roads, recreational facilities, schools, hospitals and has abandoned the programmes of his predecessor. The administration of president Muhammadu Buhari came up with welfare programmes which include, collaboration of the federal government with states to institute a well-structured social welfare intervention programmes such as school feeding programmes, cash transfer of (#5000) five thousand Naira to the most vulnerable and post-national youth service corps among others. Others include, employment of 500,000 teachers under the teach Nigeria segment, 300,000-500,000 youths for skill acquisition and vocational training, N-power programme for unemployed graduates Gabriel (2017). These laudable programmes deserve some accolades but the implementation has always been a major problem with this type of programmes in Nigeria over the years. Considering the population of over 180,000 million the estimated population of beneficiaries are very minute, that might also be one of the reasons why government intervention plans are not appreciated. The problem of embezzlement and nepotism may not be ruled out as there is no basic specification on how to get those that are eligible for the services.

It is a common knowledge that there is no society without people living with disability both physically and mentally, the basic needs of this group of persons are usually not met by most of the federal government policies. They cannot be neglected or ignored as they are just like any other citizen with equal right to access education, transportation, health services etc., these services should be designed in such a way that it will meet their specific needs so that they will be able to contribute their little quota to the development of the nation. For some states the story is different as the state government has taken bold step to remedy their plight, for example in Akwa Ibom state the ministry of women affairs and social welfare (MWASW) has rehabilitation centres for shoemaking for the handicapped, Itu leprosy clinic for patients with leprosy, arts and craft training centre, St. Joseph's remedial training centre, St. Louis centre, divine children's centre Uyo, which was established by Mrs Ekaette Godswill Akpabio, former first lady of Akwa Ibom state for children abandoned and labelled as wizards by their parents or guardians premium times Nigeria (2011).

The 1976 local government reform was to facilitate development at the grass root. Over the years' evidence has shown their inability to effectively achieve the goals and objectives of this reform Abonyi (2012) in Nwobia (2015). These functions include building of markets, bridges, culverts, internal roads, community health, education and sanitation. The rural dwellers have no means of knowing the financial status of their council, the normal response to not implementing the basic social welfare services include, inadequate fund from the federal government, state government interfering with local government fund. The 1999 constitution make the local government in Nigeria a residual matter for the state government Olalekan (2016) and so their interference is not out of place but the major interest should be on how to make life meaningful to the rural populace.

### **Statement of the Problem**

Welfare is human right which is supposed to be the responsibility of the government to its populace, it is necessary to subject its effectiveness to empirical analysis using a rural community, since most rural communities face the problems of negligence by most administrations in Nigeria in terms of health services, education, access roads, sanitation, employment etc. Despite the obvious lack of formal social welfare structures in the rural communities the people have adapted to their environment and have various strategies which they use in meeting most of their basic needs, it is absolutely necessary to critically examine these methods used in providing welfare services.



Yusuf (2002) in Eric (2018) identified some of the major problems of human race that leads to communal clashes as the inability to establish who and who belong to a particular society and who is not a member. This defines the boundaries of the community and its political activities, which has to keep on changing and expanding to accommodate, and incorporate others who do not have the same ancestry but moved due to other factors. He pointed out that communal clashes became common during the 1980's till date. Few examples include, conflict between Ogoni and Okrika in Rivers state, 1994-1996, between Sangama Soku in Rivers State and Oluasiri in Bayelsa state, 1993-2001, Andoni and Ogoni, 1993-1994, and presently the rampaging Fulani herds men in plateau state and other parts of Nigeria. The government seems to be clueless on how to resolve these conflicts permanently as shown by their actions and pronouncements.

Akpenpuun (2013) assert that communal conflict usually results in massive loss of lives, destruction of properties, hinders man power development, political stability and socio-economic development.

Ataba the community studied has some peculiar problems such as being an Island, that is secluded from other Andoni towns and villages, had suffered three intra- communal clashes, the first, August, 1995, second June, 2003, and lastly August, 2004, due to chieftaincy wrangling among the royal family which engulfed the whole community. Lives were lost, properties destroyed, people were disabled and made homeless, their health was jeopardized and economic activities halted. It is necessary to investigate how they survived during and after the crises and still remain as an entity called Ataba.

### **Objectives of the Study**

The main objective was to investigate formal and traditional methods of welfare services in Ataba community. Others include to examine:

1. The formal welfare services structure in Ataba community.
2. The coping strategies they adopted during and after the crises in Ataba community
3. The traditional methods of welfare services in Ataba community

### **Research Questions**

1. What are the formal social welfare structures available in Ataba community?
2. What was the coping strategies adopted during and after the crises?
3. What are the traditional methods of social welfare services in Ataba community?

### **Significance of the Study**

Practically the study was used to assess formal and traditional methods of welfare services in the rural community of Ataba. Since the government alone cannot do everything it is necessary to enlighten the people on how they can help themselves especially in time of crises. It is to create awareness on the importance of social welfare services in the development of the people.

Theoretically, the famous family system theory postulated by Dr Murray Bowen was used to direct the study. It is a theory of human behaviour which sees the family as an emotional unit and so whatever affects a member affects all. This emotional interdependence enables them to render assistance when the need arises.

### **Methodology**

The study area was Ataba community in Andoni local government of Rivers state. The community is an Island made up of 40 villages with a population of 45,000 NPC (2006) census. The research design is a qualitative study. 10 villages were randomly selected for the study and being a rural community oral interview was used for data collection. 10 Chiefs being the leaders of the villages were selected for the focus group discussion which was guided by 10 structured questions and was moderated by the researcher and a research assistant who was the time keep and recorder. They are

the custodians of the people culture and traditions that was the primary reason for choosing them and also in order to gain access to their people and acceptance to do the study. Out of the 20 age grades in the community 5 leaders of the groups were purposively selected for the oral interview all male and five women leaders from the 10 women groups for a session of oral interview. 10 youths, (5) male and five female were also interviewed for the second session making a total of 20 people for oral interview. Purposive sampling technique was used to select respondents with adequate knowledge about traditional and formal welfare services. Primary data was obtained by visitation of the comprehensive health centre overgrown with grasses, the schools, the ongoing road project and the reclamation work in the area. The FGD and interview session did not exceed 1 hour at each session.

### **Results and Discussions**

It is very difficult for members of the public in Nigeria to know about revenue allocation from the different tiers of government for social welfare services and how the funds are used. The most difficult aspect is for people to know the responsibility of the local government councils in terms of provision of social welfare services. Response to question no1 which says 'How do people get help when in need or crises?' 95.5% of the respondents said that it is their tradition that family, age grades, social clubs and religious organizations help their members. One of the chiefs elaborated by saying that the affected member will inform the family chief who will inform the compound chief and the extended family meeting will be called where levies and contribution will be made, various committee will be set up to handle the problem or celebration, with these arrangements the direct person or family will not feel the impact of the problem much.

Answers to research question 2 which says: "What are the formal social welfare services in Ataba?" It took much explanation for the people to understand, 75.2% said government is not doing anything for them, while the remaining 24.8% identified the only government presence in their community as, one comprehensive secondary school, two primary schools, one comprehensive health center that is not properly equipped and staffed, ongoing road project by NDDC and sand filling project to protect the water fronts from erosion. Question 3 on coping strategies during their intra- communal crises? Initially they ran to neighbouring towns and villages of Andoni, Okrika and Ogoni while some located their family members in urban cities. But later they started making peace among themselves and relocated back to the community while the case was in court, they denied any assistance from government.

Question on family welfare services, majority of the respondent said that issues related to marital instability, juvenile delinquency are handled by the chiefs of both families, while the leader among the chiefs responded that "it is our duty to settle marital problems and to call our ailing children to order" Question on water supply and electricity, it was a chorus answer that they get water from well and privately owned bore holes. The local government council provide diesel for the generator in the community sometimes during festive periods such as Christmas and Easter.

The question on security was met with general laughter by the chiefs as they asked if there is security anywhere in the country? There is no police station in the community except for naval officers at the water front who are guiding the ongoing road project from militants and other criminals. Level of awareness about formal welfare services was not much as they attribute most of the development in their community to self-help projects. One of the chiefs said "if we had waited for government to help us especially during our crises, there would not have been a place called Ataba again"

The failure of government in Nigeria as it concerns the provision of welfare services is no longer strange but people perception is that with rural – urban migration and high standard of education the traditional methods are absolute or are non-existence. People in the urban cities are

complaining of inadequate social welfare services while the rural dwellers are complaining of non-existence.

Though this study was carried out in Ataba with its peculiar geographical terrain as an Island that has suffered several intra- communal crises and external conflict their experiences might not be different from other rural communities in Nigeria. The findings of this study corroborated with the study of Ekpe 1983 which identified the African family as the basic structure that carry out functions of social system even before the colonial administration, which include organization of behaviour, economy, preservation of culture, realization of political goals, and provision of social welfare services. Nonso Obikili, a Nigerian economist with the economic research centre, southern African programme in South Africa recently considered the social welfare programme of the Buhari administration as a drop of rain in the ocean of poverty olusola (2017). Gabriel's (2017) report also corroborated the findings by admitting that Bihari's social welfare programmes so far are not good.

### **Conclusion and Recommendation**

Evidence from the study has shown that formal welfare services are lacking in most rural communities and especially Ataba the community studied. The fact remains that the family, age grades, social clubs, and religious bodies are the main providers of welfare services to the people in this 21<sup>st</sup>, century. The few available government facilities are poorly equipped and staffed with some of the buildings dilapidated. UNESCO report (2005) has it that every child must have access to education by 2015 but this cannot be achieved with the number of educational facilities there. The people are depending mostly on self-medication and African traditional medicine as the closet hospital to them is at Bori in Khana local government area.

The government should strengthen the health system, educational system, make provision for family welfare services to council people before marriage, settle marital problems including issues relating to juvenile delinquencies which are in the increase in the rural areas with the emergence of cultism and militancy. To speedily complete the ongoing road projects so that the community will be linked with other communities by land for easy communication and transportation.

Insecurity in Nigeria is a major concern even with the presence of police and other military agencies due to terrorism, militancy, high unemployment rate leading to increase in crime rate, influx of illegal arms and ammunitions by politicians, drug abuse and addiction and yet there is no police presence at Ataba this is unacceptable, there is an urgent need for a police post and presence especially as another governorship election approaches.

Though the three tiers of government are faced with many challenges especially finance, but with good leadership, transparency, and effective use of available resources during this democratic dispensation, there could be major improvement in the provision of social welfare services to the rural communities.

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## **The Knowledge and Attitude of Public Health Workers Towards the Management of HIV/AIDS Patients**

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### **Abstract**

The study examined knowledge and attitude of public health workers towards the management of HIV/AIDS patients at General Hospital Isiokpo, Rivers State. The population for the study was 100 male and female public health workers at the General Hospital Isiokpo in Ikwerre Local Government Area, Rivers State. A stratified sample technique was adopted for the group involving random sampling technique to fairly select 50 respondents. Structured Questionnaire was developed and adopted as an instrument for data collection. Three research questions guided the study. They were analyzed with descriptive percentages. The study shows that level of knowledge of public health workers is very pertinent for the management of HIV/AIDS patients in General Hospital Isiokpo, Ikwerre Local Government Area, Rivers state. The study also shows that the poor attitude of public health workers in General Hospital, Isiokpo negatively influence the management of the HIV/AIDS Patients in General Hospital Isiokpo negatively influence the management of the HIV/AIDS patients in General Hospital Isiokpo, Ikwerre Local Government Area, Rivers State. Based on the findings, the researchers recommend among others that there should be periodic off-the-training sessions for the rekindling of the public health workers residual knowledge. Also, public health workers should rebrand their attitude and having empathy for the HIV/AIDS patients.

**Keywords:** knowledge, attitude, public health workers, management, hospital.

### **Introduction**

Acquired Immune Deficiency Syndrome (AIDS) is a disease of the immune system caused by the Human Immune Deficiency Virus (HIV). The first case of the disease was reported in 1981 among homosexuals in America Centre of Disease Control (CDC, 2017). HIV/AIDS is a pandemic reflecting all inhabited countries and continent since the early eighties (Mann, 1989). Anti-Virus Emergency Response Team (AVERT, 2009) estimated that there are over 33.3 million people worldwide living with HIV/AIDS with 2.6 million new HIV infections per year and 1.8 million annual deaths due to AIDS. However, United Nations Programme on HIV/AIDS (UNAIDS, 2018) fact sheet revealed that 36.9 million people globally were people living with HIV/AIDS (PLWHA) in 2017. According to World Health Organization (WHO, 2017), global health observatory (GHO) data showed that about 35 people have died of HIV/AIDS.

In 1982, name of AIDS was given after considering the clinical syndrome and the disease was laced among the blood and blood product recipients. But in Nigeria, the disease was first diagnosed in two AIDS cases in 1985 and reported in 1986 in Lagos, one of which was a young female sex worker aged 13 years from one of the West African Countries (Nasidi & Harry, 2006). Despite the use of the mass literacy medium such as: radio jungles, television programmes, posters, fliers on the dangers of HIV/AIDS, the prevalence rate of the disease in Nigeria is still increasing as vividly shown by UNAIDS, (2016) through the following data, 220,000 (150,000-310,000) new HIV infections and 160,000 (110,000 – 230,000) AIDS related death while there are 3,200,000 – 4,300,000) People Living With HIV/AIDS.

Health workers are culprits in the discrimination against PLWHA and also not keeping to the principle of confidentiality with regards to voluntary counselling and testing session and results being transmitted to unauthorised third party. In addition to that, they were callously treated as complained by the People Living with HIV/AIDS (PLWHA) Khadija, (2007). Also a study by Savina, Masamine, Kimiyo, Junko, Keiko, Jo and Vanphanom, (2017) x-rayed the stigmatizing attitudes towards PLWHA by doctors and nurses in Vientiane, Lao PDR (Lao People's Democratic Republic) in Southeast Asia.

The management of people living with the virus, HIV/AIDS includes addressing not only the physical, but also the emotional, psychosocial and spiritual needs of the individual. Many patients living with the virus have a kind of mystical reverence toward HIV/AIDS, which is the result of ignorance, fear of the unknown and fear of something they know can hurt them. Although, they do not really know how, but believed that they are in danger. To this, they lose their body image, countenance and relationship and needed someone being there to provide the need support that can alloy these fear. In addition to the above, the current study builds on previous HIV/AIDS research among healthcare workers in Nigeria with focus on two southern states of Cross-Rivers and Akwa-Ibom to determine knowledge, attitude, beliefs and sources of HIV/AIDS information (Umeh, Essien, Ezedinachi & Ross, 2008).

Also, builds on previous HIV/AIDS, study with physicians midwives, nurses, medical students, and nursing auxiliaries in Madagascar, and noted gaps in the knowledge of the respondents and physicians, paramedical staff differed in their better known knowledge about HIV transmissibility Hentagen, Jaurreguiberry, Ramiliarisoa, Andrianatoandro & Belec, (2002). They also noted negative attitudes towards HIV-positive patients across the respondents.

In the same vein, Rekah, and Zadeh, (2011), Pickles, King and Belan, (2009); Visser, Makin, Vandormael, Sikkema, and Forsyth, (2009) in their study identified that, majority of respondents had good knowledge of HIV/AIDs, which is similar to the findings of previous studies done among health care workers in Nigeria. However, this contradicts the findings of a South African Study which found poor knowledge of HIV/AIDs among nurses (Juan; Siebers, Chang, & Chao, 2004). There were other studies carried out to determine staff caring for PLWHA need to acquire new attitudes, knowledge and skill as they confront the multi disciplinary problems of AIDs care and prevention (Adeyi, Kanki, Odutolu & Idoko, 2006). In another study also, stigma was seen spreading to the whole person, debases the person, leading to discrimination and utter rejection, which, ultimately, will result in reduced opportunities (Barnett & Blaikie, 1992). In addition to their view, attitude is gained through experience and contact with the world around us. This actually prompted the researchers' interest to explore the knowledge and attitude of health workers in the management of patients living with HIV/AIDS in General Hospital Isiokpo Ikwerre Local Government Area, Rivers State.

In view of the rapid increase in mortality rate of PLWHA (people living with HIV/AIDS). It is believed that, one of the major problems PLWHA are facing is lack of adequate care by public health workers. The knowledge and attitude of public health workers have toward them and rejection by their family and the general public. The experiences of discrimination make these patients very sad, depressed even to the point of considering suicide. Therefore, from the foregoing, the focus of this work is knowledge and attitude of health workers towards the management of patients living with the virus, HIV/AIDS in General Hospital Isiokpo. The study aims to achieve the following objectives:

- To determine the knowledge of public health workers towards the management of HIV/AIDS patients at General Hospital Isiokpo.
- To determine the attitude of public health workers towards the management of HIV/AIDS patients at General Hospital isiokpo.

- To determine the influence of knowledge on the attitude of public health workers towards the management of HIV/AIDS patients at General Hospital Isiokpo.

### Research Questions

- What is the level of knowledge of public health workers towards the management of HIV/AIDS patients at General Hospital Isiokpo?
- What is the level of attitude of public health workers towards the management of HIV/AIDS patients at General Hospital Isiokpo?
- Does knowledge influence the attitude of public health workers towards the management of HIV/AIDS patients at General Hospital Isiokpo?

