

Information and Communication Technology (ICT): A Catalyst for Promoting Primary Healthcare Delivery Services in Rural Communities in Nigeria

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Abstract: *This study examined the potentials of ICT as a catalyst for promoting primary health care delivery services in rural communities in Ukwuani local government area of Delta State. The study adopted the descriptive design survey type. A questionnaire titled ICT as a Catalyst for Promoting Primary Health Care Delivery Services in Rural Communities (QICPHCDSIRC) was designed for data collection. The sample size for the study was 192 rural dwellers which is 10% of the total population of 1,922 (though only 180 responses were analyzed due to some difficulties faced by the researcher). This amounts to 93.8% return rate. Tables, frequency counts and simple percentage statistical tool were used to answer the research questions. The study revealed that ICT tools are being employed in the delivery of primary health care services in these rural communities. The study further revealed that the respondents are aware of the various benefits derived from ICT application in primary health care service delivery which include access to timely and quality primary health services amongst others. It was also discovered from the study that the major area of primary health care where ICT enhances effective delivery was in maternal and child health and family planning; and that the barriers to the smooth implementation of ICT in primary health care delivery include poor ICT / Primary health care infrastructures, absence of government policies on implementing ICT in health care, high level of illiteracy among the rural dwellers and so on. It was recommended that standard ICT infrastructures for primary health care services delivery should be provided in rural communities and a well structured policy to guide the implementation of ICT in primary health care delivery services in rural communication should be provided and also reviewed regularly and so on.*

Key words: *Information and Communication Technology (ICT), Primary Health Care, Delivery Services, Rural Communities, Delta State and Nigeria.*

1. Introduction

It is no longer news that Information and Communication Technology (ICT) is arguably the most rapidly growing segment of the world ecosystem. The development in the sector permeates every human activity: social, economic, cultural, religious, political or health care (Idowu, Cornford & Bastin, 2008). The huge networking possibilities afforded by ICT has significantly transformed the health care systems in the world; dispersing health care information with comparative ease, bringing patients closer to caregivers, making access to the best health care technology and expertise available to the remotest parts of the world (Akadiri, Olusanya & Omitola, 2009).

Without a doubt, ICT is revolutionizing our life, our ways to interact with each other, and day-to-day life and work. Its application in health is described broadly as eHealth, which

includes telemedicine (Health care for all, 2001), electronic medical records, and health information systems with decision support, mobile health and eLearning tools. E-Health has shown potential in facilitating a better health care delivery system, leading to better health and universal health coverage (Marker, McNamara & Wallace, 2002). It creates access, enhances quality, improves primary health care interventions and can act as a solution for situations where human resources for health are scarce (Dzenowagis, 2009).

However, Primary health care has been singled out as the most suitable health care setting to meet the increasing need for health promotion interventions and to curb the rising number of chronic diseases (Watson, 2008). A majority of people (especially the rural communities) depend on health care services for health information, yet primary health care is poorly equipped to provide this service.

Primary health care is essential health 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 the country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination (Anie, 2011).

The delivery of Primary health care is the foundation of rural health care system and forms an integral part of National Health Care system (Media Lab Asia Report, 2006). For developing vast human resources of the country, accelerating socio-economic development and attaining improved quality of life Primary Health Care is accepted as one of the main instruments of action.

Primary health care service became a dream come true for the first time in Nigeria in 1975, when Yakubu Gowon, the former Military Head of State announced the Basic Health Service Scheme (BHSS) as part of the Third National Development Plan (1975-80). The objectives of the scheme were to increase the proportion of the population receiving health care from 25 to 66 percent, establish a health care system best adapted to the local conditions and to the level of health technology in this information age (Sorungbe, 1989 cited in Anie, 2011).

According to Ademiluyi and Aluko-Arowolo (2009), primary health care centre are meant to provide healthcare services for the treatment of malaria fever, cold, nutrition disorder, and infant, maternal and pregnancy matters, among others. They also perform specialist functions such as providing reproductive health and family planning, nutrition education, and community rehabilitation for convalescing and disabled patients. The centres are also to undertake such functions as health education, diagnosis and treatment of common ailments, through the use of appropriate technology, infrastructure and essential drug list (Iluyemi, 2009).

