

# Harnessing Information and Communication Potentials for Effective Healthcare Delivery and Promotion in the 21<sup>st</sup> Century Nigeria

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## Abstract

*The purpose of this paper is to identify and exploit the potentials of information and communication in order to achieve effective and functional healthcare delivery and promotion in Nigeria. To achieve this purpose, the paper discussed the themes under an Introduction, Healthcare Delivery Services in Nigeria, Health Promotion and Healthcare Delivery Service, Information and Health Information in Healthcare Delivery and, Communication and Health Communication, Patient Education in Healthcare Delivery and Promotion, and Information and Communication Technology (ICT) Applications in Healthcare Practice. Conclusions were drawn from expositions and some recommendations made such as that the government at all levels should endeavour to provide the 21<sup>st</sup> century health facilities since the governments control the resources of the land and should be able to afford the expensive facilities.*

**Keywords:** Healthcare, Promotion, Information, Communication, Technology

## Introduction

This paper is built around the first four sub-themes of this conference namely: Communication Strategies in health promotion, Communication Technology in health promotion, Patient Education in Healthcare System and, Health Communication and Health Promotion. These are some of the areas outlined to address the theme of this conference which is “**Communication as a vehicle for health promotion in contemporary Nigeria**”. I consider both the theme and the sub-themes very thoughtful and commendable even as one considers the enormous challenges facing healthcare delivery in the whole world and particularly in the developing nations such as Nigeria. Communication in healthcare delivery may not have featured regularly in health discourse yet it is at the foundation and holds the key to effective healthcare delivery and promotion success. Effective dissemination of health information is necessary in both preventive and curative medicine.

In today’s world of globalization, a health problem of one nation automatically becomes a health concern of other nations. Besides outbreak of a disease may not recognize national boundaries. To this extent, communicating and sharing health information among nations becomes indispensable as an effort to contain the outbreak of the disease. The medical personnel need to get at accurate information in order to achieve accurate diagnosis and treatment of the disease. An informed patient is most likely to cooperate with healthcare practitioners and manage himself better. Every stakeholder in healthcare delivery and promotion enterprise has a lot to gain from an effective and functional healthcare system. This is why every effort aimed at accessing and sharing the right health information, such as discussion of this theme, should be applauded and encouraged.

In order to achieve a logical address of both the theme and the sub-themes, this paper is organized under the following sub-headings: the Introduction, Healthcare Delivery Services in Nigeria, Health Promotion in Healthcare Delivery Service, Information and Health Information in Healthcare Delivery and Promotion, Communication and Health Communication, Patient Education and Healthcare Delivery and Promotion, and Information and Communication Technology (ICT) Applications in Healthcare Practice. Based on the issues revealed in the above sections, Conclusions and Recommendations are made.

## Healthcare Delivery Services in Nigeria

The World Health Organization (WHO) defined healthcare system as the organization of people, institutions, and resources that deliver healthcare services to meet the health needs of target population. Healthcare delivery services refer to health services provided or rendered by health professional. Ministerstov (2012) highlighted the types of healthcare delivery services as out-patient care, in-patient care, medical rescue service and emergency service, occupation/work related medical services, dispensary care, spa therapeutic/rehabilitative care, providing medicines and medical devices, and preventive care. According to Adebayo and Ofoegbu (2014)

healthcare spans across all ages, gender, races, culture and geographical boundaries and is an area of concern to every population.

Healthcare delivery service in Nigeria has a history. It is a popular knowledge that before the arrival of western explorers in Nigeria, there were (and still are) different traditional medical care on ground. Traditional medicine was defined by WHO in 1976 as the sum total of knowledge and practice, whether explicable or not, used in diagnosis, prevention, and elimination of physical, mental or social imbalance and relying exclusively on practical experience or observations handed down from generation to generation whether verbal or in writing (Adesina, 2005). He further identified the elements of traditional medical practice in Nigeria to include: herbal medicine, massage, homeopathy, mind and spirit therapies, radiation and vibration therapy, therapeutic fasting and dieting therapy, spinal manipulation therapy, psychotherapy among others. The traditional healers go by such names as herbalists; traditional birth attendants (TBAs); traditional surgeons who cut tribal marks, remove whitlows, bone setters; traditional medical ingredient dealers; traditional psychiatrists and practitioners of therapeutic occultism etc. (Adesina, 2005).