### Study Area

The study area was General Hospital Isiokpo in Ikwerre Local Government Area (KELGA) of Rivers State. The hospital was chosen because of the appropriate and adequate samples with relevant characteristics for the study. General Hospital Isiokpo was established in 1976 in Alimini Community Isiokpo in KELGA, Rivers State. The Hospital was later upgraded to a zonal status in 2011 with seven (7) wards and seven (7) departments in the Hospital which also offer primary health services (SMOH, 2017). However, the study population consists of 100 male and female health workers at General Hospital Isiokpo. They include: doctors, nurses in male and female medical wards, obstetrics and gynaecology ward general outpatient department and children medical wards. For the purpose of this study a sample size of 50 were selected out of the 100 workers posted through a stratified sampling technique.

### Research Design

The study was descriptive survey in design; which aims at identifying and reporting situation as they exist. It utilized both quantitative and qualitative methods for data collection and analysis. A 12-item structured questionnaire validated by test-retest reliability was used to measure knowledge and attitude of health workers in the management of patients living with the HIV/AIDS virus at General Hospital Isiokpo, KELGA of Rivers State, out of which only 50 were retrieved.

Informed consent was obtained from respondents and the wishes of those who declined participation were fully respected. Although the management of the hospital declined issuance of written approval which they insisted should originate from the board, however, provided Oral approval upon which, useful data were obtained. Descriptive statistics was used to analysis data from instrument.

### Results

Result from this study revealed that 40 (75%) of the respondents are females while 10(25%) were males. Majority of the participants were within the age range of 18-22 years 25(50%) while 23-27 years were 15(30%) and 28 – 32 years were 10 (20%) majority of the participants (70%) were singles while those who were married made up (30%). Christianity was dormant religion with 94% and Islam (6%).

**Research Question 1:** What is the level of knowledge of public health workers towards the management of HIV/AIDS patients?

**Table 1:**

Options	Yes	No	Total
Does cognitive ability of public health workers improve care for People leaving with HIV/AIDs	45 (90%)	5 (10%)	50
Practical experience of p ublic health workers reduces amount spent by People leaving with HIV/AIDs on care?	42 (84%)	8 (16%)	50
Has the training and re -training of public workers boost the care of People leaving with HIV/AIDs	40 ((80%)	10 (20%)	50
<b>Grand total</b>	<b>127</b>	<b>23</b>	<b>150</b>



Table 1 showed that 45(90%) of respondents agreed that cognitive ability of public health workers improve care for People leaving with HIV/AIDs, while 5(10%) said “NO”. In item ii, 42(84%) of respondents took “YES” that practical experience of Public health workers reduces amount spent by People leaving with HIV/AIDs on care. Whereas, “NO” as a response was 8(16%). For item iii, 40(80%) of respondents affirmed that training and retraining of public health workers boost the care of People leaving with HIV/AIDs, while 10(20%) said “NO” to that assertion.

**Research Question 2:** What is the level of attitude of public health workers towards the management of HIV/AIDs patients at General Hospital Isiokpo?

**Table 2:**

SN	OPTIONS	YES	NO	TOTAL
1.	Does poor attitude of public health workers hinder the management of HIV/AIDs patients care?	38 (76%)	12(24%)	50
ii.	Is it really true that sincerity of public health workers increase the care rate of HIV/AIDs patients?	42 (84%)	8(16%)	50
iii.	Does stigma by public health workers reduces the care received by HIV/AIDs patients?	45(90%)	5(10%)	50
<b>Grand total</b>		<b>125</b>	<b>25</b>	<b>150</b>

Table 2 showed that 38(76%) said Yes to item I, 12(24%) No. Most of the respondents 42(84%) said Yes and 8(16%) was NO to item ii. Majority of the subjects 45(90%) said YES, and 5(10%) said NO to item iii.

**Research 3:** Does knowledge influence the attitude of public health workers towards the management of HIV/AIDS patient at General Hospital Isiokpo?

**Table 3:**

SN	OPTIONS	YES	NO	TOTAL
i.	Public health workers knowledge has nothing to do with their attitude towards HIV/AIDs patients care	10(20%)	40(80%)	50
ii.	Does half-baked experience portray the public health workers in bad height towards HIV/AIDs patient care?	40(80%)	10(20%)	50
iii.	Are you sure that poor attitude behaviour results from lack of proper knowledge towards the management of HIV/AIDs patient	40(80%)	10(20%)	50
<b>Grand total</b>		<b>90</b>	<b>60</b>	<b>150</b>



From table 3 above, 10(20%) of respondents assets YES and 40 (80%) said NO to item i. most of the respondents 40(80%) said YES and 10(20%) said NO to item ii. However 40(80%) said Yes and 10(20%) said NO to item iii.

### Discussion of Findings

The results from table 1 shows that  $\pm 43.33$  (84.67%) of respondents (public health workers agreed that level of knowledge is pertinent in the care of People Living with HIV/AIDs. However not neglecting the views of  $\pm 7.67$  (15.33%) of public health workers who disagree to the above position. This study now corroborates with a previous study by Hentagen et al (2002) where physicians, midwives, nurses, medical students and nursing auxiliary in Madagascar and noted gaps in the knowledge of the respondents. In the same vein, Rekah et.al (2011), (Pickles et al (2009); and Visser et al (2009) in their study identified that, majority of respondents had good knowledge of HIV/AIDs, which is similar to the findings of previous studies done among health care workers in Nigeria. However, this contradicts the findings of a South African Study which found poor knowledge of HIV/AIDs among nurses (Juan et al 2004).

Results from table 2 shows that  $\pm 41.67$  (83.33%) of respondents (public health workers) affirmed that, level of attitude of public health workers towards the management of HIV/AIDs patients in General Hospital Isiokpo. On the contrary,  $\pm 8.33$  (6.67%) of the respondents disagreed that level of attitude of public health workers hinder the management of HIV/AIDS patients. This was consistent with an earlier study by Hentagen et al (2002b) conducted among health workers in Madagascar and noted that negative attitudes towards HIV-positive patients was across the respondents.

Lastly, result from table 3 shows that  $\pm 30$ (60%) of respondents (public health workers) affirmed that knowledge influence their attitude towards management of HIV/AIDs patients in Isiokpo General Hospital on the other hand,  $\pm 20$ (40%) were non-affirmative, to the above position. This study is consistent with Savina et al (2017) in which stigmatizing attitudes towards people living with HIV/AIDs by doctors and nurses in Vientiane, Lao PDR (Lao People's Democratic Republic) in Southeast, Asia.

### Conclusion

All the public health workers in this study are trained, qualified and licensed by their various councils; which in return expect them, to exhibit the highest level of professionalism toward their management of people living with the HIV/AIDs (PLWHA) virus in the hospital or community. They management includes not only the physical, but also emotional, psychological, psychosocial and spiritual needs of the individual. This is why the investigation of the knowledge and attitude of public health workers towards the management of HIV/AIDs patients at General Hospital Isiokpo, Rivers State became pertinent.

Based on the findings, the study recommends that there should be periodic off the job training sessions for the rekindling of their residual knowledge. Public health workers should rebrand their attitude and seeing the HIV/AIDs patients as themselves and knowing that anyone can be victim Public health workers must avoid any form of stigmatization of HIV/AIDs patients.

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## **Causes of Late Marriage Among Highly Educated Women in Ikwerre Local Government Area, Rivers State**

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### **Abstract**

This research adopted a cross-sectional survey design to identify the causes of late marriage among highly educated women in Ikwerre Local Government Area of Rivers State. The sample size for this study was 120 respondents selected among Igwuruta women, using simple random sampling technique. The instrument for data collection was a structured questionnaire. The findings of the study showed that economic status, attitudinal disposition, educational background and family background were significant determinants of late marriage among educated women in the area. The study recommended that marriage counsellors should counsel those with attitudinal disposition on adjustment of their life style to the accepted social norms and morals. Proper health education on the social implication and complication of late marriage and the need to marry at the right age should be conducted across the area. Highly educated women with higher economic status should not allow their financial position to influence them, but see it as an added advantage to complement their would-be spouses.

**Keywords:** causes, late marriage, educated women.

### **Introduction**

The existence of marriage could be dated far back to the Garden of Eden when God instituted it after forming man. He said, "It is not good for the man to be alone; I will make him a helper, a companion". The Lord caused a deep sleep to fall upon Adam; and while he slept, He took one of his ribs to make a woman and He brought her to the man as recorded in the Bible. Therefore, the man forms a social union with the woman, to satisfy the need for the formalization of family structure so as to create key economic and social institution for distributing resources and production of consumable goods as well as bearing of children (Marlowe, 2003). Marriage is one of the essential social institutions in the society which creates strong bond and ties among families. Marriage is a bond between a woman and a man who start living together, having sexual, social, cultural intimacy and share livelihood to live a life (Saleem, Abi & Muhammad, 2015).

Certainly, there have been different perspectives of marriage among several groups, ethnics, and mostly, religions institutions. Buddhist marriage is a simple ceremony, and it is purely a social contract. According to its law, as soon as a girl attains the age of 20 years she has the privilege of an independent choice of husband. The Buddhists have no inhibitions with regard to societal strata. Divorce by mutual consent is permissible. The Buddhists point of view about marriage, considers it as circular affair and as such, it is not considered a sacrament. They advise their members to follow the civil laws regarding marriage laid out by their respective governments (Shodhganga, 2013).

To the Muslims, marriage is a civil contract and by the Islamic law, has no need for elaborate ceremonies or religious rites as prescribed by most cultures. The only essential requirement is that a contract of marriage must come into existence. Muslim marriage is potentially a polygamous marriage as the husband is allowed to have up to four wives, as polygamy is not prohibited by the Islamic law (Shodhganga, 2013).

Whereas in Christianity, marriage is one of the ethnical perspectives of life; it grows out of love between the man (husband) and the woman (wife), and it is maintained by love and



faithfulness. Only love will make it possible for a couple to be compassionate, caring, committed, self-denying, self-sacrificing and forgiving. It is therefore difficult to find the practice of arranged marriages for whatever cause on biblical messages (Vorster, 2008). Christian marriages are just sacrosanct and binding. Marriage vows conducted in the church by a priest are equally as serious and legally contractual. The priest in a church is authorized, to legalize the marriage but all marriages must be registered (Shodhganga, 2013). As expressed by Baishali (2012), the pattern of marriage is undergoing some discernible changes throughout the world. It has played a major role in determining the growth rate of population through its relationship to marital fertility.

In Nigerian society where reproduction, is primarily within the confinement of marriage, the changes in respect to marriage age and the consequential reduction in proportion of woman remaining in married state are directly related to fertility and these determine the future trend of demographic transition. Marriage, is a universal social institution. In the marriage institution, the strong bonds and intimacy are strengthened by the birth of children which unfortunately decline due to infertility in some cases.

One of the root causes of infertility has been attributed to late marriage practice among educated women in the society. Vorster (2008) expressed that the purpose of marriage is primarily mutual help and guidance, physical and spiritual fulfilment and the prevention of immorality. According to Kostenberger (2004), procreation was also considered as an integral part of God's plan for marriage. Another reason for marriage is because it is viewed as a sacred duty which every normal person must perform and failure to do so implies obstructing the flow of life through individual and hence, the diminishing of mankind upon the earth. Anything that deliberately goes towards the destruction or obstruction of human life is regarded as wicked and evil (Oderinde, 2013).

Late marriage is one of the prevailing universal trends where people decide to get marriage at later ages. As defined by Oderinde (2013), late marriage is a situation when a person who has reached the state of maturity in every facet of life (mentally, spiritually, financially and physically) is not married, probably as a result of unavailability of spouse or some other factors.

Delayed marriage is an undeniable trend in the developed country, like United States as well as developing nation like Nigeria. Between the early 1990s and the 20<sup>th</sup> century, average marriage age had risen to its highest level for women. From the mid 1980, it has become increasingly evident, that throughout several East and South East Asian countries, the age of marriage has increased almost up to 25 years for women at their first marriage, (Leece as cited in Hinaet *et al*, 2015). Hinaet *et al* (2015) opined that educated women are now more probable to be materialistic and marriages are now becoming optional in this era, where everybody is struggling to get more riches, to have better living standards; as well as afraid of losing their social and economic freedom which understandably is part of the reason for getting married. Achievement of high social status has been identified to be one of the major factors responsible for late marriage.

It has been viewed that the reason why most individuals especially, women decide to delayed their marriages according to Jenson and Thornto (2013), is for them to complete their education, build labour force skills, and develop career interest that compete with child bearing within marriage. Also, as expressed by Jejeebhoy (cited in Lawrence, 2005), 51 studies (DHS) were analysed, and it was found out that education was the single factor most strongly associated to the decision of delayed marriages. Other reasons why people decided to delay marriages were woman liberation movement, (campaign of women for the need to get involved in politics, decision-making and leadership at all levels both in the home, society, and the church), and the problem of choosing "the right person to marry (Oderinde, 2013). Hence, the study was aimed at investigating the implication of late marriage among highly educated women in Igwuruta community in Ikwerre Local Government of Rivers State.



### **Statement of the Problem**

There has been declined in fertility rate and childbearing occurring later and more often outside marriage; marriage too, has sometimes been suspended and more often foregone. In the same view, the rate of cohabitation among individuals has risen greatly due to the delay or late marriages among highly educated women as well as the desire to get married at all cost, due to ageing.

According to available data, “the percentage of never married families has increased substantially over time in respect of all three selected age groups. However, whereas 60 percent of women have remained unmarried under the age group of 15-19 between 1992 – 1993. The figure rose up to as high as 74percent by 2005/2006. The corresponding for the age group 20 – 24 had also increased from 17 percent to 24 percent over the same period. However, an increment in the proportion of never married female with regard to all age groups is found more between NFHS 1(1992-93) and NFHS 2 (1998-99) as compared to that between NFHS 2(1998-99) and NFHS 2 (2005-2006), (Baishali, 2012). Based on these, the researcher decided to carry this study on the “implication of late marriage among highly educated women” in Igwuruta Community of Ikwerre Local Government Area of Rivers State.

### **Research Design**

A simple descriptive, non-experimental survey was adopted for the design of the study. According to Nwankwo (2006), a descriptive survey study is that in which the researcher collects data from a large sample drawn from a given population and describes certain features of the sample which are of interest to the research or the researcher. It seeks to find solution to problems through analysis of variables and their relationship. The design was chosen to provide guideline or a scheme in helping the researcher in her effort to generate data for the study and for the purpose of testing hypotheses or analysing research questions.

### **Population of Study**

Population has been defined as the area under the study by the researcher. It is specific aggregation of the study elements. Hence, the population of this study consisted of 2600 women both married and unmarried in Igwuruta Community of Ikwerre Local Government Area of Rivers State (National Population Census of 2006).

### **Sample and Sampling Technique**

In order to achieve reliable information for an effective and efficient analysis, simple random sampling technique was employed to sample out 120 women from the entire population and used to obtain relevant data for the study. It then means that every woman in the population had the chance of being selected in the sample. 120 questionnaires were prepared and given to the women from the community.

### **Instrument for Data Collection**

The instrument for data collection was a semi-structured questionnaire. The semi structured questionnaire was of two sections. Section A consisting of demographic data, while section B consisted of related questions to the variables under study.

### **Method of Data Collection**

Letters of introduction duly signed were sent to the head of Health Departments in the selected areas of study with the aim of securing their permission before questionnaires were administered to the respondents. The questionnaires were directly administered to the respondents and retrieved on the spot after their response.

## Results

**Table 1:** Age of respondents

Age Range	No. of respondents	Percentage (%)
21-25 years	57	57.0%
26-30 years	22	22.0%
31-35 years	12	12.0%
40 years and above	4	4.0%
<b>Total</b>	<b>100</b>	<b>100%</b>

## Method of Data Analysis

Survey statistics involving simple percentage was used to analyze the data. The total figure of each respondent showed a grand total of 100%.

**Table 2:** Marital status of Respondents

Marital Status	No. of Respondents	Percentage (%)
Single	85	85.0%
Married	15	15.0%
Separated	0	0.0%
Divorced	0	0.0%
<b>Total</b>	<b>100</b>	<b>100%</b>

Table 2 above indicates that single respondents were more in number being 85 with (85.0%), married were 15 (15.0%), while separated and divorce were both 0 (0.0%) respectively.

**Research Question 1:** To what extent does personal interest constitute a determinant of late marriage among highly educated women in Ikwerre Local Government Area?

**Table 3: Personal Interest and Late Marriage**

S/N	Items	Yes	%	No	%
1.	Do you think pursuing one's ambition can cause a delay in marriage?	31	31.0	69	69.0
2.	Can you sacrifice what you love most for marriage?	40	40.0	60	60.0
3.	Can an offer of opportunity to pursue a career cause delay in marriage?	76	76.0	24	24.0
	<b>Total</b>	<b>147</b>	<b>147.0</b>	<b>153</b>	<b>153.0</b>
	<b>Mean</b>	<b>49</b>	<b>49.0</b>	<b>51</b>	<b>51.0</b>

The Table 3 above showed that the mean response to Yes was 49 with the percentage of 49.0% while those for No were 51 with 51.0%. This means that the mean response to Yes was less than No.

**Research Question 2:** To what extent does economic status constitute a determinant of late marriage among highly educated women in Ikwerre Local Government Area?