Consequently, developing Information and Communication Technology (ICT) in supporting the health care delivery services in rural communities could contribute to increased health literacy and empowerment, which are foundations of health promotion and the notion of enabling people to increase control over their health and its determinants, and thereby improve their health (Kickbusch & Ratzan, 2011).

The requirements of the rural health care infrastructure at the Primary level are both unique and complex, with its inherent set of strengths and weakness. Presently there is a vast nationwide public healthcare infrastructure already established in our country (Okereke, 2002). This infrastructure can be fortified by augmenting them with ICT technologies and services to address primary healthcare more effectively.

Several experiences show that the ability to acquire and use information is fundamental to the successful implementation of primary health care service scheme especially with the adoption of new technologies. Poor access to information is a major constraint to the primary health care service scheme in rural communities in Nigeria, and the situation is aggravated by the high level of illiteracy among the rural dwellers. It's clear evidence that the ability to acquire and use information is a sine qua non for the application of ICT and improvement of primary health care services scheme in all the rural communities in Nigeria (Anie, 2011).

In rural communities in Nigeria, presently the services of health care delivery are provided through a network of integrated health and family welfare delivery system (Iluyemi, 2009). Health Care Programmes have been restructured and reoriented from time to time for attaining the objectives as envisaged in the National Health Policy. Priority has been accorded to extension, expansion and consolidation of rural health infrastructure namely; Sub-Centres, Primary Health Centres and Community Health Centres. Primary Health Care pays particular attention to the point of initial contact between the members of community and the health services. Sophisticated and specialized needs are referred to secondary and tertiary levels. Despite this seemingly complex structure for delivery of health care in rural communities in Nigeria, the distribution is largely heterogeneous and some parts of the country lacking even the basic services.

1.1. Statement of the Problem

In Nigeria, rural dwellers need a wide range of health information access, especially in all areas of primary health care services which include the services of special centres . These special centres are designed to handle special health problems such as tuberculosis, leprosy, disabled, mental illness, mobile clinic, diagnostic services and referral services (Metiboba, 2009). The information received helps to enlighten the rural dwellers on the activities of the above mentioned health services centres. But most of the rural dwellers are not highly educated and most of them understand and speak their dialects only. Experience shows that the ability to acquire and use information is fundamental to the successful implementation of primary health care service scheme especially with the adoption of new technologies. Poor access to information is a major constraint to the primary health care service scheme in rural communities in Delta State of Nigeria, and the situation is aggravated by the high level of illiteracy among the rural dwellers. Thus, this study aims to examine ICT as a catalyst for promoting primary healthcare delivery services in rural communities in Ukwuani local government area of Delta State, Nigeria.

1.2. Research Questions

For the purpose of carrying this study, three research questions were formulated to guide the study:

- (1) Are there benefits associated with the use of ICT for primary health care service delivery in rural communities?
- (2) In what areas of primary healthcare have ICT enhances effective delivery?
- (3) What are the barriers to the smooth implementation of ICT in facilitating primary healthcare delivery services in rural communities?

1.3. Purpose of the Study

The main purpose of this study was to examine ICT as a catalyst for promoting primary health care delivery services in rural communities in Delta State, Nigeria. However, the study sought to:

- (1) Discover if there are benefits associated with the use of ICT for primary health care service delivery in rural communities;
- (2) Examine the areas of primary healthcare services where ICT enhances effective delivery; and
- (3) Investigate the barriers to the smooth implementation of ICT in facilitating primary healthcare delivery services in rural communities.

1.4. Significance of the Study

The significance of this study lies in the fact that the findings will enable the rural dwellers in Delta State to be acquainted with new ideas and the activities of the Primary health care services scheme through the application of Information and Computer Technology (ICT). It will also serve as a blueprint to researchers and other information seekers who want to determine the present status of primary healthcare delivery in these communities. However, this study is considered significant as it will contribute to knowledge in the area of health care delivery.

2. Methodology

2.1. Research Design

The study adopted the descriptive survey design.