Traditional medical practice is still part and parcel of healthcare delivery practice in most parts of the world. Ndubisi (2011) noted that up to 80% of the population in some parts of African countries still rely on traditional medicine for their primary healthcare needs. In the contemporary Nigeria, traditional healthcare is still highly patronized by many people.

The story of healthcare delivery in Nigeria did not begin and end with traditional medical care. The in-road of orthodox healthcare delivery in Nigeria can be traced to the time the early explorers like Mungo Park and Richard Lander came to Nigeria. History has it that they had serious challenge with malaria which killed some their co-expeditioners. It was then that Dr Baikie came up with quinine in 1854 which drastically reduced mortality and morbidity due to malaria. This marked the beginning of modern medical care in Nigeria. Arrival of the missionaries in the early 19<sup>th</sup> century gave impetus to growth and development of modern healthcare delivery services in Nigeria. The Church Missionary Society (CMS) established the first dispensary in Nigeria at Obosi in 1880 and others at Onitsha and Ibadan in 1886 (Scott – Emuakpor, 2010). He reported further that the Roman Catholic Mission (RCM) established first hospital in Nigeria at Abeokuta in 1885. Subsequently, other missions like Seventh Day Adventist and Wesley missions etc. joined in establishing health facilities in different parts of Nigeria that by Independence in 1960, there were more mission – owned hospitals in Nigeria than government – owned.

The various development plans by the government contained their earliest efforts in developing health systems in Nigeria. The first experience at strategic planning for health and welfare in Nigeria for colonial masters was the 1946 – 1956 ten-year national development plan (Ijadunola, 2013). Though it was established to serve the colonial masters yet it provided the basis for subsequent health plans. The first national development plan came after independence to cover 1962 – 1968 and the second was launched after the civil war (1970 – 1974). The third national development plan (1975 – 1980) showed a more serious attempt at having a comprehensive health policy (Ijadunola, 2013). The unique feature of the third plan was the focus on primary healthcare services then called “Basic Health Service Scheme (BHSS)” announced by Yakubu Gowon (Anie, 2011). The fourth national development plan (1981 – 1985) was described by Adedeji (1989) as the largest most ambitious programme of investment ever launched in Nigeria. Health Policy and Strategy to achieve Health for All Nigerians published in 1988 by Federal Ministry of Health (Ijadunola, 2013). The policy was revised in 1998 and 2004. Today, Health is in the concurrent legislation list of services in the 1999 constitution and Nigeria launched the National Health Insurance Scheme also in 1999 (Ijadunola, 2013). Presently the federal, state, and local governments; organizations, private individuals are all involved in healthcare delivery services in Nigeria. Let us look at some evidence-based information to see where all these efforts have landed us.

- Adult mortality rate = 31.83% (deaths per 100 population) in 2015
- Infant mortality rate = 69.49% deaths per thousand live births in 2015
- Under 5 mortality = 112.08% deaths per thousand live births in 2015
- Under 40 mortality = 34.04% deaths per 100 population in 2015
- Under 60 mortality = 21.54% deaths per 100 population in 2015
- Male adults (15 - 59) mortality = 31.92% deaths per 100 males in 2015
- Female adults (15 - 59) mortality = 31.73 deaths per 100 females in 2015

**Source: Knoema.com <https://knoema.com> Retrieved 16/9/17**

Let us look at another health – related statistics.