**Table 4:** Analyses of economic status and late marriage

S/N	Items	Yes	%	No	%
4.	Do you think financial independence can reduce pressure to marry early on women?	82	82.0	18	18.0
5.	Do you want a job before marriage?	92	92.0	8	8.0
6.	Can a man's poor financial status cause delay in marriage?	93	93.0	7	7.0
	<b>Total</b>	<b>267</b>	<b>267.0</b>	<b>33</b>	<b>33.0</b>
	<b>Mean</b>	<b>89</b>	<b>89.0</b>	<b>11</b>	<b>11.0</b>

The above table 4 indicated that mean response to Yes as 89 which is 89.0%, while for No, 11 with 11.0%. This means that the mean response to Yes is higher (greater) than those of No response.

**Research Question 3:** To what extent does attitudinal disposition constitute a determinant of late marriage among highly educated women in Ikwerre Local Government of Rivers State?

**Table 5:** Analysis of educational background and late marriage

S/N	Items	Yes	%	No	%
10.	Can one's educational background in any way cause delay in marriage?	64	64.0	36	36.0
11.	Will you complete your education first before entering into marriage?	70	70.0	30	30.0
12.	If your answer to question 11 above is "No", is the marriage plan in process?	61	61.0	39	39.0
	<b>Total</b>	<b>195</b>	<b>195.0</b>	<b>105</b>	<b>105.0</b>
	<b>Mean</b>	<b>65</b>	<b>65.0</b>	<b>35</b>	<b>35.0</b>

From the Table 5 above, it was revealed that the mean response to Yes was 65.0%, while for No response, 35.0%. It therefore means that the mean response to Yes was higher than the mean response to No.

**Research Question 4:** To what extent does family background constitute a determinant of late marriage among highly educated women in Ikwerre Local Government Area.

**Table 6: Family Background and Late Marriage**

S/N	Items	Yes	%	No	%
13.	Can family background cause delay in marriage?	83	83.0	17	17.0
14.	Can some family issues cause delay in marriage?	90	90.0	10	10.0
15.	Does parental influence contribute to delay in marriage?	91	91.0	9	9.0
	<b>Total</b>	<b>264</b>	<b>264.0</b>	<b>36</b>	<b>36.0</b>
	<b>Mean</b>	<b>88</b>	<b>88.0</b>	<b>12</b>	<b>12.0</b>

In table 6, it was revealed that the mean response to Yes was 88 with 88.0%, while for No, 12 with 12%, which indicated that the mean response to yes was higher than the mean response to No

## Discussion

The result in table 3 revealed that the mean response of YES of 49 % slightly less than the mean response of NO of 51%. The result implies that the majority of the respondents have a negative view on the variable of personal interest being a contributor to late marriage. This result however, contradicts the findings of the United Nations Children's Fund (UNICEF), in Nepal, which reveals that, for above 25% of girls within the age bracket of 14-19 years, rejected the idea of marriage and said their interest was how to improve on their education rather than getting married. Another 15% of those within a higher age bracket of 20-24 years also opted for higher education to marriage.

For table 4, the mean response of Yes was 89% as against No response of 11%. This means that the majority of the respondents agree to the variable that the economic status of any individual contributes a lot to late marriage. This is in tandem with the results obtained by Sather and Kiani (2013), that in the Urban areas of Pakistan, women between 20-24 years and 25-29 years who are not married are 65.5% for the employed and 81.2% for the unemployed. Similarly, the employed unmarried men were 35.6% while those unemployed and not married were 66.7% within the ages of 25-29 years. The above, confirms that the economic status of the intending couples can effectively contribute to their timing of marriage. In a related development, Jones (2012), asserted that the perceived cost associated with marriage, such as, housing and marriage ceremony itself affects singles' attitude in marriage as economic stability is a precondition for marriage.

For table 5, the mean response for Yes was 87% as against the mean response of No of 13%. This result clearly indicates that most of the respondents affirm to the fact that attitudinal disposition, contributes to late marriage. Attitude gradually build up to form behaviour, and when good/positive attitudes gradually builds, good behaviour is produced which is generally seen as one of the commanding factors in any relationship, especially that of marriage. The above, is in the



same plane with view of Dubrin, (2005), who said that life is made up of 10% what happens to humans and 90% how we react to it. He continued that attitudinal disposition influences the behaviour of individual's successes and failures in life depend upon the attitude the individual imbibes and displays. If attitudes are positive, then human relationship will be positive, and positive human relationship is a basic necessity to a successful life including marriage. Enaibe, (2005) also agreed that negative attitude may be responsible for disinterest in getting motivated or excited about any event as depicted in their 80% response to the influence of attitude as against 20% negative response to whether or not attitudinal disposition influences life and academic success from a study carried out.

Table 6 indicated the mean response to YES as 88% and this is higher than the mean response to NO which is 12%. This simply implies that majority of the respondents accepted that the family background of the people contributes to late marriage. This is in line with the findings of the National Marriage Project of the University of Virginia for the United States (2013), which observed that, by late 2000, the percentage of unmarried women increased to 25.1% for women within the ages of 30 – 40 years, this according to the study was due to economic challenges facing families, and that it was increasing further today because of financial constraints and challenges facing the family, (family background). With the falling wages, economic melt-down around the globe, families are battling to meet up with basic needs such as home bills, shelter and domestic needs of family members.

### **Conclusion**

Based on the results of the study, factors such as economic status, attitudinal disposition, educational family background were significant determinants of late marriage among highly educated women in Ikwerre Local Government Area of Rivers State.

### **Recommendations**

In view of the above results and findings, the following recommendations were put forward by the researcher;

1. Marriage counsellors should advise highly educated women with poor attitudinal disposition on how to adjust their lifestyle to enable them live and operate within the accepted social norms and morals to avoid late marriage.
2. Parents, spiritual fathers/leaders and experienced senior health workers should educate and advise their children and the general public on the need to marry at the right age to avoid the health effect and social implications of late marriage.
3. Highly educated women, especially the female ones whose economic status is high should not allow their financial position to influence them but to see it as an added advantage to complement their would-be spouses.
4. Highly educated women should be enlightened not to use their high-level of family background as an excuse to scare away proposed husbands and delay their marriages.

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## **Operations of Commercial Motorbikes in Nigeria: Its Economic, Health and Social Implications**

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### **Abstract**

The purpose of this study was to examine the operations of commercial motorbikes in Nigeria and its implications on the health, social and economic lives of the populace. Findings revealed that although the use of motorbikes as a means of public transportation is a viable source of self-employment generation and poverty reduction, it also increased road traffic accidents and crime. Provision of safety education, provision of alternative jobs before ban on the commercial use of motorbikes and designation of less hazardous routes for bike operation was some of the suggestions provided by the study.

**Keywords:** operations, commercial, motorbikes, nigeria, implications

### **Introduction**

The use of motorcycles as a means of transportation is not strange to many countries the world over. In Nigeria, motorbikes were hitherto owned and operated by the middle class as a luxury good and means of personal transportation to their respective offices and other important places (Nwaorgu, 2011). Those intending to travel by public means made use of public trains and other long mass transit vehicles mainly provided by the government for commuters. Some of these vehicles were designated for inter-city movements while others catered for the internal movement of people and materials within big cities. These vehicles had terminals, bus stops and parks from where commuters were expected to board and drop (Odidi, 2012).

According to Olubomehin (2012), the use of motorbikes as a means of public transportation in Nigeria can be traced to Calabar in the 1970s when some owners for obvious economic reasons decided to commercialize their bikes. This initially attracted low patronage since its use for the purpose of transportation was rather unfamiliar to the people. However, following the economic recession in the 1980s which witnessed the retrenchment of many Nigerian workers, most of the disengaged workers and other jobless Nigerian youths found solace in the use of motorbikes as a means of livelihood (Michael, 2012).

Similarly, Christopher, Usman and Eke, (2013) reaffirms that commercial motorbikes appeared in the late 1980s during an economic downturn in Nigeria. According to him, jobless youths began to use motorcycles to earn money by transporting passengers on narrow or poorly maintained roads to far away cities and villages. This means of transportation which is readily accessible gradually became popular and acceptable over time as a viable means of transportation. Abdussalam (2014) reiterates that this idea of using motorcycle/bike to carry passengers in Nigerian communities came up in the late last century during the time the country experienced economic hardship. He adds that during this period, some Nigerians became involved in the

operation of this local transport otherwise known as Okada as a last resort to survive. Okada has earlier been described as any motorcycle that is used for commercial transportation of persons and other material goods (Jimmy, Solomon, Peter & Asuquo, 2014).

More so, the expansion of new cities witnessed mass rural-urban migration of able-bodied youths and several others who thronged to the cities in search of greener pastures. As the urban population continued to increase, available mass transit motor vehicles became grossly inadequate. This is in addition to the vehicular setbacks occasioned by bad roads.

Overtime, the absence of a ready job made it inevitable for most of the unemployed youths to take advantage of their motorbikes in order to earn a living and as such, ameliorating the hardship of the ever waiting passengers who were eager to be conveyed to their destinations as quickly as possible. According to Abdussalam, (2014), the proliferation of commercial motorcyclists and their use as urban transportation is triggered by the unfriendly socio-economic policies which manifested in the rate of urban unemployment. Similarly, Oteng-Ababio and Agyemang (2015), has also attributed commercialization of Motorbikes to extreme poverty triggered by the high level of unemployment.

Okada has thus come to stay as one of the primary modes of transportation in Nigeria. Often times, they even convey customers to remote villages that motor vehicles may not find convenient to ply at regular intervals. It has become a means of transportation regularly used by the young and the old, men and women. In normal situations, bike-men carry one or two passengers at a time. While in other circumstances situation, they may carry much more.

In recent times however, there has been a serious clamour for the abolition or ban of commercial motorcyclists in major cities in Nigeria following certain activities associated with them. While this clamor is gathering momentum and even being implemented by some State governments, others feel that their operations should be sustained in the light of perceived benefits derivable from their services. It is predicated against this backdrop that a study on the implications of the sustained operations of commercial motorbikes as a means of public transportation in Nigeria becomes inevitable.

### **Operations and Activities of Commercial Motorbikes**

The operations and general activities of commercial motorcyclists are not very different from those of commercial taxis and bus drivers. They have designated parks from where they are expected to load and are also required to be registered with both government and unions for quick identification in case of accident or crime. While some of them remain in the parks and load, many others prefer to move freely (wawawa) and pick passengers along the road. This seem to be more convenient for passengers who only stand in front of their houses and save themselves the stress of moving to designated parks or bus stops as is the case with buses and taxis. Unfortunately, this has become a viable window for infiltrators who pose as Okada riders and commit a lot of atrocities (Obeng-Odoom, 2011). Again, rather than dropping at the bus stops, commercial motorbikes have the advantage of carrying their passenger to their door-posts including roads that are no longer passable by cars.

### **Implications of the Operations of Commercial use Motorbikes in Nigeria**

The operations of commercial motorcyclists in Nigeria have both positive and negative impacts on both the economy and entire populace. This section will examine the economic, health and social implications of motorcycles as a means of public transportation in Nigeria.

#### **Economic Implications**



### **i. Job creation**

Every day, thousands of students graduate from our secondary schools and other institutions of higher leanings with high hopes of gainful employment. Regrettably, they are often met with an over saturated labour market. Thus, most of them roam the streets for years without being gainfully employed. In other to survive in the face of this obvious hardship, majority of them resort to Okada riding. Studies show that at least 50% of school leavers and other jobless or disengaged men find solace in Okada riding as a means of livelihood (Michael, 2012). It is not debatable that those who took to commercial motorcycling over time saw it as an employment they have created for themselves (Jimmy *et al*, 2014). Overtime, they became stabilized and started planning their lives and future.

More so, the taking away of one's source of livelihood for those who lost their jobs due to the economic downturn is enough to evoke violence both at family, group, and societal levels. The affected parties could see robbery, thuggery, kidnapping and other vices as veritable means of making ends meet. According to (Dongo *et al* (2013), robbery, armed or unarmed receives a cordial embrace from jobless and hungry members of society especially those who are seriously aggrieved of been helpless. Thus, the sustained operation of commercial motorbikes will create more jobs for those who would have ordinarily been idle or lack the capital base to commence other kinds of businesses.

### **ii. Poverty Reduction**

Once people are engaged in doing something-no matter how meager, they will certainly generate some incomes which will increase their purchasing power and generally boost the economy. The obvious result is that they will daily have a hope of what to eat thereby; reducing the magnitude of poverty. This will in turn have serious implications on their health and their abilities to afford some of their basic needs. Considering the large number of people engaged in commercial motorcycling in Nigeria so far, poverty level would have been unbearable if they were all to be idle or disengaged (Odidi, 2012).

### **iii. Reduction in Dependency Ratio**

Dependency ratio refers to the number of a given population who cannot fend for themselves but rely substantially on others for survival (Ekpeyong, 2006). Thus, the higher the dependency ratio, the poorer the population becomes. Studies reveal that if the population of Okada riders were otherwise idle, both themselves and those depending on them presently would have all be depending on fewer members of the population (Nwaorgu, 2011).

### **iv. Increase in per capita Income**

The more engaged people are within a given economy, the higher their per capita income which is one of the parameters used in measuring the standard of living of a people. According to Odidi (2012), the per capita income of Nigeria is presently less than \$1 (one U.S dollars). This implies that majority of the population live below N200 per day. This is very bad on its own. However, if the operations of commercial motorcyclist are sustained, in all the big cities in Nigeria, the per capita income is likely to increase over time or at least stabilized where it is presently rather than dropping (Ohakwe, Iwueze & Chikezie, 2011).

## **Health Implications**

### **i. Increase in intra-city road traffic accidents**

It has been argued that the sustained operation of commercial motorbikes in major cities in Nigeria will in turn increase the frequency of road traffic accidents due to the recklessness of Okada operators. For instance, the ban on commercial motorbikes has been observed to reduce the frequency and fatality of road traffic accidents in many big cities in Nigeria. In a study carried out in Lagos, it was observed that the rate of road traffic accidents within Lagos metropolis dropped by 50% in three months after the ban (Ekpenyong, 2006). In a similar study conducted in Uyo, the rate of intra-city accidents also reduced significantly (Oteng-Ababio and Agyemang, 2015). This proves further that Okada riding was actually a major predictor of intra-city accidents and provided justification for its ban.

#### **ii. Increase in Accident-Related Morbidity and Mortality**

Since motorcycles are just two-wheeled in nature, riders and commuters are always very vulnerable to falls on the main road in times of accidents when compared with taxis and buses. These falls often increases the severity of the accidents depending on which part of their bodies they fall with and the distance of other oncoming vehicles. Those who fall with their heads may break their skulls while those who fall with other parts of the body have such parts chopped up by the coal tar; others who would have ordinarily survived are helplessly crushed to death by oncoming vehicles (Dongo, Kesieme, Eighemherio, Nwokike, Esezobor, & Alufahal, 2013). This in turn increases the severity or even fatality of the accident while survivors may come up with broken limbs and spend a relatively longer period of time receiving medical attention (Ohakwe *et al*, 2011).

Studies show that at least, 70% of all admitted accident and fractured cases within Port Harcourt metropolis before the ban of commercial motorcyclists were bike-related (Iribhogbe and Odai, 2013). Thus, successive administrations have taken serious steps in ensuring that Okada operations are safe and secure. This ranges from ensuring that operators are all registered. In addition, operators are also required to put on their safety devices such as helmets and reflective clothing (Nantulya and Michael, 2002). In addition, the use of reflective jackets by both the drivers and the passengers is mandatory.

#### **iii. Air Pollution**

Motorcycles and other automobiles are known for their emission of dangerous gases which could predispose the health of inhabitants. In a study carried out on the environmental health implications of motorcycle gases in Uyo metropolis, dangerous gases such as nitrogen dioxide, sulfur dioxide and carbon monoxide among several others were examined and found to be in higher concentrations around motorcycle parks. The study shows that the urban dwellers in Uyo metropolis will have serious health problems now and in the future if this trend of motorcycle gas emission continues unabated (Jimmy, Solomon, Peter & Asuquo, 2014).

### **Social Implications**

#### **i. Increase in Crime**

The activities of commercial motorbikes have become a matter of great concern to successive governments, commuters and the general public. Firstly, they always seem to be in a hurry and try as much as possible to beat all known traffic rules. In addition to all these, commercial motorbikes provide a cheap escape means for armed robbers, snatchers, pick-pockets and even assassins in the cities since they are hardly caught by traffic. (Obeng-Odoom, 2011)

In a study carried out in Port Harcourt Metropolis, it was discovered that commercial motorbikes played key roles in nearly all the major robbery operations and assassination cases that occurred within the city between 2000 and 2005 (Arogo, Ugwu, Diekedie, Ephraim and Benson, 2014). According to them, on several occasions, motorbikes were either used by informants to spy

on their victims or to facilitate the escape of criminals after a successful robbery. Similarly, Ohakwe *et al*, (2011) observes that these criminals most times come with motor vehicles but end up escaping with motorbikes.

In a similar study conducted in Uyo, Aba and Lagos respectively, it was discovered the rate of crimes dropped tremendously following the ban on Okada (Obeng-Odoom, 2011). This confirms earlier suspicions that most commercial bike operators pose as genuine businessmen in the day but operate as wild criminals at night.