2.2. Population

The population of this study comprises of all the adult indigenes in Ukwuani Local Government Area of Delta State.

2.3. Sample and Sampling Procedure

192 rural dwellers from five villages were selected by the simple random sampling from all the villages in Ukwuani local government area of the state and their distribution is as follows: Ozionum 41, Aziokpor 39, Umoegbu 31, Umuoshi 47 and Amai-Nge 34.

2.4. Instrument for Data Collection

A questionnaire titled ICT as a Catalyst for Promoting Primary Health Care Delivery Services in Rural Communities (QICPHCDSIRC) was designed for data collection for the study.

2.5. Validity of the Instrument

The questionnaire for this study was first designed by the researcher and submitted to two specialists in health care management for validation with regard to terminology that was used to measure the intent of the study. Their corrections were used in the reconstruction of the instrument.

2.6. Reliability of the Instrument

To ensure the reliability of the instrument, a test-re-test technique was employed. A pilot study was carried out by administering the ICPHCDSIRCQ instrument at intervals of two weeks on 3 non-participating rural communities in Ughelli North Local Government Area of the State. The reliability index was calculated using the person product moment correlation. A correlation coefficient index of 0.76 was obtained.

2.7. Data Collection

The researcher, with the assistance of two research assistants administered the questionnaires to the adult indigenes in the five villages: Ozionum 41, Aziokpor 39, Umoegbu 31, Umuoshi 47 and Amai-Nge 34 and were retrieved as soon as they were completed because the researcher had to wait for the respondents to fill them and assist them in filling them by providing oral and written assistance to them. However, this amount to 93.8% return rate. 71 of the respondents were males while 109 were females.

3. Findings and Discussion

This section presents the analysis of the collected questionnaires and discussion of the findings of the study. There were 192 respondents from the five communities under survey and their distribution is as follows; Ozionum 41, Aziokpor 39, Umoegbu 31, Umuoshi 47 and Amai-Nge 34 but later resulted to 180 questionnaires which is 93.8% return scale.

Table 3.1: Distribution of Respondents by Occupation

Occupation	No. of Respondents	Percentage
Farming	54	30%
Trading	43	23.9%
Fishing	27	15%
Apprentice	31	17.2%
Others	25	13.9%
Total	180	100%

Table 3.1 indicates that most of the respondents were farmers 54 (30%) and traders 43 (23.9%), apprentice 31 (17.2%), fishermen/women 27 (15%) while 25 (13.9%) represent others (students, full housewives and tailors).

Research Question 1

What are the benefits associated with the use of ICT for primary health care service delivery in rural communities?

The result generated from the study is presented in Table 3.2.

Table 3.2: The benefits enjoyed by rural dwellers in the application of ICT tools in primary health care service delivery

Category of Response	No. of Respondents	%
Access to timely and quality primary health	146	81.1%

services		
Reduction in geographical disparities	137	76.1%
Better diagnosis	118	65.6%
Better mapping of public health threats	124	68.9%
Disease surveillance and epidemiology	110	61.1%
Interactive communication between patients and health workers	131	72.8%
Quicker dissemination of primary health care services	142	78.9%

Table 3.2 displays the benefits enjoyed by the rural dwellers with the application of ICT tools in primary health care service delivery. 81.1% affirmed that access to timely and quality primary health services is one major benefit of ICT in primary health care delivery. Also, 78.9% claimed that quicker dissemination of primary health care services is another advantage. Reduction in geographical disparities was seen by 76.1% respondents as a benefit. However, other benefits include interactive communication between patients and health workers, better mapping of public health threats, better diagnosis and disease surveillance & epidemiology as revealed by 72.8%, 68.9%, 65.8% and 61.1% respondents respectively.

Research Question 2

In what areas of primary healthcare have ICT enhances effective delivery?

Table 3.3: Areas of primary health care services that rural dwellers feel ICT enhances effective delivery.