- Nigeria’s seven North-West States had 75% of the country’s cases of malnutrition in 2016.
- 1594,462 children in the Northwestern part of Nigeria affected by severe acute malnutrition.
- 2,300 under 5s and 145 women of child bearing age die in 1 day due to malnutrition in Nigeria.

- Nigeria is the second highest contributor to under 5 deaths and maternal mortality rate in the world.
- Nigeria ranks highest with the burden of premature babies in the world after India and China.

Source: Premium Times, September 23, 2017

Let us also make a comparative judgement of life expectancy at birth of some countries including Nigeria as at 2015.

Country	Life Expectancy (years)
North America	78.74
Australia	82.84
India	68.33
China	76.12
South Africa	57.44
Ghana	61.49
Kenya	62.13
Nigeria	53.05*
Bokina Faso	58.46
Algeria	75.86
Angola	61.19

Source: World Bank

The health statistics presented above, are, to say the least, unimpressive. Menzibeya (2011) had noted major flaws in Nigerian health system to include poor access to healthcare facilities and that there is poor referral system between various tiers of healthcare among others. Also, Opaluwah (2016) expressed worry about needless deaths, poorly managed centres etc. and blames frequent strikes which characterize the health facilities, corruption in the system, inadequate supervision, incompetence, lack of commitment, inadequate tools for measuring out-put, lack of incentive for hard work, and lack of sanctions for unprofessional conducts among other factors. It is imperative then that all available and possible strategies and approaches should be mobilized if efficient and workable healthcare services are to be achieved in Nigeria. The next section will explore health promotion and healthcare delivery services.

### Health Promotion and Healthcare Delivery Services

Health promotion has been proved to be one of the evidence-based approaches to effective healthcare delivery. According to WHO (2016) health promotion seeks to improve the health of individuals and communities through education, behavioural change, and environmental improvement; strengthens the skills and capabilities of individuals to take action; and develop capacity of groups, communities, organizations and institutions to act collectively to exert control over the determinants of health. Responsible health promotion must provide information, reassurance and a plan of action (Full Gospel Business Men Fellowship International, 2017).

Health promotion has been variously defined. WHO defined it as the process of enabling people to increase control over and improve their health. Health promotion is any combination of health education and related organizational, economic and political interventions designed to facilitate behavioural and environmental changes conducive to health (Green, 1997). Vetter and Matthews (1999) defined health promotion as the process of helping people take control over their lives so that they can choose options that are health-giving rather than those that are health-risky. In yet another development VicHealth-Australia (2014) views health promotion as the provision of information and/ education to individuals, families and communities that encourage family unity, community commitment, and traditional spirituality, that make positive contributions to their health status. It is promotion of healthy ideas and concepts to motivate individuals to adopt healthy behaviours.

The following deductions were made from the definitions:

- Health promotion is a process – It involves series of actions to achieve health targets.
- Health promotion is aimed at helping people to have control over their health.
- Health promotion involves combination of interventions.
- Health promotion is also concerned about the environment.
- It is a goal of health promotion to get individuals to make rational and healthy choices.
- It involves provision of information and education to the people.
- Health promotion is concerned with promotion of healthy ideas and concepts to improve health.

The Ottawa Charter for health promotion of 1986 identified the three basic strategies for health promotion as advocacy, enabling people to control those things that determine their health, and mediation which implies coordinated action by all concerned. The charter outlined health promotion priority areas as:

- Building a healthy public policy
- Creating supportive environments
- Strengthening community actions
- Developing personal skills
- Reorienting health services

### **Assumptions Underpinning Health Promotion Models**

Pender (2011) provided the rationale behind any health promotion strategy or model in what he termed “some assumptions underpinning any health promotion model” as follows:

- Persons seek to create conditions of living through which they can express their unique human health potentials.
- Persons have the capacity for reflective self-awareness including assessment of their own competencies.
- Persons value growth in directions viewed as positive and attempt to achieve a personally acceptable balance between change and stability.
- Individuals seek to actively regulate their own behaviour.
- Individuals in all their biopsychological complexity interact with the environment, progressively transforming the environment and being transformed over time.
- Health professionals constitute a part of the interpersonal environment which exert influence on persons throughout their lifespan.
- Self-initiated reconfiguration of person – environment interaction pattern is essential to behaviour change.