Accordingly, successive governments have instituted various policy initiatives to deal with this criminality and its associated outcomes. In most Nigerian cities such as Calabar, Lagos and Port Harcourt, commercialization of motorbikes has been banned but not without a public outcry (Obeng-Odoom, 2011). Although the bans may have recorded some obvious benefits, it has simultaneously brought about untold hardship to operators and their dependants in a variety of ways.

### **Unsignificance**

As the number of Okada riders continue to increase by the day in our big cities, they tend to aesthetically deface the cities and make same look like a peasant society. This is against the backdrop that most of these cities such as Abuja, Lagos and Port Harcourt among others house world class facilities like the international airports, international stadia and hotels. In order to improve the aesthetic value of these cities, many have proposed or implemented the banning of commercial motorbikes around the metropolis.

### **ii. Road Congestion**

The metropolitan cities in Nigeria are already over-filled with motor vehicles thereby leading to routine traffics on major roads. The sustained operation of bikes will flood thousands of such bikes on the already over congested roads. Although, some have also argued that in times of traffic challenges, commercial motorcyclists are seen as the fastest means of getting to one's desired destinations, others say, the bikes themselves contribute significantly to such traffics (Ohakwe *et al*, 2011).

### **Conclusion**

This study considered the operations of commercial motorbikes in Nigeria and its implications on various facets of live. Findings showed that the use of motorbikes as a means of public transportation was substantially necessitated by the dwindling economic fortunes of the country in the early 1980s and its consequent retrenchments that rendered many jobless. Okada riding thus became a viable source of self-employment for job seekers in order to make ends meet. While this assisted the economy so much by reducing the unemployment rate, poverty and dependency ratio among others; the operations of commercial motorbikes has also been strongly associated with social vices such as armed robbery and assassination. Other health implications include high frequency of accidents and fatality of these accidents due to the poor engineering balance of motorbikes which constantly expose commuters to falls on the hard coal tars at the slightest contact with another vehicle or object. This has thus led most administrations to place a ban on the commercial use of motorbikes in most Nigerian State capitals

### **Suggestions**

In order to reduce the challenges associated with the operations of commercial motorbikes, the following suggestions will be quite useful.

### **i. Safety education for rider**



In order to meet up favorable returns, most commercial bike men are always in a big hurry and thus become reckless at the expense of their dear lives. There should be a routine pep talk organized for bike men during their meetings on how to remain safe on wheels. More so, specially designed stickers showing scenes of motorbike accidents and associated outcomes and what to do to avert such should be placed on every commercial bike in order to reinforce their safety consciousness.

**ii. Alternative jobs should be provided should there be need for any ban on their operations**

When people are banned from their legitimate sources of livelihood without providing a favorable alternative, they become prone to crimes. Thus, the provision of alternatives such as tricycles and taxis at highly subsidized rates will cushion any adverse effect that would have emanated as a result of such bans.

**iii. Soft loans and reorientation in other alternative businesses.**

There are many small scale businesses that may be more viable and less hazardous than commercial motorcycling which operators would ordinarily prefer even without a ban, were they properly enlightened and aided financially. This includes agric businesses such as snail farming, fish farming, poultry and piggery among others. There is therefore the need for periodic reorientation of bike men on the need to explore other economic opportunities which can be supported with soft loans.

**iv. There should be designation of alternative routes for bike operation**

Rather than an outright ban on the operations of commercial motorbikes due to its proneness to accidents, there could be a deliberate attempt to reduce their vulnerability by pulling them out of major highways to other less busy routes. This will be able to both retain their employments and at the same time reduce their risks.

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## **Assessment of Microbiological and Physiochemical Attributes of Sachet Water Sold in Rumuodamaya, Port Harcourt**

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### **Abstract**

The purpose of this study was to determine the microbiological and physiochemical parameters of sachet water in Rumuodamaya-Port Harcourt. The sachet water samples were collected from vendors and coded P1, P2 and P3. Analysis involved determination of total heterotrophic bacteria, *Escherichia coli* and heavy metals using spread plate techniques, most probable number techniques and standard methods respectively. Results obtained showed high variation of microbiological and physiochemical parameters (heavy metals) in the water samples compared to the set regulatory standard. The study recommended that concerned agencies should periodically monitor the production quality of sachet water packaged for sale in Rumuodamaya-Port Harcourt in order to ensure its suitability for consumption.

**Keywords:** microbiological, physiochemical, sachet-water, rumuodamaya

### **Introduction**

Access to safe drinking water is vital to good health and sustainable quality of life (Adekunle, Sridhar, Ajayi & Oluwada, 2004). One of the fundamental problems of developing countries including Nigeria is lack of access of greater proportion of the populace to safe drinking water. Non-availability of potable water or its inadequacy has been implicated as being responsible for the out-break of waterborne diseases such as cholera and typhoid fever as often recorded in Nigeria in recent times (Raji and Ibrahim, 2011). Apart from waterborne diseases caused by the consumption of pathogen in water, consumption of water contaminated by heavy metals also remains one of the leading causes of morbidity and mortality globally, leading to serious public health challenges (Oladipo Onyenika, & Adebisi, 2009).

The urgent need to quench thirst at relatively affordable cost has given rise to the packaging and sales of sachet water in major cities in Nigeria (Dada, 2009). Although, the advent and sales of sachet water has significantly helped in tackling the problem of thirst across all classes of people in big cities due to its availability, accessibility and affordability, there are serious concerns about its purity and safety. This is so because the conditions under which majority of the factories package and store water are generally insanitary, and unhygienic leading to frequent complaints by consumers about the un-pleasant taste and sometimes, offensive odour associated with sachet water (Rajendra, Prasad, Sadashivaiah, & Ranganna, 2009). Oladipo *et al.*, (2009) revealed that about 90% of sachet water sold in the country are not potable and are as such, hazardous to health. Thus, the purpose of this research was to determine the physiochemical and microbiological parameters of sachet water sold in Rumuodamaya-Port Harcourt in order to ascertain its suitability for public consumption.

## Materials and Methods

The study area, Rumuodamaya, is one of the forty five communities that make up Obio/ Akpo Local Government Area of Rivers State. The area is densely populated with lots of human, commercial and industrial activities which have encouraged high sales of sachet water. Two different brands of sachet water samples were collected in 200ml sterile containers and placed in an ice-packed container to retain integrity. A control sample was also obtained from a reputable table water company using the same method. All the samples were transported to a standard public microbiology laboratory in Port Harcourt for microbiological and Physiochemical analysis. The samples collected were coded for the purpose of this study as P1 and P2 while the control was coded as P3.

MacConkey agar and Nutrient agar were used for the preparation of the samples. The media were prepared based on manufacturers' direction on the leaflet (Harrigan & McCane, 1976). Both media were used for the purpose of enumerating Total Heterotrophic Bacteria and isolating *Escherichia coli* from the water samples ( Chakraborty and Wishith, 2008). A ten-fold decimal serial dilution as employed by General Laboratory Technology (2007) was carried out on the samples aimed at getting an appropriate dilution that was used to inoculate on the media. The spread plating technique as done by Young and Wood (1977) was used to enumerate Total Heterotrophic Bacteria and the Most Probable Number Technique as done by Tankeshwar and Sagar (2015) was used to enumerate *Escherichia coli* counts. Parameters such as electrical conductivity, temperature, salinity, total dissolved solids, nitrates, alkalinity, hardness, manganese, magnesium and calcium were determined as done by APHA (1995).

## Results

### 1. Bacteriological Loads of the Sachet Water Samples

Table 1: Total Heterotrophic Bacteria Counts

Water Samples	Water Sample Bacterial Count (cfu/ml)
P1a	$2.7 \times 10^4$
P1b	$3.5 \times 10^3$
P1c	$4.5 \times 10^5$
P2a	$9.3 \times 10^4$
P2b	$5.0 \times 10^4$
P2c	$4.5 \times 10^4$
P3a	-
P3b	-
P3c	-

**Keys: P1, P2 & P3 = codes for water samples; cfu/ml = coliform forming unit per ml  
 & - = no result**

Result in table 1, showed the bacteria count in the sachet water samples. The samples contained detectable number of total heterotrophic bacteria. This indicated that heterotrophic bacteria were found in all brands of water sampled (P1 & P2) except the control samples (P3). Samples coded, P2a had the highest count when compared with the samples coded P1a. However, no bacteria was found on the control samples coded (P3).

### 2. *Escherichia coli* Counts

Table 2: *Escherichia coli* (E-coli) Identification

Water Samples	E-coli identification
P1a	+
P1b	+
P1c	+
P2a	+
P2b	+
P2c	+
P3a	-
P3b	-
P3c	-

**Keys: P1, P2 & P3 = codes for water samples; + = presence or positive; - = absence or negative**

Result in table 2 showed the presence of *Escherichia coli* in the sachet water samples. The presence of *Escherichia coli* were identified in all brands except the control samples (P3a-c).

### 3. Physiochemical parameters of the Sachet Water Samples

Table 3: Physiochemical Parameters of Sachet Water Sample one (P1)

S/ N	Parameters	Normal Range	Minimum	Maximum	Range	Mean	SE
1	pH	6.5-9.0	6.40	7.70	1.30	7.08	0.55
2	Temp. (°C)	NA	29.20	29.90	0.70	29.56	0.27
3	EC	25.00	13.00	81.00	68.00	46.00	32.24
4	Salinity(mg/l)	≥600	300	450	3.5	0.12	0.011
5	TDS (mg/l)	NA	9.00	59.00	50.00	32.60	23.15
1`	CT	NA	1.90	4.90	3.00	3.40	1.27
7	Alkalinity (mg/l)	200	400	600	20.0	4.80	1.09
8	Ca	200	3.02	6.88	3.86	4.28	0.75
9	Hardness (mg/l)	≥100	140	115	25.5	25.5	35.03

**Keys: pH=Hydrogen Ion; EC=Electrical Conductivity; TDS=Total Dissolved Solids; Ca=Calcium; Mg=Magnesium**

Table 3 showed that although the pH, salinity and alkalinity were within acceptable range but there was a wide variation between the minimum and maximum with elevated numbers of heavy metals.



Table 4: Physiochemical Parameters of Sachet Water Sample two (P2)

S/ N	Parameters	Normal Range	Minimum	Maximum	Range	Mean	SE
1	pH	6.5-9.0	6.42	7.71	1.32	7.08	0.56
2	Temp. ( $^{\circ}$ C)	NA	28.20	30.50	0.72	29.58	0.29
3	EC	25.00	25.00	85.00	68.00	48.05	33.25
4	Salinity(mg/l)	$\geq 600$	330	470	4.5	0.12	0.022
5	TDS (mg/l)	NA	11.00	61.00	51.00	33.63	25.20
1'	CT	NA	1.92	4.92	3.01	3.41	1.09
7	Alkalinity (mg/l)	200	410	620	21.0	4.81	1.09
8	Ca	200	3.02	6.88	3.86	4.28	0.75
9	Hardness (mg/l)	$\geq 100$	142	116	26.5	26.5	36.03

**Keys: pH=Hydrogen Ion; EC=Electrical Conductivity; TDS=Total Dissolved Solids; Ca=Calcium; Mg=Magnesium**

Table 4 showed that although the pH, salinity and alkalinity were within acceptable range but there was a wide variation between the minimum and maximum with elevated numbers of heavy metals.

## Discussion

Results from this work revealed that sachet water relied upon for drinking by residents of Rumuodomaya-Port Harcourt is contaminated with bacteria organisms. The study also revealed the existence of variations in the bacterial loads of the different brands of sachet water packaged and sold in the area. The findings also revealed that sachet water samples contained detectable numbers of heterotrophic bacteria and abundant presence of *Escherichia coli* in sachet water meant for public consumption. Again, the findings showed that *Escherichia coli* loads of the sachet water sources were very high. This is in line with the findings of a similar study which noted that most brands of sachet water circulated for public consumption in Nigeria are derived from doubtful sources and this has great implications on public health (Adekunle *et al*, 2004). Raji and Ibrahim, (2011) also discovered that the presence of indicator organisms and other microbes could also be attributed to the poor sanitary condition of the processing factories in the area.

There were also, wide variations in hydrogen ion concentration, electrical conductivity, total dissolved solid and nitrates of the different sachet water samples when compared with acceptable standards (WHO, 2014). Again the high elevation of temperature identified could be as result of the presence of total dissolved solid and salinity factors due to continuous presence of pollutants or contaminants in the water. Elevated salinity may also be due to the suspension of cations like the Magnesium and Calcium from the edaphic material where the water was sourced from before packaging. High loads of hardness could also be as a result of the presence of magnesium and calcium in the water while high chloride could be due to salinity. This result is also similar to the findings of previous studies which observed increasing hydrogen ion concentration and total dissolved solids in sachet waters meant for public consumption (Sagar, 2015).

It is thus the recommendation of this study that regulatory agencies such as NAFDAC and environmental health officers should enhance their routine inspections on sachet water factories in order to improve the quality of water released to the general public for consumption. Again, as more factories enter the business of packaging and sale of water, it is instructive that investigations such as this should encourage quality control and assurance on good hygiene and sanitation at both the treatment and production units of the factories. The quality control unit must also take into consideration, the source of water and cellophane or polythene bag/ material that is converted into sachets.

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## **Perceived Health Problems Induced by Overcrowded Campus Hostel Accommodation Among Students in State-Owned Universities in Rivers State**

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### **Abstract**

This study investigated the perceived health problems induced by overcrowded campus hostel accommodation among students in state-owned universities in Rivers State. A descriptive survey research design was adopted while information gathering was achieved through the use of validated hostel accommodation overcrowding questionnaire (HAOQ). Five research questions and five hypotheses were formulated to guide the study. The population for the study consisted of all campus hostel students in the state-owned universities in Rivers State. The sample for the study consisted of 800 students (400 males and 400 females) selected through a multi-stage sampling procedure. Percentage and mean were used in analyzing the demographic variables and the research questions while z-test and ANOVA were used in testing the hypotheses at 0.05 alpha level of significance. Findings established that overcrowded campus hostel accommodation will significantly induce physical, mental, psychological and social health problems; age, gender, level of study do not have significant relationship with the perceived health problems; types of programmes will have significant relationship with the perceived health problems among students. It was therefore recommended that attempts should be made to provide hall to accommodate all the students admitted into the universities; admission of students should base on available bed spaces and good maintenance culture among all those concerned with the management of hostels should be implemented, in order to provide good hostel environment for students among others.

### **Introduction**

Education plays very important roles in shaping the life of any citizen in his or her community. The school or learning environment must be effective, in other words, conducive environment assists students in their academic and pave way to learn. One of the key features students and their parents are concerned about when enrolling in a university is the availability of students housing or accommodation (Ubong, 2007). This therefore makes it imperative for schools to give students accommodation a top priority while enhancing the reputation of the school among other contemporaries. Okoh (2004) stated that, the growth of students enrolment in educational programmes in Nigeria has created serious accommodation problems in all the Federal Colleges of Education to the extent that due to overcrowded environment some students have resorted to living in laboratories, workshop and even in the classrooms. This has gone a long way in affecting them psychologically, emotionally, socially, and even in their academic performance. Today the students' hostel accommodation not only appears to be inadequate and overcrowded but some of the existing ones are dilapidated and constitute danger to the health of the students and the university communities.

According to Briggs (2000) overcrowding is a serious predisposing factor in the transmission of various communicable diseases such as tuberculosis, chicken pox, and measles among others. Another implication of overcrowding is that, it gives rise to social and economic



problems. Social vices such as robbery, pick pocketing, rape, cultism among others are on the increase in the environment as consequences of overcrowding (Agbo, Envuladu, Adah, & Zoakah, 2012; Okoh, 2004). Social amenities in the hostels, boys quarters and self made abode are overstretched to the point that they can no longer sustain the ever increasing population thereby constituting eye sore and nuisance. Many students, who are not accommodated in the hostel, are charged exorbitant fees for accommodation outside campus (Akpan, 2000). The hostels are so crowded, poorly built and inadequately supplied with water, and this has its attendant consequences leading to the justification of this research which aims at identifying perceived health problems induced by overcrowded campus hostel accommodation among students in State-owned Universities in Rivers State (Adiku, 1999).

Students' accommodation is said to include facilities such as bedrooms which can serve dual purpose-of study and sleeping, bathrooms and toilets, kitchen, laundry, recreational areas and access to internet services as this further enhance the study-learning experience. Ubong (2009) opined that students housing in Nigeria has not received the desired attention both from the government and the management of the institutions although it is an important component of pupil personal management, inadequate maintenance of services and infrastructure of hostel accommodation is very common. There have been reported cases of students taking ill in the hostels as a result of poor sanitary conditions. It is crucial to note that students must not only be adequately provided for in relation to the students' population of a university, but it must also be able to satisfy their needs if the best is to be appropriated from them (Ndu, Ocho, & Okeke, 1997).