Category of Response	No. of Respondents	%
Maternal and Child Health	151	83.9%
Mental Health	129	71.7%
Prevention & control of locally endemic diseases	149	82.8%
Family planning	151	83.9%
Immunization against major infectious diseases	150	83.3%
Supply of safe water and basic sanitation	142	78.9%

Promotion of food supply and nutrition	126	70%
Appropriate treatment of common disease & injuries	147	81.7%

Table 3.3 discloses the areas of primary health care where the rural dwellers feel that ICT enhances effective delivery. Maternal and child health and family planning were seen as the area with the highest responses as affirmed by 83.9% of the respondents. 83.3% picked immunization against major infectious diseases while 82.8% claimed that ICT helps in the prevention & control of locally endemic diseases. Also, 81.7% picked appropriate treatment of common diseases and injuries as one area where ICT helps, 78.9% claimed ICT enhances the supply of safe water and basic sanitation, 71.7% picked mental health while 70% respondents saw promotion of food supply and nutrition as another area.

Research Question 3

What are the barriers to the smooth implementation of ICT in facilitating primary healthcare delivery services in rural communities?

Table 3.4: Barriers to the smooth implementation of ICT in the primary health care service delivery in your community

Category of Response	No. of Respondents	%
Absence of government policies on implementing ICT in health care	144	80%
Poor ICT/Primary Health Care infrastructures	157	87.2%
High level of illiteracy among the rural dwellers	141	78.3%
Lack of contact with Primary Health Care Agents	139	77.2%
Lack of adequate information system	134	74.4%
Superstitious belief	104	57.8%
Lack of awareness / Orientation on ICT	139	77.2%

Table 3.4 discusses the barriers to the smooth implementation of ICT in the primary health care service delivery in rural communities. Poor ICT / Primary health care infrastructures was seen as the highest barrier as affirmed by 157 (87.2%) of the respondents. Thus, absence of government policies on implementing ICT in health care was the problem with the second highest frequency

as recorded by 144 (80%) respondents. 141 (78.3%) of the respondents chose high level of illiteracy among the rural dwellers as a barrier. Again, lack of contact with Primary Health Care Agents as well as lack of awareness / Orientation on ICT was seen as a barrier by 139 (77.2%) respondents each. It was also observed that 134 (74.4%) and 104 (57.8%) of the respondents saw lack of adequate information system and superstitious belief respectively as barriers kicking against ICT in primary health care service delivery in rural communities.

4. Summary and Conclusion

An attempt has been made in this study through a case study research to investigate Information and Communication Technology (ICT) as a catalyst for promoting primary health care delivery services in Ukwuani Local Government Area of Delta State. Five rural communities were selected from this L. G. A.: Ozionum, Aziokpor, Umoegbu, Umuoshi and Amai-Nge. The main purpose of this research work is to discover if there are benefits associated with the use of ICT for primary health care service delivery in rural communities; to examine the areas of primary healthcare services where ICT enhances effective delivery; and to investigate the barriers to the smooth implementation of ICT in facilitating primary healthcare delivery services in rural communities. The result of the findings shows that ICT has a positive impact on rural dwellers in respect of Primary Health Care Services. More so, information and communication technology tools are being employed in the delivery of primary health care services in these rural communities. Proper awareness campaigns on ICT would be encouraged to serve as a major weapon to enlightening the rural dwellers as they only saw maternal and child health and family planning as the only area of primary health care where ICT enhances effective delivery. As such, the barriers to the smooth implementation of ICT in primary health care delivery in these rural communities include poor ICT infrastructures for primary health care services, absence of government policies on implementing ICT in health care, high level of illiteracy among the rural dwellers amongst others.

5. Recommendations

Based on the results and findings of this study, the following are recommended for combating the barriers kicking against the application of ICT in primary health care service delivery in rural communities in Delta State:

- (a) Standard ICT infrastructures for primary health care services delivery should be provided in rural communities.
- (b) More emerging technologies should be incorporated into the delivery of primary health care services in rural communities in Delta State.
- (c) Proper awareness campaigns on the gains derived from the application of ICT in health care delivery should be encouraged so as to change the orientation of the rural dwellers.
- (d) A well structured policy to guide the implementation of ICT in primary health care delivery services in rural communication should be provided and also reviewed regularly.

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