The above assumptions, no doubt have revealed the complexity of a health promotion package. They have also provided us the mirror to view health promotion programmes. A health promotion programme must therefore encapsulate the human and environmental attributes. The complexity and psychology of the human personality as well as the social and environmental features must be very carefully knitted together to achieve effective, efficient and workable health promotion package. The impact of health promotion practice in Nigeria can only be located in the overall healthcare delivery performance as expressed in the various health indicators highlighted in the previous section. To further x-ray the theme of this conference the next section will discuss information and health information in the context of overall healthcare delivery.

### **Information and Health Information in Healthcare Delivery**

Information is the life wire of every discipline and health area cannot be an exception. Every discipline must name, label, describe and explain something. Information is the basis of communication (Rocha and Schnell, 2007).

Many authorities had defined information. Information is stimuli that has meaning in some context for the receiver (Rouse, 2005). Information is one or more statement or facts that are received by a human and that have some form of worth to the recipient (Loses, 1999). According to Rocha and Schnell (2007) information is explained as the formative principle of something, or to imbue that something with specific character or quality. The following stance can be gleaned from the definitions.

- Information must be a fact otherwise it is misinformation.
- Information imbues something with specific character or quality.
- Information is capable of stimulating somebody or something to make a response (action).
- For the stimuli to be information, the recipient must understand it.
- Information is contextual.

In his own conviction Loses (1999) noted the following about the nature of information.

- Information must be something although the exact nature may not be clear.
- Provide “new” information – a repetition of previously received message is not information so to say.
- Be “true”: A lie or false or counterfactual information is a mis-information, not information itself.
- Must be about something.
- The meaning of a message must be perceived to make a statement informative.

All the above characterizations of information have implications for effective and successful healthcare delivery and promotion especially in developing nations such as Nigeria. It is important to recognize the nature of

information. It could be in form of language, a representation, a sign and symbol system (Rocha and Schnell, 2007). They further explained that signs could be in form of icons (as used in computers), indices used as indirect representations like smoke for fire and symbols which are arbitrary representations as used in road signs. All the forms of information apply in one situation or the other in healthcare delivery and promotion practice. Whatever the form, they all serve very useful purposes and these are expressed by Rocha and Schnell (2007) thus:

- Information is the basis of communication.
- It is used in the process of categorizing our environment and helping in coping with it.
- Information allows us to think about reality.
- Information represents reality or is used to construct it and hence when you are deprived of information, the world becomes darker and oppressive. This view they beautifully articulated in these words:

“Without information, without records, reports, books, news, education etc the reach of experience trails off into the shadows of ignorance”.

### Information Literacy

The need for information literacy in the day to day functions of human beings cannot be over emphasized. The bible had noted that people perish for lack of knowledge. Information literacy is knowing when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical manner (Scottis Information Literacy Project, 2013). We can now take a look at literacy statistics in Nigeria.

### Education Statistics in Nigeria (Who is going to school)

Zone	% Uneducated	% Uneducated	% Average	% Educated
Youth	females	Illiterate	Population	
Males				
North East	56.75	61.1	56.75	43.25
North West	46.9	62.8	54.85	45.15
North Central	22.6	38.0	30.3	69.70
South East	10.70	18.70	14.70	85.30
South West	11.6	17.1	14.35	85.65
South South	6.1	13.0	9.55	90.45

Source: Nairaland Forum. Released 9 August, 2015

The literacy picture painted in the above statistics, no doubt is unimpressive and has implications for healthcare delivery and promotion in Nigeria. Ability to acquire and use information is fundamental to successful implementation of primary healthcare service scheme (and services at other tiers) especially with adoption of technologies (Anie, 2011).