Ezeukwu (1999) declared that accommodation is the pivot, around which, all the activities of students revolve. There is an urgent need for adequate housing of students for qualitative implementation of educational programmes and students' welfare. It is then very necessary that every educational institution, particularly every university, should desire and plan to give students the best affordable accommodation (Gray, 2013). Good enough, the past administration of President Goodluck Ebele Jonathan's transformation agenda include that of education and students' hostel accommodation. On gender impact on hostel resident's level of satisfaction, Walden, Nelson, Smith in Adegoke, (2014) found that males and females tend to have difference perception on the "feeling of overcrowding" and subsequently have different coping strategies to the overcrowded conditions. Leton (1998) also found that overcrowding has a greater effect on mental health for women and that wives who feel they lack privacy, are more likely to contemplate suicide. The study is therefore set to examine perceived health problems induced by overcrowded campus hostel accommodation among students in Rivers State- owned universities (Rivers State University Nkpolu-Oroworukwu and Ignatius Ajuru University of Education, Port Harcourt).

### **Statement of the Problem**

It is very appalling that most often, government emphasize provision of education to students without a corresponding emphasis on provision of affordable students accommodation. In Rivers State-owned Universities, the population of students admitted is more than available accommodation spaces. This had led to overcrowding with accompanying consequences such as, poor health, poor academic performance, squatting in the halls of residence, which has forced some students to stay off-campus. Hence it is important that research is conducted to examine the perceived health problems of overcrowding in Universities particularly State-owned universities in Rivers State.



### **Research Questions**

The following research questions guided the study:

- 1) What is the relationship between overcrowded campus hostel accommodation and occurrence of tuberculosis as a physical health problem among students residents in state-owned Universities in Rivers State?
- 2) What is the relationship between overcrowded campus hostel accommodation and occurrence of depression as a mental health problem among students residents in State-owned Universities in Rivers State?
- 3) What is the relationship between overcrowded campus hostel accommodation and occurrence of anxiety as a psychological health problem among students residents in State-owned Universities in Rivers State?
- 4) What is the relationship between overcrowded campus hostel accommodation and occurrence of prostitution as a social health problem among students residents in State-owned Universities in Rivers State.
- 5) What is the relationship between age, gender, level of study, type of programme and the perceived health problems induced by overcrowded campus hostel accommodation among students in State-owned Universities in Rivers State.

### **Hypotheses**

- 1) Overcrowded campus hostel accommodation will not significantly induce tuberculosis as a physical health problem among students' residents in State-owned universities in Rivers State.
- 2) Overcrowded campus hostel accommodation will not significantly induce depression as a mental health problem among students residents in State-owned universities in Rivers State.
- 3) Overcrowded campus hostel accommodation will not significantly induce anxiety as a psychological health problem among students residents in State-owned Universities in Rivers State.
- 4) Overcrowded campus hostel accommodation will not significantly induce prostitution as a social health problem among students residents in State-owned universities in Rivers State.
- 5) Age, gender, level of study, and type of programme do not have significant relationship with the perceived health problems induced by overcrowded campus hostel accommodation among students in state-owed universities in Rivers State.

### **Research Design**

This study adopted descriptive survey research design. It was deemed appropriate because according to Robert (2016), descriptive survey requires the researcher collecting data from a large sample drawn from a given population which describes certain features which is the interest of the researcher. For a researcher who is interested in collecting an original data for the purpose of describing fairly large populations, this design is one of the best available.

### **Population for the Study**

The population for this study consisted of the undergraduates students of the state-owned universities in Rivers State. The total population of the universities as at the period of the study is estimated 20,530, students (Student Affairs, 2017).

### **Sample and Sampling Techniques**

The sample size for the study consisted of 880 students residing in the hostels in the two state-owned universities (R.S.U and I.A.U.O.E). There was no database for students' living within the universities neighborhood, therefore a multi-stage sampling procedures techniques was adopted in order to obtain a representative sample from the population. First stage used balloting with replacement to select four schools and four hostels in each of the two state-owned universities; this give rise to eight (8) schools and eight (8) hostels. In all the 8 schools selected, compulsory courses were identified from year one to year two. During the compulsory courses, papers were passed to students who live around the universities community, to indicate their names, gender and hostel they reside. All the names in the list from year one to year two were collected and collated. Thus from the list, we have a total number of 1,760 names as the study frame. However, for convenience fifty percent (50%) of the students were picked from each school. The second stage used stratified sampling technique to stratify the population into boys and girls hostels. This is for better representation of each strata. The final stage involved the use of proportionate and accidental sampling technique in selecting 55 males and 55 females, giving a total number of 110 students' respondents from each of the eight selected (male and female) hostels from the two universities, giving a total of 880 respondents.

### **Instrument for Data Collection**

A self structured and validated questionnaire titled "Hostel accommodation overcrowding questionnaire (HAOQ)" was used by the researcher. The questionnaire comprises two sections. Section A contains 4 items on demographic data of the respondents while section B was structured to gather information on Physical, mental, psychological and social health problems of overcrowding. There are nineteen items in section B. The questionnaire was a two and four point rating scale, that is, (True or false), (often, sometimes, rarely, never) and (strongly agree (SA), agree (A), disagree (D) and strongly disagree (SD).

### **Validity of the Instrument**

In order to establish the face and content validity of the instrument, copies of the questionnaire were given to the project supervisor and 3 of other lecturers in the Department of Human Kinetics and Health Education, University of Port Harcourt. Corrections and improvements of the instrument based on the objective of the study were made in line with the suggestions and contributions of the supervisor. The purpose of this study, research questions and hypotheses were included to enable the lecturers determine items that would elicit the actual, appropriate and adequate information they intend to elicit.

### **Reliability of the Instrument**

The reliability of the instrument was determined using the test-retest method. The instrument was administered twice on twenty (20) students of University of Port Harcourt, giving an interval of 2 weeks. The instrument was re-administered on the same twenty samples selected two weeks earlier. The scores derived from the two administrations were correlated using Cronbach Alpha statistics which gave reliability coefficient of 0.82.

### **Procedure for Data Collection**

The researcher collected a letter of introduction (see the appendix) from the head of the "department human kinetics and health education, university of Port Harcourt, Rivers" State. The researcher used the letter to introduce himself and the purpose of the research to the respondents soliciting for their co-operation. A total of 880 copies of the questionnaire was administered directly to the students with the help of three trained assistants. The questionnaire was collected on the sport and some were retrieved on an agreed date and time by the respondents. A total of 800 copies of the questionnaire representing about 91% of the total was obtained.

**Table 1: Analysis of physical health problems induced by overcrowded campus hostel accommodation**

S/N	Statements	Responses		Total
		True	False	
1.	There are cases of Tuberculosis in hall.	242	558	800
		30.2%	69.8%	100.0%
2.	There are cases of Pneumonia in hall.	434	366	800
		54.2%	45.8%	100.0%
3.	There are cases of Scabies in hall.	239	561	800
		29.9%	70.1%	100.0%
4.	There are cases of Eczema in hall.	480	320	800
		60.0%	40.0%	100.0%
5.	There are cases of Fighting resulting to injuries in my hall as a result of number of persons.	711	89	800
		88.9%	11.1%	100.0%
<b>Overall %</b>		<b>52.6</b>	<b>47.4</b>	<b>100.0</b>
		<b>%</b>	<b>%</b>	<b>%</b>

Table 1 revealed that 242 respondents representing 30.2% agreed that there are cases of tuberculosis in their hall, also 434 respondents (54.2%) agreed to cases of pneumonia. Whereas 239 representing 29.9% agreed to scabies outbreaks. On the contrary, 480 respondents representing 60.0% agreed that there are cases of Eczema in their hall. Majority of the respondents, 711 respondents representing 88.9% agreed to cases of fighting. The table also showed the overall percentage of 52.6% respondents that agreed to physical health problems induced by overcrowded campus hostel accommodation among students in State-owned Universities in Rivers State.

**H<sub>0</sub>:** Overcrowded campus hostel accommodation will not significantly induce tuberculosis as a physical health problem among students resident in State-owned Universities in Rivers State.

**Table 2: Summary of  $\chi^2$  analysis on physical health problems among students in State-owned Universities in Rivers State**

VARIABLE	N	df	$\chi^2$ cal	Sig. (2 tailed)	Level of Sig.	$\chi^2$ crit.	Decision
Physical health problems	800	4	766.728	0.00	0.05	9.49	H <sub>0</sub> 1 Rejected
Tuberculosis							

Table 2 revealed that the  $\chi^2$ cal is 766.728 with df = 4 and  $p < 0.05$ . The obtained  $\chi^2$ cal value of 766.728 is greater than  $\chi^2$  crit. = 9.49, therefore the null hypothesis that overcrowded campus hostel accommodation will not significantly induce tuberculosis as a physical health problem among students is rejected. This indicates that overcrowded campus hostel accommodation will

significantly induce tuberculosis as a physical health problem among students in State-owned Universities in Rivers State.

**Research Question 2:** What is the relationship between overcrowded campus hostel accommodation and occurrence of depression as a mental health problem among students in State-owned Universities in Rivers State?

**Table 3: Analysis of mental health problems induced by overcrowded campus hostel accommodation**

S/N	Items	Response				N	$\bar{x}$	SD	Remark
		Often	Sometimes	Rarely	Never				
1.	How overcrowding makes me to be anxious about something or someone.	392	254	103	51	800	3.23	0.91	Sometimes
2.	Are people trying to pick quarrels or start argument with you.	206	363	167	64	800	2.89	0.88	Sometimes
3.	Overcrowding depresses me that it interferes with my daily activities.	275	358	119	48	800	3.08	0.85	Sometimes
4.	My personal worries get me down physically that is making me physically ill.	216	368	156	60	800	2.93	0.87	Sometimes
5.	Moody.	287	323	130	60	800	3.05	0.91	Sometimes
<b>Grand Mean</b>							<b>3.03</b>	<b>0.88</b>	

Never = 1.00-1.49, Rarely = 1.50-2.49, sometimes = 2.50-3.49, always = 3.50-4.00

See appendix for details of analysis of research question 2

Table 3 shows that items 1-5 have positive response rates, since their weighted mean are all greater than the criterion mean of 2.50, also their corresponding SD are also positive. This result implies that for items 1-5 with mean of 3.23, 2.89, 3.08, 2.93 and 3.05 with corresponding SD of 0.91, 0.88, 0.85, 0.87 and 0.91 respectively respondents agree that overcrowding makes them to be anxious about something or someone; people pick quarrels or start argument with them. Overcrowding depresses them and interferes with their daily activities; their personal worries get them down physically, ill and moody. With grand mean of 3.03 which is also greater than the criterion mean of 2.5, it implies that there is depression and mental health problems induced by overcrowded campus hostel accommodation among students in State-owned Universities in Rivers State.

**H0<sub>2</sub>:** Overcrowded campus hostel accommodation will not significantly induce depression as a mental health problem among students resident in State-owned Universities in Rivers State.



**Table 4: Summary of  $\chi^2$  analysis on mental health problems among students in State-owned Universities in Rivers State**

VARIABLE	N	df	$\chi^2_{cal}$	Sig. (2 tailed)	- Level of Sig.	$\chi^2_{crit.}$	Decision
Mental health problems	800	12	131.252	0.00	0.05	21.03	H02 Rejected
Depression							

Table 4 revealed that the  $\chi^2_{cal}$  is 131.252 with  $df = 12$  and  $p < 0.05$ . The obtained  $\chi^2_{cal}$  value of 131.252 is greater than  $\chi^2_{crit.} = 21.03$ , therefore the null hypothesis that overcrowded campus hostel accommodation will not significantly induce depression as a mental health problem among students is rejected. This indicates that overcrowded campus hostel accommodation will significantly induce depression as a mental health problem among students in State-owned Universities in Rivers State.

**Research Question 3:** What is the relationship between overcrowded campus hostel accommodation and occurrence of anxiety as a psychological health problem among students residents in State-owned Universities in Rivers State?

**Table 5: Analysis of psychological health problems induced by overcrowded campus hostel accommodation**

S/N	Items	Response				N	$\bar{x}$	SD	Remark
		Often	Sometimes	Rarely	Never				
1.	I feel confused, frustrated under a lot of pressure.	304	346	100	50	800	3.13	0.86	Sometimes
2.	Are you ever bothered by being nervous i.e. by being irritable or tense	274	387	109	30	800	3.13	0.78	Sometimes
3.	Do you ever feel that nothing ever turns out for you the way you want it	283	364	99	54	800	3.10	0.86	Sometimes
4.	Do you find keeping your mind on what you are going difficult.	218	292	187	103	800	2.78	0.99	Sometimes
	<b>Grand Mean</b>						<b>3.04</b>	<b>0.87</b>	

Never = 1.00-1.49, Rarely = 1.50-2.49, sometimes = 2.50-3.49, always = 3.50-4.00

See appendix for details of analysis of research question 3

Table 5 revealed that respondents sometimes feel confused, frustrated under a lot of pressure ( $\bar{x} = 3.13 \pm 0.86$ ); nervous, irritable or tensed ( $\bar{x} = 3.13 \pm 0.78$ ) and feels things don't turn out the way they wanted it ( $\bar{x} = 2.78 \pm 0.99$ ). The grand mean 3.04 was greater than the criterion mean 2.50. This indicates that all these are various types of psychological health problems induced by overcrowded campus hostel accommodation among students in State-owned Universities in Rivers State.

**H03:** Overcrowded campus hostel accommodation will not significantly induce anxiety as a psychological health problem among students' residents in State-owned Universities in Rivers State.

**Table 6: Summary of  $\chi^2$  analysis on psychological health problems among students in State-owned Universities in Rivers State**

VARIABLE	N	df	$\chi^2_{cal}$	Sig. (2 tailed)	Level of Sig.	$\chi^2_{crit.}$	Decision
Psychological health problems	800	9	121.396	0.00	0.05	16.92	H03 Rejected
Anxiety							

Table 6 revealed that the  $\chi^2_{cal}$  is 121.396 with  $df = 9$  and  $p < 0.05$ . The obtained  $\chi^2_{cal}$  value of 121.396 is greater than  $\chi^2_{crit.} = 16.92$ , therefore the null hypothesis that overcrowded campus hostel accommodation will not significantly induce anxiety as a psychological health problem among students is rejected. This indicates that overcrowded campus hostel accommodation will significantly induce anxiety as a psychological health problem among students in State-owned Universities in Rivers State.

Table 9 showed the relationship between of age and the perceived health problems induced by overcrowded campus hostel accommodation among students. On the average, respondents between the age bracket 21-24 years had the highest mean score of 3.01, followed by those between the age 25-29 years and 35 years and above had the same mean score of 2.99. This implies that the students between the age-bracket 21-24 years experienced more perceived health problems induced by overcrowded campus hostel accommodation among students in State-owned Universities in Rivers State.

**Table 10: Analysis of gender and the perceived health problems induced by overcrowded campus hostel accommodation**

S/N	Statements	Gender	
		N=511 Female $\bar{X}$	N=289 Male $\bar{X}$
1	How overcrowding makes me to be anxious about something or someone.	3.23	3.25
2	Are people trying to pick quarrels or start argument with you.	2.90	2.87
3	Overcrowding depresses me that it interferes with my daily activities.	3.05	3.12

4	My personal worries get me down physically that is making me physically ill.	2.92	2.93
5	Moody.	3.09	2.97
6	I feel confused, frustrated under a lot of pressure.	3.14	3.12
7	Are you ever bothered by being nervous i.e. by being irritable or tense	3.11	3.17
8	Do you ever feel that nothing ever turns out for you the way you want it	3.12	3.05
9	Do you find keeping your mind on what you are going difficult.	2.77	2.79
10	There is lack of privacy in my room as a result of number of persons.	2.95	2.90
11	There are cases of malice in my room as a result of number of persons.	2.95	3.01
12	There are cases of quarreling in my room as a result of number of persons.	2.66	2.49
13	Social vices like prostitution exist in my hall as a result of number of persons.	2.92	2.90
14	There are cases of stealing and robbery in my room as a result of number of persons.	3.11	3.05
<b>Grand Mean</b>		<b>2.99</b>	<b>2.97</b>

Table 10 showed the relationship between gender and the perceived health problems induced by overcrowded campus hostel accommodation among students. With the grand mean 2.99 and 2.97 for female and male respondents respectively, this indicates that the female respondents are more sensitive to perceived health problems induced by overcrowded campus hostel accommodation among students in State-owned Universities in Rivers State.

### Discussion of Findings

#### **The relationship between overcrowded campus hostel accommodation and occurrence of tuberculosis as a physical health problem among students residents in state-owned universities in Rivers State**

The result on table 1 showed the overall percentage of 52.6% respondents that agreed to physical health problems induced by overcrowded campus hostel accommodation among students in state-owned universities in Rivers State. When put to statistical test, the result on table 4.9 further showed that the obtained  $\chi^2$  calculated value of 766.728 is greater the  $\chi^2$  criterion (9.49) which implies that overcrowded campus hostel accommodation will significantly induce tuberculosis as a physical health problem among students. This finding is in agreement with Krieger and Higgins, (2002) who stated that residential overcrowding has been linked both with physical illness, including infectious diseases such as tuberculosis and respiratory infections.