### Health Information

A well-structured and managed health information is the bedrock of any successful healthcare delivery plan. A well-functioning Health Information system (HIS) will enhance accurate, timely and reliable information on health status and healthcare determinants required for efficient and effective clinical and managerial decision making (Abubakar, 2015). Information saves life (Kennedy, 2015). Health information should include information about health promotion, specific health conditions, self-management techniques, treatment guidelines, the healthcare system and insurance coverage. With respect to specific diseases, such health information as how to identify a particular disease (signs and symptoms) occurrence, infectious agents, reservoir, mode of transmission, incubation period, period of communicability, susceptibility and resistance, and method of control should be known. It is also important to have information on preventive measures and treatment procedures. In a nutshell, health information should encompass the who?, the what?, the when?, the why?, and the how? of the health condition. National Academy of Science (2005) identified three major types of clinical information as: the patients' health record, the rapidly changing medical evidence base, and provider orders guiding the process of patient care. There is also need for information on patient preferences and values, and administrative information such as the status and availability of supporting resources (personnel, hospital bed etc). Health information needs to be communicated or shared for it to be useful.

## Communication and Health Communication

It has been made clear that information is the basis of communication. The claim that information is giving out and communication is getting through was credited to an American journalist named Sydney J. Harris (1917 – 1986). Communication of the right kind of health information at the right time will go a long way in saving life. Accurate and effective health information communication should be the concern of all stakeholders in the healthcare delivery business.

Health communication is the study and practice of communicating promotional health information such as in public health campaigns, health education, and between doctor and patient (National Commission Association, 2013). Health communication encompasses the study and use of communication strategies to inform and influence individual and community decisions that enhance health (Anatsui, 2014). The meanings and values of health communication, as implied in the definitions, are captured in the purposes articulated by the National Commission Association, (2013).

- To increase audience knowledge and awareness of health issues.
- Influence behaviours and attitudes toward a health issue.
- Demonstrate healthy practices.
- Demonstrate the benefits of behaviour changes to public health outcomes.
- Advocate a position on a health issue or policy.
- Increase demand or support for health services.
- Argue against misconceptions about health.

To the above, Anatsui (2014) added that health communication contributed to health promotion and disease prevention in several areas, and health communication helps in raising awareness of health risks and solutions. Health communication adopts some strategies.

## Health Communication Strategies

A strategy is a method or plan chosen to bring about a desired future such as achievement of a goal or solution to a problem (Business Dictionary). It is a plan of action to achieve a set goal. A strategy can be in form of a master plan, game plan, policy, blueprint, procedure, a schedule or an approach. Health communication strategies, therefore, could be seen as consciously designed and adopted approach to transmit health information to the appropriate audience.

Language is a common tool for sharing health information and radio, television, movies and music jingles remain the fundamental media for health promotion and enlightenment. Centre for Disease Control and Prevention (2017) listed other possible tools as use of show creators and network officials to dramatize health issues, expert panel discussion on TV, using writer's guild, using foundations and setting a day aside for highlighting some specific health problems among other strategies.

Many organizations and bodies have come up with what they consider the best strategy in health communication. For the purpose of this theme, the North Carolina Institute of Medicine strategies appear to be most relevant as they are designed for an environment where there is low literacy level such as Nigeria. Anie (2011) had noted that most of the rural dwellers in Nigeria are not highly educated and most of them understand only their local dialect. According to the North Carolina Institute of Medicine, the strategies are designed to improve the ability of healthcare providers (practitioners, insurers, health educators, health administrators, pharmaceutical manufacturers etc) to convey complex health information to low health literate populations. The strategy focused on verbal communication, written information (communication), group medical visits, use of community health workers, use of websites and use of other media such as video tapes, DVDs, audio tapes, CDs etc. For effective use of verbal communication, the institute gave the following guidelines:

- Providers should avoid using jargon and complicated medical terminologies.
- Providers should be conscientious of the speed at which they talk and should emphasize the key messages they want their patients to remember.
- Providers should use visual aid materials to reinforce their messages.
- Providers should use teach-back methods which requires the patients to repeat information they just heard in their own words.
- Providers should encourage patients to ask questions to which honest answers must be given.

In using written communication, the institute advised thus:

- Write information at an appropriate reading level of the patient.
- Replace complicated medical or technical words with plain language (when appropriate).
- Use short sentences and short paragraphs.

- Write using the active voice (where the subject performs the action denoted by the active verb).
- Use clear and descriptive headings.
- Use adequate white space and margins.
- Use pictures and diagrams that clarify written concepts.
- Focus materials on desired behaviours rather than on medical facts.
- Make information culturally sensitive and motivate customers to take actions.

Space will not permit me to elaborate on all the strategies listed. Suffice it to say here that they have been proved effective in American setting. They can be applied or adopted to our own environment especially to our own hospital setting in patient education since most of the people are illiterates.

### **Patient Education in Healthcare Delivery and Promotion**

In today's world where there is proliferation of both biological and medical information, application of appropriate health communication strategies, no doubt, becomes needful. Emphasis on patient education, perhaps, could be what is needed to achieve effective, efficient and better healthcare delivery to the patients. The healthcare environment is changing, and effective management of the knowledge base in this area is integral part of delivering high quality patient care (Metaxiotis, 2008). Omachonu and Einspruch (2010) noted that healthcare industry has experienced a proliferation of innovations aimed at enhancing life expectancy, quality of life, diagnostics and treatment options, as well as the efficiency and cost effectiveness of healthcare system. Patient education happens to be one of the contemporary areas of focus in efficient healthcare delivery practice.

Patient education is a process by which health professionals and others impart information to patients and their caregivers that will alter their health behaviour or improve their health status (Wikipedia). Patient/Family Education (1997) defined patient education as an individualized, systematic, structured process to assess and impart knowledge or develop skills in order to effect change in behaviour. Patient education is to achieve a positive change in the behaviour of patients and caregivers as the health personnel intervenes with some health education information in an interactive session with the patients. The intervention is structured and follows a systematic order in presentation of the contents. The way and manner the health personnel carries out this intervention is important especially when viewed against the information that 90% of deaths in Nigerian hospitals are caused by health workers attitudes (Agan, 2017).

The history of patient education dated back to the ancient world when people consciously went about searching for better ways to follow healthful lifestyle (Braslow, 1985). He reported that as far back as 2000B.C, one Chinese physician advocated cereals for energy, fruits for accessory, animals for benefits, vegetables for supplements. There was also the evidence that the Soviet constitution has a clause which says that "every citizen is responsible for his own welfare". So, the idea of personal responsibility for health gained ground around 1925 – 1975 (Braslow, 1985).

Patient education in Nigeria has a brief history. The University College Hospital in Ibadan was the first to create a health education unit in 1978 (Brieger and Edozie, 1983). The programme of this unit encouraged patients to recognize and respond quickly to early signs of illness, to comply with recommendations to overcome illness, to prevent the recurrence of disease, and to maintain life-style changes needed to cope with chronic illnesses. The unit was engaged in counselling services to patients on admission. This practice (patient education) served some useful purposes. Jytdog (2017) outlined the values of patient education thus:

- It improves understanding of medical condition, diagnosis, disease or disability.
- It improves understanding of methods and means to manage multiple aspects of medical condition.
- It improves self-advocacy in deciding to act both independently from medical providers and in interdependency with them.
- It increases compliance by increasing patient motivation to comply.
- Patient education makes patients more likely to respond well to treatment plan thereby reducing complication.
- Patient education makes patients feel they have been provided with the information they need.
- It makes for more effective use of medical services which could reduce the number of phone calls and visits.
- Patients feel more satisfied with services and cause patient to refer others to the medical facility.
- It makes for more effective risk management by patients.
- It enhances patients' safety and prevents fatality at home.