#### **The relationship between overcrowded campus hostel accommodation and occurrence of depression as a mental health problem among students' residents in state-owned universities in Rivers State**

The result on table 2 showed that items 1-5 have positive rates, since their weighted means

(3.23, 2.89, 3.08, 2.93 and 3.05) are all greater than the criterion means of 2.50. When put to statistical test, the result on 4.10 further showed that the obtained  $\chi^2$  calculated value of 131.252 is greater than  $\chi^2$  criterion (21.03) which implies that overcrowded campus hostel accommodation will significantly induce depression as a mental health problem among students. This finding is in line with the opinion of Ibituroko (2010) who concluded that: overcrowding results to physical withdrawal, psychological withdrawal, a lack of general planning behavior and general feeling of being “washed out” and that the experience of overcrowding strongly related to poor mental health and to poor social relationship in the home.

### **The relationship between overcrowded campus hostel accommodation and occurrence of anxiety as a psychological health problem among students residents in state-owned universities in Rivers State**

The result on table 3 showed the overall grand mean of 3.04 which is greater than the criterion mean 2.50 which implies that all items raised on research question three are various types of psychological health problems induce by overcrowded campus hostel accommodation among students in state-owned universities in Rivers State. When put to statistical test, the result on table 4.11 further showed that the obtained  $\chi^2$  calculated value of 121.396 is greater than  $\chi^2$  criterion (16.92) which implies that overcrowded campus hostel accommodation will not significantly induce anxiety as a psychological health problem among students. Njoku, (2002) in agreement with the finding has declared that lack of privacy which is a major feature of overcrowding is associated with psychological problems, which can develop to anxiety and total depression.

### **The relationship between overcrowded campus hostel accommodation and occurrence of prostitution as a social health problem among students residents in state-owned universities in Rivers State**

The result on table 4 showed a grand mean score of 2.90 which is greater than the criterion mean of 2.50. This implies a high level of social health problems such as: lack of privacy, malice, Quarreling and prostitution. When put to statistical test, the result on table 4.12 further showed that the obtained  $\chi^2$  calculated value of 141.849 is greater than  $\chi^2$  criterion (21.03) which implies that overcrowded campus hostel accommodation will significantly induce prostitution as a social health problem among students in state-owned universities in Rivers State.

Furthermore, the finding is still in consonant with Njoku, (2002) who revealed that overcrowded premises breeds or gives rise to quarrels that in some cases end up in courts. He declared that lack of privacy which is a major feature of overcrowding is associated with psychological problems, which can develop to anxiety and total depression.

### **Conclusion**

Based on the finding of the present study it could be concluded that:

- 1) Overcrowded campus hostel accommodation will significantly induce physical, mental, psychological and social health problems among students in state-owned universities in Rivers State.
- 2) Age, gender and level of study do not have significant relationship with the perceived health problems induce by overcrowded campus hostel accommodation among students.
- 3) Types of programme will have significant relationship with the perceived health problems induce by overcrowded campus hostel accommodation among students.

The implication of the finding is that students have health problems in state-owned universities and



these range from overcrowding and inadequate hostel accommodation. Many factors are responsible for these and they include increase in students enrolment, poor funding from government, lack of maintenance culture, lack of partnership between government, private individuals and organization in the ownership and management of hostels. Other findings include students squatting and struggling for spaces, many students live outside the school hostels. These overcrowding and hostel accommodation problems and the associated hazards, contribute to a great extent in lowering standard in terms of academic performance, learning, and improved health status.

### **Recommendations**

Based on findings, discussion and conclusions of this study, the following recommendations are made;

- 1) Attempts should be made to provide hall to accommodate all the students admitted into the universities.
- 2) Admission of students should base on available bed spaces and good maintenance culture among all those concerned with the management of the hostels should be implemented, in order to provide good hostel environment for students.
- 3) The university students could also play a constructive role in finding solutions to their residential accommodation crisis, to take the example of Queens hall executives, at university of Ibadan, who in 1996 sought sponsorship or financial assistance from individuals and corporate bodies towards the development of halls of residence.
- 4) Also, not less than 80% of the students surveyed hold the opinion that the universities and by extension, the state should continue to provide campus accommodation for students; government should build more halls or hostels and better maintain the existing ones. If and when more halls are build, there is the need to make the rents more realistic even as it is subsidized.
- 5) The opinion of state/universities building more halls of residence should go with recognition of the need periodically revise the rents, and create a conducive environment for proper learning. Getting students themselves to be part of these decisions would help.
- 6) Students also have the responsibility of keeping the hostels clean. They would achieve this by cleaning their rooms, toilets and bath rooms sweeping their corridors and also dumping refuse where appropriate.
- 7) There should be enactment and enforcement of laws on overcrowding which act as a checkmate to the students.

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## **Invitro-Fertilization: An Innovation for Managing Infertility among Couples in Recent Years**

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### **Abstract**

Infertility is the inability of a couple to become pregnant (regardless of cause) after one year of unprotected sexual intercourse. The aim of this study is to explain in-vitro-fertilization as one of the ways of managing infertility. The work further describe in-vitro fertilization as a procedure that allows couples who cannot conceive normally to have a child. The woman's egg(ovum) and the man's sperm are taken out of the body and fertilized in a laboratory, then put back into the woman who carries the pregnancy to term. systematic review of evidence based literatures was used and the history, indications, process, prognosis, advantages, disadvantages and complications were also highlighted. In the findings, it was discovered that in-vitro fertilization allows women who may not have been able to conceive to get pregnant, some in-vitro procedures has been too effective while some women giving birth to twins, triplets or even more babies at once suggestions were made which include more sensitization among couples to embrace this technology, government intervention to reduce the cost of providing this service to the less privilege and continuous health education and enlightenment programme to the populace.

**Keywords:** in vitro, fertilization, infertility, couples, pregnancy.

### **Introduction**

An In-vitro-fertilization cycle takes four to six weeks to complete and usually cost up to one million naira. IVF is a major treatment for infertility when other methods of assisted reproductive technology have failed. The process involves monitoring a women's ovulatory process. Removing ovum or ova (egg or eggs) from the women's ovaries and letting sperm fertility them in a fluid medium in a laboratory. The fertility egg (zygote) is then transferred to the women's uterus with the intention of establishing a successful pregnancy. The first successful birth of a "test tube baby", Louise Brown, occurred in 1978. Robert G Edwards, the physiologies who developed the treatment, was awarded the Nobel Prize in physiology in 2010.

The term in vitro, from the Latin meaning in glass, is used, because early biological experiments involving cultivation of tissues outside the living organism from which they came, were carried out in glass containers such as beakers, test tubes, or petri dishes. Today the term in vitro is used to refer to any biological procedure that is perform outside the organism it would normally be occurring in, to distinguish it from an in vivo procedure, where the tissue remains inside the living organism within which it is normally found. A colloquial term for babies conceived as the result of IVTF, "test tube babies ", refer to the tube-shaped containers of glass or plastic resin, called test tube that are commonly used in chemistry labs and biology lab. However, in vitro fertilization is usually performed in the shallower containers called petri dishes. IVF is a complex and expensive procedure: only about 5% of couples with infertility seek it out. However,



since its introduction in the U.S in 1981, IVF and other similar techniques have resulted in more than 200,000 babies today, in vitro fertilization (IVF) is practically a household word. But not so long ago, it was a mysterious procedure for infertility that produced what were then known as “test-tube babies”.

### **History of In Vitro Fertilization**

There was a transient biochemical pregnancy reported by Australian foxton school researchers in 1953. John Rock was the first to extract an intact fertilized egg. In 1959, Min Chueh Chang at the Worcester foundation, proved fertilization in vitro was capable of proceeding to a birth of a live rabbit. Chang's discovery was seminal, as it clearly demonstrated that oocytes fertilized in vitro were capable of developing, if transferred into the uterus and thereby produce live young.

The first pregnancy achieved through in vitro human fertilization of a human oocyte was reported in the lancet from the Monash University Team(1973), although it lasted only a few days and would today be called a biochemical pregnancy. there was also an ectopic pregnancy reported by Patrick Steptoe and Roberts Edwards (1976& 1977), Steptoe and Edwards successfully carried out a pioneering conception which resulted in the birth of the world's first baby to be conceived by IVF, LOUISE Brown (1978), in Oldham General Hospital, Greater Manchester, (1978), reported that Subash Mukhopadhyay, a relatively unknown physician from Kolkata, India was performing experiments on his own with primitive instruments and a household refrigerator and this resulted in a test tube baby, later named as “Durga” (alias Kanupriya Agarwal) who was born on 3 October 1978. However, state authorities prevented him from presenting his work at scientific conferences and, in the absence of scientific evidence, his work is not recognized by the international scientific community.

Steptoe and Edwards were responsible for the world's second (confirmed) baby conceived by IVF, Alastair MacDonald born on 14 January 1979 in Glasgow. A team led by Ian Johnston and Alex Lopata were responsible for Australia's first baby conceived by IVF, Candice Reed born on 23 June 1980 in Melbourne. It was the subsequent use of stimulated cycles with clomiphene citrate and the use of human chorionic gonadotrophin (HCG) to control and time oocyte maturation, thus controlling the time of collection, that converted IVF from a research tool to a clinical treatment. This was followed by a total of 14 pregnancies resulting in nine births in 1981 with the Monash University team. The Jones team at the Eastern Virginia Medical School in Norfolk, Virginia, further improved stimulated cycles by incorporating the use of a follicle-stimulating hormone (uHMG). This then became known as controlled ovarian hyperstimulation (COH). Another step forward was the use of gonadotrophin-releasing hormone agonists (GnRHA), thus decreasing the need for monitoring by preventing premature ovulation, and more recently gonadotrophin-releasing hormone antagonists (GnRH Ant), which have a similar function. The ability to freeze and subsequently thaw and transfer embryos has significantly improved the feasibility of IVF use.

The other very significant milestone in IVF was the development of the Intracytoplasmic Sperm Injection (ICSI) of single sperms by Andre van Steirteghem and Paul Devroey in Brussels (UZ Brussel), 1992. This has enabled men with minimal sperm production to achieve pregnancies. ICSI is sometimes used in conjunction with Sperm recovery, using a testicular fine needle or open testicular biopsy. Using this method, some men with Klinefelter's syndrome, and so would be otherwise infertile, have occasionally been able to achieve pregnancy. Thus, IVF has become the final solution for most fertility problems, moving from tubal disease to male factor, idiopathic sub fertility, endometriosis, advanced maternal age, and anovulation not responding to ovulation induction. Robert Edwards was awarded the 2010 Nobel Prize in Physiology “for the development of in vitro fertilization” Carl Wood was dubbed “the father of IVF (in vitro fertilization)” for having



pioneered the use of frozen embryos. In the US, ART cycles started in 2006 resulted in 41,343 births (54,656 infants), which is slightly more than 1% of total US births. In 2012 it was estimated that five million children has been born worldwide using IVF and other assisted reproduction techniques.

### Indications

For some situations or conditions, such as tubal factor, IVF may be the first-line treatment. In other cases, IVF is recommended treatment. **Fallopian Tube Damage/Tubal Factor:** The only options for treating significant tubal damage are surgical repair or bypassing the tubes with IVF. This decision must be carefully individualized in each situation. **Male Factor Infertility:** One of the most dramatic advances in the treatment of infertility has been the capacity to obtain fertilization and pregnancy in the IVF lab with severely abnormal sperm samples by utilizing ICSI (Intracytoplasmic Sperm Injection). ICSI is often recommended if there is any suggestion of a sperm problem, if sperm are obtained surgically, or if there has been a prior failure of only if simpler treatment fails. Below is a list of common indications for IVF fertilization.

- Endometriosis may be effectively treated with a combination of surgical and medical therapy. IVF is very effective as a second line of treatment if the initial treatment is proven unsuccessful.
- Age Related Infertility: In normal reproductive life, a woman's ovarian function is diminished with age. In many cases, this reduced function can be overcome through the use of IVF alone or in conjunction with techniques such as Assisted Hatching and ICSI.
- Anovulation: The majority of patients with anovulation will conceive using simpler treatments. However, those patients requiring IVF are typically “high responders” to gonadotropin therapy and have a good prognosis.
- Unexplained Infertility: Approximately 20% of couples will have no identifiable cause of infertility after completing a comprehensive evaluation. IVF is often successful even if more conservative treatments have failed, especially since some of these couples actually have some block to fertilization.
- Preimplantation Genetic Testing (PGT): Genetic testing on pre-implantation embryos may be indicated for patients who are at risk for genetic disorders such as Cystic fibrosis and Thalassaemia and for patients with infertility related to chromosomal abnormalities such as recurrent pregnancy loss or repeated unsuccessfully IVF.

### In Vitro Fertilization Technique (Process)

- A number of screening tests are performed prior to beginning an IVF cycle. Tests typically include imaging studies such as a transvaginal ultrasound of the ovaries and uterus. In some cases, oral contraceptive pills are administered in the cycle prior to the treatment cycle. Sometimes another medication, leuprolide (Lupron) is also given during this phase, depending upon the protocol used. It may also be necessary to carry out further imaging studies of the uterus, such as a hysteroscopy.
- When the treatment cycle begins, medications known as gonadotrophins are given daily by injection to promote maturation of ovarian follicles containing eggs. The woman is taught to administer the injections at home. Blood tests are carried out to measure hormone levels. While the goal is to stimulate production of multiple follicles, the actual number of developing follicles varies widely. Some women may produce 20 or more follicles, while others produce only two or three per cycle. During this so-called stimulation phase,

transvaginal ultrasounds are performed frequently to assess maturation of the follicles and are performed daily toward the end of the stimulation phase.

- When, according to the ultrasound results, the follicles are mature, the woman administers an injection of human chorionic gonadotrophin (hCG). It is critical for the success of the procedure to take this injection at precisely the time that you are instructed to do so. This is the final step in the maturation process for the follicles.
- **Egg Retrieval and Fertilization:** The egg retrieval procedure is performed 34 to 36 hours after the hCG injection was given. In this procedure, the surgeon inserts a needle through the vagina into the woman's ovary to remove the fluid from the follicles, which contains the mature eggs. General anesthesia is not required for this part of the procedure, but the woman may be given some sedating medication. The procedure takes about 20 to 30 minutes and is performed on an outpatient basis. The woman is generally advised to rest on the day of the procedure. Some light spotting and/or mild cramping may occur after the retrieval procedure. The fluid removed from the follicles is examined in the laboratory to make sure eggs are present.
- At the same time, the man provides a semen sample. He is asked not to have sexual intercourse for a few days before the eggs are retrieved from the woman and before he produces a semen sample (usually by masturbation). The sperm are separated from the semen in a laboratory procedure.
- The active sperm are combined in the laboratory dish with the eggs. This is the actual process of in vitro fertilization. In some cases, a sperm cell will be manually inserted into the egg in a process known as intracytoplasmic sperm injection (ICSI). This step is done for a variety of reasons including poor sperm quality.
- About 18 hours after this fertilization procedure, it is possible to determine if the egg or eggs have been fertilized and have begun to grow as embryos. They are incubated and observed over the next 2 to 3 days or longer.
- **Embryo Transfer:** The woman will be informed by the laboratory about the status of the fertilization process including the number of eggs that were successfully fertilized. The embryo transfer is typically scheduled 3 to 5 days after the egg retrieval, depending upon the maturation of the embryos.
- The number of embryos to be transferred will be decided by the doctor and the woman together. This can vary from one embryo to several. In making a recommendation about the number of embryos to transfer, the doctor will consider the woman's age and reproductive history, the quality and appearance of the fertilized embryos, and the risk of multiple gestations.
- For the embryo transfer, the doctor transfers the embryos into the woman's uterus through the cervix with a catheter (a long slender tube). This procedure is done with a speculum in a manner similar to a pelvic exam. Anesthesia is not required for this procedure. The woman should then remain in a resting position for the next hour or so.
- **After Embryo Transfer.** This is known as the luteal phase of the cycle, and the woman is given the hormone progesterone, either as injections or vaginal suppositories. Sometimes progesterone in both forms may be given. She is given the progesterone for the next 2 weeks. A pregnancy test is scheduled for two weeks following the embryo transfer. If implantation is successful (the egg or eggs attach to the uterine wall and grow), the pregnancy test result is positive.

### Outlook (Prognosis)

After embryo transfer, the woman may be told to rest for the remainder of the day. Complete bed rest is not necessary, unless there is an increased risk of OHSS. Most women return to normal activities the next day. Women who undergo IVF must take daily shots or pills of the hormone progesterone for 8 – 10 weeks after the embryo transfer. Progesterone is a hormone produced naturally by the ovaries that helps thicken the lining of the womb (uterus). This makes it easier for the embryo to implant. Too little progesterone during the early weeks of pregnancy may result in a miscarriage. About 12-14 days after the embryo transfer, the woman will return to the clinic so that a pregnancy test can be done.

**Success rates:** In 2006, Canadian clinics reported an average pregnancy rate of 35%. A French study estimated that 66% of patients starting IVF treatment finally succeed in having a child (40% during the IVF treatment at the center and 26% after IVF discontinuation). Achievement of having a child after IVF discontinuation was mainly due to adoption (46%) or spontaneous pregnancy (42%). The success rate depends on variable factors such as maternal age, cause of infertility, embryo status, reproductive history and lifestyle factors (Didona, 2006).