Achievement of the above values, to a very large extent, will depend on availability of appropriate education resources such as brochures or other printed materials, Podcasts, YouTube, Videos or DVDs,

PowerPoint presentations, posters or charts, models or props, group classes, and trained peer educators (MedlinePlus, 2015). There is no doubt that application of ICT in patient education will make a world of positive impact on the overall healthcare delivery efficiency and effectiveness. Senator Hillary Rodham Clinton of America stated that harnessing the potentials of ICT will help to reduce errors and improve quality in the health system.

### **Information and Communication Technology (ICT) Applications in Healthcare Practice**

ICT application in healthcare delivery is a major advance in medical care. Anie (2011) posited that ICT application in healthcare delivery is the bridge to help cross from the dark ages to the era of enlightenment in order to enhance awareness on prevention and control of endemic diseases, maternal and child health as in family planning, the importance of safe water and basic sanitation, provision of essential drugs, appropriate treatment of common diseases, injuries, and immunization against major infectious diseases. ICT application is a must if we must get things right in healthcare delivery practice.

Application of ICT in healthcare delivery, otherwise called eHealth, is the application of ICT for healthcare management as in promoting healthcare service support, delivery and education for improving efficiency in healthcare delivery to the citizens (Adebayo and Ofoegbu, 2014). It is application of ICT across the whole range of functions that affect health (Silber, 2013).

ICT application provides a marginal edge in quality healthcare delivery. Let us hear this from Congressman Patrick Kennedy (2015).

“In a digital healthcare system, providers can have the information they need right at the point of care. Computer algorithms can catch mistakes and prompt to ensure consideration of latest scientific developments. Public health officials can be alerted nearly immediately of unusual patterns that might indicate a natural or bioterror infectious outbreak. Researchers would have vast new databases to learn more about what works”.

There is everything to gain in ICT application. Kennedy (2015) highlighted the benefits.

- More complete information available for treatment decisions.
- New and more efficient options for patient interactions.
- Enhanced ability to demonstrate performance consistent with regulations and recognized professional standards.
- Potential for reduced operational costs and more effective use of resources.
- Reduce or streamline management responsibilities.
- Less paperwork.
- Automation of repetitive tasks.
- Better efficiency in dealing with other providers and outside parties.

Kennedy (2015) simply categorized the spheres of benefits into four namely: quality of care, administrative efficiency. Patient communication, and public health and security. The move of medical practice today is towards precision medicine occasioned by ICT applications.

The extent ICT impacted on healthcare delivery in Nigeria still remains to be established. A survey by Adebayo and Ofoegbu (2014) revealed the following:

- Poor or no use of ICT facilities in the healthcare sector.
- Lack of modern healthcare information system that contains database, software applications, online medical training for nurses, etc.
- Inadequacy of medical practitioners proficient in the use of ICT tools.
- Lack of centralized national healthcare database.
- Poor access to basic qualitative and affordable healthcare services (mostly in the rural areas).
- Poor structural development and lack of maintenance culture which allows waste of resources in terms of finances, equipment, and human resources.
- Difficulty in medical referring system which disjoins proper follow-up and avoids repetition of treatment.
- Inadequate IT facility and technology.

Ochonogor (2017) after attending a symposium on the theme: The Pains and Gains of eHealth in Nigeria held on 26<sup>th</sup> January 2017 concluded that for those venturing into eHealth market in Nigeria, it has been mainly pain and hardly any gain. (Ochonogor is a consultant specializing in technology, IP, media and entertainment, and advertising law).

The consequences of the above situation are obvious – high mortality rate, increased cost of treatment, drug misuse and abuse and the resultant disability, death, drug resistance, etc (Adebayo and Ofoegbu, 2014).



Nigeria is still at the talking level of eHealth applications. The first eHealth summit held in Nigeria was on Thursday September 12, 2013 and since then, not much improvement has been noticed possibly because of political, economic and other social vices, especially corruption, plaguing the country.

For the sake of knowledge and enlightenment, this author would want to expose us to the state of the art for the 21<sup>st</sup> century health facility. Herman (2012) listed 10 technologies that will give a hospital a comparative and competitive advantage in healthcare delivery in this 21<sup>st</sup> century thus:

1. A certified, efficient Electronic Health Record (EHR) system with which records are capable of being shared among multiple facilities.
2. Surgical and service line technologies like robotic surgical system, Magnetic Resonance Imaging (MRI) used during surgery to remove brain and pituitary tumors and placement of deep brain stimulator for Parkinson's disease.
3. Smartphones tablets and applications e.g.; iPads, etc.
4. Hybrid operating rooms: This is a surgical theatre that is equipped with advanced medical imaging devices like Computed Tomographic scan (CT-scan), MRI scanners etc.
5. Telehealth tools such as bi-directional video feed, cameras, TVs and wireless infrastructure which helps in taking care of patient outside of the more costly inpatient environment.
6. Ultrasound imaging devices. Many physicians are already using this.
7. Infection detecting technologies such as smart bandages, colour changing bandages, chips that detect DNA, smart suture stitches, cancer cell detection technology, etc.
8. Healthcare staffing management technology.
9. Social media e.g. Facebook, Twitter, Podcasting and Blog platforms etc.
10. Patient friendly technologies like speech-assisted automated attendant system, online bill pay, bedside medication verification technology, etc.

At this point, I believe that no one is still left in doubt that our country still has a long way to go in ICT application in healthcare delivery. Otherwise this author needs to be told where we can find a health facility with these state-of-the-art health technologies. This is a challenge to all stakeholders in healthcare delivery enterprise in Nigeria.

## Conclusion

Healthcare delivery and promotion practice in Nigeria of today has not met the minimum expectation for the 21<sup>st</sup> century world. All the well-to-do in Nigeria, including our president, rush to advanced countries for medical care. The human, material and financial resources required for the state-of-the-art situation are still very much unsatisfactory. The human resources, to a very large extent, requires retraining, the health facilities are mostly obsolete, and the funding of the facilities is nothing to write home about. Even the traditional medicine that held sway before the inroad of orthodox practices are not given adequate attention by the government. There is every indication that the application of ICT in healthcare delivery and promotion is not receiving priority attention from the governments at all levels. There is need to retool both the individuals (health practitioners and other stakeholders) and all the apparatus related to healthcare delivery and promotion in Nigeria. The sooner something is done especially with respect to ICT application to healthcare delivery and promotion the healthier the citizens and more improvement in the health indicators in Nigeria.

## Recommendations

1. Governments at various levels should accord the health sector the priority it deserves especially with respect to funding. This is the only way 21<sup>st</sup> century health facilities can be achieved in the country.
2. There is need for training and retraining of most of the medical personnel in the art of 21<sup>st</sup> century health delivery practice. Most of the practitioners today were trained when the modern-day ICT facilities were not being used in healthcare practice.
3. Governments at all levels should endeavour to provide the 21<sup>st</sup> century health facilities. The facilities are too expensive that it is, so to say, the governments that control the resources of the land that are expected to have enough money to provide such expensive facilities.
4. Governments at all levels should do something very urgently to beef up the literacy level of the country. Literate population is expected to do better in patient education and healthcare generally.
5. Governments at all levels should make honest efforts at tackling corruption in the health sector, and of course in the Nigerian society. War against corruption should not be politicized.
6. Individuals and organizations that could afford it should be encouraged by the governments, through provision of enabling environment, to provide state of the art health facilities even in special areas.

7. Patient education should be made a course of study in health professionals' training. This is expected to help improve health workers attitude toward their patient.

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