**Live birth rate:** The live birth rate is the percentage of all IVF cycles that lead to a live birth. This rate does not include miscarriage or still birth and multiple-order births such as twins and triplets are counted as one pregnancy. In 2006, Canadian clinics reported a live birth rate of 27%. Birth rates in younger patients were slightly higher, with a success rate of 35.3% for those 21 and younger, the youngest group evaluated. Success rates for older patients were also lower and decrease with age with 37 year olds at 27.4% and no live births for those older than 48, the oldest group evaluated. Some clinics exceeded these rates, but it is impossible to determine if that is due to superior technique or patient selection, because it is possible to artificially increase success rates by refusing to accept the most difficult patients or by steering them into oocyte donation cycles (which are compiled separately). Further, pregnancy rates can be increased by the placement of several embryos at the risk of increasing the chance for multiples. The Society for Assisted Reproductive Technology (SART) summarized 2008-9 success rates for US clinics for fresh embryo cycles that did not involve donor eggs and gave live birth rates by the age of the prospective mother, with a peak at 41.3% per cycle started and 47.3% per embryo transfer for patients under 35 years of age. IVF attempts in multiple cycles result in increased cumulative live birth rates. Depending on the demographic group, one study reported 45% to 53% for three attempts, and 51% to 71% to 80% for six attempts. Pregnancy rate may be defined in various ways. In the United States, the pregnancy rate used by the Society for Assisted Reproductive Technology and the Centers for Disease Control.

A 2012 Summary compiled by the society for Reproductive Medicine which reports the average IVF success rates in United States per group using non-donor eggs compiled the following data.

<b>Success Rate of United States</b>					
Variable	<35	35-37	38-40	41-42	>42
Pregnancy Rate	46.7	37.8	9.7	19.8	8.6
Live Birth Rate	40.7	31.3	22.2	11.8	3.9

Source: Society for Reproductive Medicine 2012



### **Advantages of In Vitro Fertilization**

The advantages of IVF can be the following. These advantages make people to utilize this technique as this can be the only option to be pregnant.

- Problems in trying to conceive will be solved through this
- Safe and easy method
- Women with damaged fallopian tubes also have babies
- No long term side effects will be there

### **Disadvantages of In Vitro Fertilization**

- Increased risk of miscarriage in multiple pregnancy
- Premature birth
- Expensive treatment
- Ectopic Pregnancy
- Drug treatment effects
- Mental Strain

All the above issues are related to the in vitro fertilization method. These can happen or may not happen in case of IVF treatments. Anyway, the person attempting IVF should know about these disadvantages and should be ready to face these too although it happens less frequently.

### **Complications in the IVF procedure**

Possible risks may occur throughout the procedure, and depend on the specific step of the procedure. During ovarian stimulation, hyperstimulation syndrome may occur. This results in swollen, painful ovaries and some form of it(mild, moderate or severe) occurs in 30% of patients. Mild cases can be treated with over the counter medications and cases can be resolved in the absence of pregnancy. In moderate cases, ovaries swell and fluid accumulated in the abdominal cavities and may have symptoms of heartburn, gas, nausea, vomiting and will result in hospitalization. During egg retrieval, there's a small chance of bleeding, infection and damage to surrounding structures like bowel and bladder (transvaginal ultrasound aspiration) as well as difficulty in breathing, chest infection, allergic reactions to meds, or nerve damage (laparoscopy).

During embryo transfer, if more than one embryo is transferred there's always a risk of multiple pregnancy, infertile couples may see this is good news but there may be risk to the embryos and to the mother such as premature delivery. Ectopic pregnancy may also occur if a fertilized egg develops outside the uterus, usually in the fallopian tubes and requires immediate destruction of the fetus.

**Multiple births:** The major complication of IVF is the risk of multiple births. This is directly related to the practice of transferring multiple embryos at embryo transfer. Multiple births are related to increased risk of pregnancy loss, obstetrical complications, prematurity, and neonatal morbidity with potential for long term damage. Strict limits on the number of embryos that may be transferred have been enacted in some countries (e.g. Britain, Belgium) to reduce the risk of high order multiples (triplets or more), but are not universally followed or accepted.

Spontaneous splitting of embryos in the womb after transfer can occur, but this is rare and would lead to identical twins. A double blind, randomized study followed IVF pregnancies that resulted in 73 infants (33 boys and 40 girls) and reported that 8.7% of singleton infants and 54.2% of twins had a birth weight of <2,500 grams (5.5lb). Recent evidence also suggests that singleton offspring after IVF is at higher risk for lower birth weight for unknown reasons (Didona, 2006).

**Birth defects:** A review in 2012 came to the result that singleton pregnancies resulting from IVF (with or without ICSI) is associated with a relative risk of congenital anomalies of 1.67 (95% confidence interval 1.33-2.09) compared to spontaneous pregnancies. In 2008, an analysis of the data of the National Birth Defects Study in the US found that certain birth defects, cleft lip with or



without cleft palate, esophageal atresia, and anorectal atresia; the mechanism of causality is unclear.

### Conclusion

IVF is never the first step in the treatment of infertility. Instead, it's reserved for cases in which other methods such as fertility drugs, surgery, and artificial insemination haven't worked. When it comes to infertility, IVF may be an option if either of the partners have been diagnosed with:

- Endometriosis
- Low sperm counts
- Problems with the uterus or fallopian tubes
- Problems with ovulation
- Antibody problems that harm sperm or eggs
- The inability of sperm to penetrate or survive in the cervical mucus
- An unexplained fertility problem

IVF was used successfully for the first time in the United States in 1981. More than 4 million babies have been born worldwide as a result of using the in vitro fertilization technique. IVF offers infertile couples a chance to have a child who is biologically related to them. Today, over 1% of infants born in the US are a result of a pregnancy conceived by assisted reproductive technologies.

With IVF, a method of assisted reproduction, a man's sperm and the woman's egg are combined in a laboratory dish, where fertilization occurs. The resulting embryo or embryos is/are then transferred to the woman's uterus (womb) to implant and develop naturally. Usually, two or four embryos are placed in the woman's uterus at one time. Each attempt is called a cycle. IVF is usually the treatment of choice of a woman with blocked, severely damaged, or no Fallopian tubes. IVF is also used to overcome infertility caused by endometriosis or problems with the man's sperm such as low sperm count. Couples who simply can't conceive and have tried other infertility methods such as intrauterine insemination that have not worked for them can also try IVF.

### Suggestions

- There is need to sensitize the infertile couples to welcome this new technology in order to solve their problems.
- Government should intervene to reduce the high charges by the physician on this service so that other couples can access the services
- The International Organizations, Federal and State Government should try to provide qualified IVF treatment staff and equipment in the public hospitals for cost effectiveness and easy accessibilities.
- Continuous and Consistent health education by relevant health organizations and NGOs.
- There should be designated IVF treatment centres for couples in Nigeria as obtainable in other countries of the world.
- IVF treatment should be recommended for older patients when other medications proved to be unsuccessful.

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## **Entrepreneurship Education: Students' Rating of Skills for Employment Opportunities**

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### **Abstract**

Entrepreneurship Education (EE) plays an important role in developing entrepreneurs. It is one of the courses recommended for acquisition of skills for employment opportunities among students in tertiary institutions in Nigeria. This study sought to identify students' preferred skills in Rivers State College of Health Science & Technology, Port Harcourt. A sample size of 318 students, randomly selected from all the departments in the college was used for the study, giving 12.2% of the estimated parent population of 2,600 students. Out of this number, male students were 65 (20.4%) and female students were 253 (79.6%). The questionnaire was used for collection of data and analysed based on percentage and simple ranking. The results showed that *catering, make-up beauty salon, decoration of event venue, fashion/designing and information and communication technology (ICT)* were the five most preferred skills for employment opportunities by the students. This study would not only guide the college in its pursuit of achieving success in EE, but would also guide other institutions, including Non-Governmental Organisations (NGOs) who are involved in skills acquisition in the state. It recommends that market outlets should be provided for the college community to assess the products of its Entrepreneurship Education.

**Keywords:** Entrepreneurship Education, skills, employment.

### **Introduction**

Entrepreneurship Education (EE) is one of the courses recommended for acquisition of skills for employment opportunities among students in tertiary institutions in Nigeria. According to Okebukola (2011), it was particularly introduced in the Nigerian university system in 2005 to address the rising trend of unemployment due to decline in industrialization and infrastructure in the country and steady increase in production of graduates who looked forth to securing white-collar jobs. National Universities Commission (NUC) has stated the overall course objective of Entrepreneurship Education; the aim is to "provide students with an exciting introduction to the theory and practice of entrepreneurship and new venture creation" (Okebukola, 2011, p. 29). In the view of Olawolu and Kaegon (cited in Undiyaundeye & Otu, 2015), EE prepares students to be reliable individuals who become entrepreneurial thinkers by exposing them to real life learning experiences where they will be required to think, take risks, manage challenges of life. Succinctly put, Entrepreneurship Education prepares students to be successful in setting up small and medium enterprises (SMEs). They achieve this by introducing advanced technology in their businesses which non-graduate skilled persons may not attain. According to Oreva (2017), educational systems have failed to give priority to the development of talents and skills, noting that in the absence of white-collar jobs, as it is at the moment, the utilization of personal skills would make it possible for one to survive with ease, and that it is important to note that the acquisition of

vocational skills is not limited to the unemployed.

An entrepreneur is “ an economic leader who possesses the ability to recognize opportunities for successful introduction of new commodities, new techniques, and new sources of supply, and to assemble the necessary plant and equipment, management, and labour force and organize them into a running concern” (Jhingan, 2011, p.439). This thesis has succinctly captured the economic importance of entrepreneurship in building a virile nation. Most undergraduates in Nigeria have the dream of being employed on graduation by government or private firms. The idea of employment of graduates as the primary responsibility of government is linked to the history of the country between 1960 – 1966 when graduates had employment opportunities readily available in government ministries and parastatals. Those who chose to work in non-government establishments did so as a matter of choice and convenience, not as the last resort.

Today, despite the fact that government and even private firms can no longer accommodate the teeming population of unemployed graduates, most students seem unprepared to face the challenges of unemployment; hence they become disillusioned when their dream of immediate employment fails. According to National Poverty Eradication Programme (cited in Adekola, Allen, Olawole-Isaac, Akanbi & Adewumi, 2016), an average of 120,000 graduates are produced by tertiary institutions in Nigeria every year without hope of being employed. As at the third quarter of 2017, National Bureau of Statistics (NBS) reported that Rivers State had the highest unemployment rate of 41.82 per cent in the country, stating that for every 10 persons in Rivers State, four were unemployed. The report further stated that Rivers State was followed by Akwa-Ibom State with a 36.58 per cent unemployment rate, while Bayelsa and Imo states had 30.36 per cent and 29.47 per cent respectively. The total unemployment and underemployment combined moved from 37.2 per cent in the previous quarter to 40.0 per cent in the third quarter of 2017 (Business News Report, 2017).

There is a link between increase in unemployment and growth in population, especially, in third world countries which Nigeria is inclusive. According to Jhingan, (2011, p. 45), “unemployment is spreading with urbanisation and the spread of education, but the industrial sector has failed to expand along with the growth of labour force thereby increasing urban unemployment”. The unemployment situation in Nigeria gave rise to the establishment of many programmes aimed at boosting employment such as National Directorate of Employment, School-to-Land, Better Life for Rural Women, Family Support Programme, National Economic Empowerment and Development Strategies, National Poverty Eradication Programme, and most recently, N-Power programmes of the present administration. These programmes have not significantly assuaged the unemployment challenges; hence experts in education have consistently emphasized the importance of Entrepreneurship Education for undergraduates. The aim of the course is to provide students with the opportunity to acquire relevant knowledge and skills for employment opportunities as employees or employers. According to Adegunju (2013), adequate skill acquisition programmes for youths should be put in place to complement the Federal Government's efforts to generate employment opportunities in order to reduce high rate of unemployment in Nigeria, which has led to all kinds of despicable acts such as kidnapping, terrorism, armed robbery, prostitution and other violent crimes

Unemployment has been defined as the economic condition of persons without work for pay or profit, who are seeking and available to start working for pay or profit in a given period (International Labour Organisation, 2018). The unemployed comprise those persons who were



without work and immediately available to start work during the same period and who had actively looked for a job at some time during the preceding four weeks. People neither employed nor unemployed are considered inactive and are excluded from the labour force (Brandolini, Cipollone & Viviano, 2004).

Consequently, each tertiary institution adopts a particular approach to Entrepreneurship Education. However, the magnet-model approach is being adopted by most schools; it brings students from different departments to undertake Entrepreneurship Education under one academic unit by bringing all resources and skills into “a single hub that facilitates the coordination and planning of entrepreneurial activities” (Okebukola, 2011, p. 3). It is this type of model that is being planned for students in Rivers State College of Health Science and Technology, Port Harcourt.

Studies have shown different rankings of skills by students. Ogar (2017), for instance, engaged over 300 students in the determination of choice skills in Nigeria through on-line participation. The result showed that food services, computer support and services, hair styling and beauty services, digital marketing, manufacturing, tailoring/fashion designing, auto services, construction services, carpentry and photography were the top 10 skills in demand. Earlier, Anene and Imam (2011) identified potentially viable skills for curriculum development for Entrepreneurship Education at undergraduate level. 500 students of the University of Abuja were tasked to rank 66 skills. The results showed that operating a salon was ranked 1st, interior decoration 2nd, landscaping 3rd, electric wiring 4th, electrical/installation 5th, fashion designing 6th, business centre 8th, graphic designing 9th, and fisheries was placed on the 24th position. In the opinion of Oreva (2017), five vocational skills that everyone should consider acquiring are: photography, digital marketing, food services, manufacturing and fashion designing.

From the foregoing discourse, Entrepreneurship Education should be vigorously practiced to achieve its objectives. First, the students' interest should be considered in selecting skill areas for learning. It was on this premise that the researchers sought to identify students' preferred skills in Rivers State College of Health Science & Technology, Port Harcourt. This study would not only guide the college in its pursuits of achieving success in EE, but would also guide other institutions, including Non-Governmental Organisations (NGOs) who are involved in skills acquisition in the state.

### **Specific Objectives**

The study sought to identify:

- the five most preferred skills among the students of Rivers State College of Health Science and Technology,
- the five most preferred skills among the male students of Rivers State College of Health Science and Technology, and
- the five most preferred skills among the female students of Rivers State College of Health Science and Technology.

### **Method**

The study was carried out in Rivers State College of Health Science and Technology, Rumueme, Port Harcourt. A sample size of 318 students who were randomly selected from all the departments in the college was used for the study, giving 12.2% of the estimated parent population of 2,600 students. This sample size is representative enough for a descriptive research design (see Nwana,

2005 & Uzoagulu, 2011). Out of this number, male students were 65 (20.4%) and female students were 253 (79.6%). The questionnaire was used for collection of data and analysed based on percentage and simple ranking. Respondents were requested to choose their five most preferred skills from a list of 20 skills.

## Results

**Table 1:** Five most preferred skills among the students of Rivers State College of Health Science and Technology.  
N = 318

S/N	Skill	No. of Students	Percentage (%)	Ranking
1	Fish farming	55	17.3	12th
2	Snail farming	23	7.2	17th
3	Cosmetics production	110	34.6	6th
4	Information and communication technology	141	44.3	5th
5	Fashion and designing	153	48.1	4th
6	Beads making	67	21.1	9th
7	Printing/publishing	22	7.0	18th
8	Paint making	26	8.2	16th
9	Cell phone maintenance	38	12	14th
10	Catering	218	68.5	1st
11	Events management	66	20.8	10th
12	Poultry	70	22	8th
13	Furniture making	10	3.2	20th
14	Public speaking	60	18.9	11th
15	Barbing	21	6.6	19th
16	Decoration of event venue	167	52.5	3rd
17	Braiding/plaiting	55	17.3	12th
18	Make-up beauty salon	180	56.6	2nd
19	Shoes production	78	24.5	7th
20	Digital marketing and branding	30	9.4	15th

Table 1 above shows that *catering*, *make-up beauty salon*, *decoration of event venue*, *fashion/designing* and *information and communication technology (ICT)* were the five most preferred skills for employment opportunities by the students of Rivers State College of Health Science and Technology, Port Harcourt. While *catering* was 1st on the ranking, *furniture-making* was last, that is, 20th position.

**Table 2:** Five most preferred skills among male students of Rivers State College of Health Science and Technology.  
N = 65

S/N	Skill	No. of Students	Percentage (%)	Ranking
1	Fish farming	27	41.5	2nd
2	Snail farming	8	12.3	16th
3	Cosmetics production	13	20	14th
4	Information and communication technology	32	49.2	1st
5	Fashion and designing	27	41.5	2nd
6	Beads making	4	6.2	19th
7	Printing/publishing	16	24.6	11th
8	Paint making	15	23.1	12th
9	Cell phone maintenance	17	26.2	8th
10	Catering	20	30.8	6th
11	Events management	12	18.5	15th
12	Poultry	25	38.5	4th
13	Furniture making	7	10.8	18th
14	Public speaking	20	30.8	6th
15	Barbing	15	23.1	12th
16	Decoration of event venue	21	32.3	5th
17	Braiding/plaiting	4	6.2	19th
18	Make-up beauty salon	8	12.3	16th
19	Shoes production	17	26.2	8th
20	Digital marketing and branding	17	26.2	8th

Table 2 above shows that *ICT* had the highest number of male respondents, *beads making* and *braiding/plaiting* were ranked last. *Fish farming* and *fashion/designing* were placed on the 2nd position, while *poultry* and *decoration of event venue* got the 4th and 5th positions respectively.

Table 3: Five most preferred skills among female students of Rivers State College of Health Science and Technology.  
N = 253

S/N	Skill	No. of Students	Percentage (%)	Ranking
1	Fish farming	28	11.1	13th
2	Snail farming	15	5.9	15th
3	Cosmetics production	97	38.3	6th
4	Information and communication technology	109	43.1	5th
5	Fashion and designing	126	49.8	4th
6	Beads making	63	24.9	7th
7	Printing/publishing	6	2.4	18th
8	Paint making	11	4.3	17th
9	Cell phone maintenance	21	8.3	14th
10	Catering	198	78.3	1st
11	Events management	54	21.3	9th
12	Poultry	45	17.8	11th
13	Furniture making	3	1.2	20th
14	Public speaking	40	15.8	12th
15	Barbing	6	2.4	18th
16	Decoration of event venue	146	57.7	3rd
17	Braiding/plaiting	51	20.2	10th
18	Make-up beauty salon	172	68	2nd
19	Shoes production	61	24.1	8th
20	Digital marketing and branding	13	5.1	16th

Table 3 above indicates that 198 female students chose *catering* skill, giving it the 1st position, while 172 chose *make-up beauty salon*, placing it on the 2nd position. *Decoration of event venue*, *fashion/designing* and *ICT* were ranked 3rd, 4th and 5th. *Furniture making* was the least skill among the female respondents.

### Discussion of Findings

The findings of this study showed *catering*, *make-up beauty salon*, *decoration of event venue*, *fashion/designing* and *information and communication technology (ICT)* were the five most preferred skills for employment opportunities by the students of Rivers State College of Health Science and Technology, Port Harcourt. This result is not a complete departure from the studies of Ogar (2017) and Anene and Imam (2011), as well as the opinion of Oreva (2017). All the studies identified *beauty salon*, *catering* and *fashion/designing* as the most trending among students. In order to make Entrepreneurship Education initiative gender sensitive, *fish farming* should be given priority for the sake of male students; the skill was 1st by them.

### Conclusion

This study sought to identify students' preferred skills in Rivers State College of Health Science and Technology, Port Harcourt so that the college could be guided in its pursuit of Entrepreneurship Education (EE) as one course recommended for acquisition of skills for employment opportunities among students in tertiary institutions in Nigeria. The results showed that *catering*, *make-up beauty salon*, *decoration of event venue*, *fashion/designing* and *information and communication technology (ICT)* were the five most preferred skills for employment opportunities by the students. This study would also guide Non-Governmental Organisations (NGOs) who are involved in skills acquisition in the state.

### Recommendations

1. A comprehensive skills acquisition centre should be built, equipped and managed on partnership basis.
2. Market outlets should be provided for the college community to assess the products of its Entrepreneurship Education.
3. Soft loans should be provided by government and banks for outstanding graduates of the programme.

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## **United Nations' Peacekeeping Missions and Human Security**

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### **Abstract**

The paper examined the nexus of United Nations' (UN) peacekeeping missions and human security. Peacekeeping was conceptualized as a technique designed to preserve peace where fighting has been halted. The paper highlighted considerable evidence to show that the UN peacekeeping operations are effective in maintaining peace. It also showed strong evidence that the presence of peacekeepers significantly reduces the risk of renewed warfare, battlefield deaths and civilian deaths. It was argued that peacekeeping strengthens security which in turn shapes and strengthens moral, ethical and ideational foundation of politics and eventually accelerates multilateral humanitarian efforts of the world community. Additionally it was concluded that UN peacekeeping operations are viable instrument for the maintenance of human security and world peace.

**Keywords :** United Nations, peacekeeping, human security.

### **Introduction**

Since 1945, the United Nations has developed a range of activities for preventing and solving conflicts that constitute a threat to international peace and security. Peacekeeping is one of such main tools of conflict resolution. Peacekeeping is a technique designed to preserve peace where fighting has been halted (UN, 2008). Today, peacekeeping missions have been deployed to many countries all over the world. Peacekeepers are implementing various tasks set in the Security Council's resolution that authorizes a mission. The role of peacekeeping operations has evolved over the past decades from being basically observing by nature to fulfilling a number of activities including military, police and civilian components.

One of the findings of Fortna (2008) is that "peacekeeping is a matter of supply and demand". From the supply side, she observes that there is unlikely a peacekeeping mission in civil wars on countries close to one of the members of the Security Council. From the demand side, there is diverse evidence that peacekeeping missions are deployed in the countries who need it the most, this is where the risk of a recurring war is high.

According to the United Nations' Department of Peacekeeping, peacekeeping refers to activities intended to create conditions that favour lasting peace. Research generally finds that peacekeeping reduces civilian and battlefield deaths and reduces the risk of renewed warfare. Within the United Nations (UN) group of nation-state governments and organizations, there is a general understanding that at the international level, peacekeepers monitor and observe peace processes in post-conflict areas, and may assist ex-combatants in implementing peace agreement commitments that they have undertaken. Such assistance may come in many forms, including confidence-building measures, power-sharing arrangements, electoral support, strengthening the rule of law and economic and social development. Accordingly, the UN peacekeepers (often referred to as Blue Berets or Blue Helmets because of their light blue berets or helmets) can include

soldiers, police officers and civilian personnel.

According to Bellamy, Williams and Griffith (2010), peacekeeping refers to the deployment of national, or more commonly, multinational forces for the purpose of helping to control and resolve an actual or potential armed conflict between or within states. Most peacekeeping operations are undertaken with authorization of, and are often led by, the United Nations (UN) but regional organizations may also conduct peacekeeping operations and in some cases single states have undertaken such operations as well. Peacekeeping forces are normally deployed with the consent of the parties to a conflict and in support of a ceasefire or other agreed upon peace measures. Peacekeeping forces are therefore usually unarmed or only lightly armed and use the minimum of force necessary and then only exceptionally. Peace enforcement refers to the use of military assets to enforce a peace against the will of the parties to a conflict when, for instance, a ceasefire has failed. Peace enforcement often exceeds the capacity of peacekeeping forces and is thus better executed by more heavily armed forces.

### **History of UN Peacekeeping**

United Nations Peacekeeping started in 1948 when the United Nations Security Council authorized the deployment of UN unarmed military observers to the Middle East in order to monitor the armistice agreement that was signed between Israel and its Arab neighbours in the wake of the Arab-Israeli War. This operation was called the United Nations Truce Supervision Organization (UNTSO) and is still in operation today. With the passage of resolution 73 (1949) by the Security Council in August 1949, UNTSO was given the task of fulfilling four Armistice Agreements between the state of Israel and the Arab states which had participated in the war. Thus, UNTSO's operations were spread through five states in the region-Israel, Egypt, Jordan, Lebanon and the Syrian Arab Republic.

In the wake of independence in India and Pakistan in August 1947 and the subsequent bloodshed that followed the Security Council adopted resolution 39 (1948) in January 1948 in order to create the United Nations Commission for India and Pakistan (UNCIP), with the purpose of mediating the dispute between India and Pakistan over Kashmir and the fighting related to it. This operation was noninterventionist in nature and was additionally tasked with supervision of a ceasefire signed by Pakistan and India in the state of Jammu and Kashmir. With the passage of the Karachi agreement in July 1949, UNCIP would supervise a ceasefire line that would be mutually overseen by UN unarmed military observers and local commanders from each side in the dispute. UNCIP's mission in the region continues to this day, now under the operational title of the United Nations Military Observer Group in India and Pakistan (UNMOGIP).

Since then, sixty-nine peacekeeping operations have been authorized and have deployed to various countries all over the world. The great majority of these operations have begun in the post-Cold War world. Between 1988 and 1998 thirty-five UN operations had been established and deployed. This signified a substantial increase when compared with the periods between 1948 and 1978; which saw the creation and deployment of only thirteen UN Peacekeeping operations and zero between 1978 and 1988 (Duffey, 2000).

### **Types of Peacekeeping Missions**

There are a range of various types of operations encompassed in peacekeeping. In Page Fortna's book *Does Peacekeeping Work?*, for instance, she distinguishes four different types of peacekeeping operations (Fortna 2008). Importantly, these types of missions and how they are conducted are heavily influenced by the mandate in which they are authorized. Three of Fortna's four types are consent-based missions, i.e. so-called "Chapter VI" missions, with the fourth being a "Chapter VII" Mission. Chapter VI missions are consent based; therefore they require the consent



of the belligerent factions involved in order to operate. Should they lose that consent, Peacekeepers would be compelled to withdraw. Chapter VII missions, by contrast, do not require consent, though they may have it. If consent is lost at any point, Chapter VII missions would not be required to withdraw.

The peacekeeping missions include observation, interpositional, multidimensional and peace enforcement missions.

1. *Observation Missions* which consist of small contingents of military or civilian observers tasked with monitoring cease-fires, troop withdrawals, or other conditions outlined in a ceasefire agreement. They are typically unarmed and are primarily tasked with observing and reporting on what is taking place. Thus, they do not possess the capability or mandate to intervene should either side renege on the agreement. Examples of observation missions include UNAVEM II in Angola in 1991 and MINURSO in Western Sahara.
2. *Interpositional Missions*, also known as traditional peacekeeping, are larger contingents of lightly armed troops meant to serve as a buffer between belligerent factions in the aftermath of a conflict. Thus, they serve as a buffer zone between the two sides and can monitor and report on the compliance of either side with regard to parameters established in a given ceasefire agreement. Examples include UNAVEM III in Angola in 1994, and MINUGUA in Guatemala in 1996.
3. *Multidimensional Missions*, are carried out by military and police personnel in which they attempt to implement robust and comprehensive settlements. Not only do they act as observers or in an interpositional role, but they also participate in more multidimensional tasks-such as electoral supervision, police and security forces reform, institution building, economic development and more. Examples include UNTAG in Namibia, ONUSAL in El Salvador, and ONUMOZ in Mozambique.
4. *Peace enforcement Missions* are Chapter VII missions and unlike the previous chapter VI missions, they do not require the consent of the belligerent parties. These are multidimensional operations comprising both civilian and military personnel. The military force is substantial in size and fairly well-equipped by UN peacekeeping standards. They are mandated to use force for purposes beyond just self-defense. Examples include ECOMOG and UNAMSIL in West Africa and Sierra Leone in 1999, as well as the NATO operations in Bosnia-IFOR and SFOR.

Different peacekeeping missions take place as a result of different causal mechanisms.

More military deterrence and enforcement are meant for those missions operating under the auspices of Chapter VII, while Chapter VI missions are meant to serve more as monitoring forces and interpositional operations are meant to target and prevent potential political abuse- these are primarily multidimensional missions and are heavily involved in the post-conflict political situation (Fortna, 2008).

While much has been written about peacekeeping and what peacekeepers do, very little empirical research has taken place in order to identify the manner in which peacekeepers can have an impact in a post-conflict environment. Columbia University Professor, Virginia Page Fortna attempts to lay out four causal mechanisms through which peacekeepers have the opportunity to lay the groundwork for a lasting peace (Fortna, 2008). Fortna's four mechanisms are as follows: change the incentives of recent belligerents, making peace more desirable or war more costly; reduce the uncertainty and fear that drives security dilemma spirals; prevent or control accidents or the actions of rogue groups that might otherwise escalate back to war; and prevent political abuse by one side (generally the government) that might cause actors losing the peace to take up arms anew.

Fortna argues that peacekeepers have a positive impact on the peace process, despite often



being sent to places where peace is most difficult to achieve. Peacekeeping is often looked at by detractors as ineffective or unnecessary. Peace prevails when belligerents already have a vested interest in sustaining peace and therefore it could be argued that peacekeepers play only a minor role in creating a strong foundation for enduring peace. Yet these casual reasons illustrate the important roles that peacekeepers play in ensuring that peace lasts, especially when contrasted against situations in which belligerents are left to their own devices. These casual reasons thus illustrate the need for peacekeeping and lay a foundation for the manner in which peacekeeping operations can have a substantive impact on the post-conflict environment.

#### Peacekeeping and the Nexus of Human Security in Africa

According to a 2014 survey of the academic literature, “there is considerable evidence that (United Nations peacekeeping operations) are effective in maintaining peace”(Hoeffler, 2014). According to Fortna, there is strong evidence that the presence of peacekeepers significantly reduces the risk of renewed warfare; more peacekeeping troops contribute to fewer battlefield deaths; and more peacekeeping troops contribute to fewer civilian deaths (Fortna, 2008). A study by political scientists at Uppsala University and Peace Research Institute Oslo estimates that an ambitious UN peacekeeping policy with a doubled peacekeeping operation and strong mandates would “reduce the global incidence of armed conflict by two thirds relative to a no-PKO scenario”. According to Fordham University political scientist Anjali Dayal, “Scholars have found that peacekeeping keeps wars from bleeding across borders. Having more peacekeepers on the ground also seems to correspond with fewer civilians targeted with violence. And peace operations at times have successfully served as transitional authorities, handing power back to local authorities, although this is decreasingly true. There is also evidence that the promise to deploy peacekeepers can help international organizations bring combatants to the negotiation table and increase the likelihood that they will agree to a cease-fire (Lundgren, 2016).

By controlling for specific factors that affect where peacekeepers are deployed and what the potential chances for peace are, Page Fortna's statistical research shows that there is a statistically significant impact on lasting peace when peacekeepers are deployed. Despite the fact that peacekeepers are sent to locations where peace is least likely to succeed, Fortna finds that conservative estimates suggest that the presence of UN peacekeepers diminishes the risk for renewed violence by at least 55%-60%; with less conservative estimates upwards of 75%-85% (Fortna, 2008).

Additionally, her analysis concludes that there is little difference in the effectiveness between Chapter VI consent-based missions and Chapter VII enforcement missions. Indeed, enforcement missions only remain effective if the UN peacekeeping force can prove and sustain their credibility in the use of force (Fortna, 2008). This stresses the importance of a UN mission maintaining the consent of the peace kept. Ultimately, Fortna finds that peacekeeping is an effective tool for ensuring a lasting peace; especially compared to situations in which belligerents' are left to their own devices. Utilizing the previously mentioned casual mechanisms for peacekeeping, a UN peacekeeping force can have a substantial and substantive impact on sustaining a lasting peace. Having a relative consensus of the positive impact for ensuring a lasting peace, Fortna and Howard suggest that the literature is moving towards the study of i) the effectiveness of the types of peace-keepers, ii) the transitional administrations, iii) the links between peacekeeping and democratization, and iv) the perspectives of the “peacekept” (Fortna and Howard 2008).

Doyle and Sambani's analysis finds that lasting peace is more likely after non-ethnic wars in countries with a relatively high level of development in addition to whether or not UN peacekeeping forces and financial assistance are available. They conclude that in the short run lasting peace is more dependent on a robust UN deployment coupled with low levels of hostility

between belligerent. They note that increases economic capacity can provide an incentive not to renew hostilities. In the long run, however, economic capacity matters far more whereas the degree of hostility between belligerents is less important. As successful as UN deployments can be, they have inadequately spurred independent economic development within the countries where they have intervened. Thus, the UN plays a strong, but indirect role and success in lasting peace is predicated on the development of institutions that support peace, rather than serving as a deterrent for renewed war (Doyle and Sambanis, 2010). Other scholarly analyses show varying success rates for peacekeeping missions, with estimate ranging from 31% to 85% (Autesserre, 2014).

There are many factors that can have a negative impact on lasting peace such as hidden information about the relative strength possessed by the belligerents; a rebel group's involvement in illicit financing through means such as through the export of diamonds and other minerals; participation in the trafficking of drugs, weapons and human beings; whether or not military victory was achieved by one side the length of the war as well as how costly it was; commitment problems and security dilemma spirals experienced by both sides; whether a cease-fire or treaty signed by the belligerents; lack of transparency in the motives and actions carried out by belligerents in the immediate aftermath of the conflict; extremist spoilers; participants in the conflict that may benefit from its continuation; indivisibility and more.

Perhaps one of the most statistically significant contributors to a lasting peace is whether or not military victory was achieved by one side. According to Fortna's research, civil wars in which one side wins, resulting in a cease-fire or truce, have and approximately 85%-90% lower chance of renewed war. Moreover, peace treaties further reduce the risk by 60%-70% (Fortna, 2008). If a group is funded by drugs, diamonds or other illicit trade then there is a substantial increase in the chance of renewed violence 100%-250% which is to say that in such circumstances war is two to three-and-a-half times more likely to begin again. While Fortna finds that wars which involve many factions are less likely to resume (Fortna, 2008), Doyle and Sambanis find the opposite (Doyle and Sambanis, 2010). Costly wars and wars fought along identity lines both provide varied chances of the renewal of violence. While longer wars and peace established by treaty (especially those attained by military victory) can reduce the chances of another war (Fortna, 2008).

## Conclusion

This paper examined the nexus between peacekeeping and human security. There is considerable evidence that (United Nations peacekeeping operations) are effective in maintaining peace. Also, there is strong evidence that the presence of peacekeepers significantly reduces the risk of renewed warfare; more peacekeeping troops contribute to fewer battlefield deaths; and more peacekeeping troops contribute to fewer civilian deaths. In this regard, peacekeeping activities or operations are viable instrument for the maintenance or sustenance of human security and world peace.

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