

Use and Gratification of ICTs by Health Care Personnel in Nigerian South- South Tertiary Hospitals

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ABSTRACT

ICTs have been seen to improve the quality of healthcare delivery as a result of their far-reaching capabilities. The numerous healthcare delivery tasks such as research, gathering of data from patients daily, cross checking their histories and collaborations between specialists among others can be simplified through the use of computers. This study examined how healthcare workers in select hospitals in the South-South region of Nigeria used ICTs and how this impacted on healthcare delivery services. Survey was the tool for generating data for the study. The findings revealed that health workers apply ICTs to various activities such as communicating with colleagues and patients; using ICTs as personal assistants, (reminders, schedulers etc); as well as for storage and analysis of patients' data, etc . Moreover, ICTs impacted service delivery in areas such as improved diagnosis, assembling health workers faster during emergency situations through calls and text messaging as well as better patient management procedures occasioned by easy access to updated information on the Internet.

Keywords: ICTs, healthcare delivery, health workers

INTRODUCTION

Medicine is a very sensitive field that requires collaboration by different specialists in a particular field for more effective outcome. Providing top quality care necessitates close collaboration, secure, easy and timely exchange of information, and coordination of the medical team's activities. ICTs with their gathering, processing and retrieval abilities can simplify the numerous information and communication needs required for such collaboration Shittu, Ajayi and Garba (2008) list the information and communication requirements of the health institution to include information and research tasks, interacting and gathering information daily from several patients, cross-checking patients' histories, discussing with colleagues to examine and share experiences as well as updating knowledge on diseases and drugs. Information and Communication Technologies are communication gadgets, hardware, equipment or facilities that have modernized, improved and eased exchange of ideas and information of various kinds between and among people within or across boundaries and frontiers.

A vivid picture of how ICTs can impact the healthcare system as painted in this analogy can serve as motivation for fully deploying ICTs in all aspects of healthcare delivery in Nigerian hospitals: A two-month old baby girl with meningitis was admitted to the emergency room of the hospital in a near-death situation. Laboratory tests confirmed the presence of rare bacteria in her spinal fluid. Troubled by the nature of the disease the pediatrician in-charge requested the hospital library to search for information on the infection. A search on various information resources available on the Internet leads to a few scattered reports in very obscure journals. None of them was available in the hospital library. Contacting other

medical libraries by telephone and fax, the required information was readily available. The baby was successfully treated, thanks to quick access to the necessary information. Internet access made this information retrieval possible (InforDev, 2005).

Scholars believe that the potentials of ICTs are yet to be fully utilised in hospitals in developing countries of which Nigeria is one. For instance ICTs were used by medical doctors mainly for research while uses for patient treatment and doctors' training were low. Moreover, use for medical diagnosis was not wide- spread, (Shittu, Ajayi and Garba, 2008; Olatokun and Adeboyejo, 2011). This provided the basis for this study which sought to assess the situation in hospitals the South –South region of Nigeria by answering the following research questions:

1. Which ICTs do healthcare personnel in tertiary hospitals in South- South Nigeria use frequently ?
2. What do healthcare personnel in tertiary hospitals in South- South Nigeria use ICTs frequently for ?
3. What benefits do healthcare personnel in South-South Nigeria derive from using ICTs ?

THEORETICAL FRAMEWORK

The Uses and Gratifications theory or approach proves invaluable if the topic under discussion is to be properly grasped and digested. Uses and Gratifications theory posits that people's need for communications is functions of social and psychological factors. Thus, people use media purposefully. Their choice of media depends on how well each option can satisfy specific needs or goals. This portends the fact that the audience of media are active and goal-oriented and largely responsible for choosing media to meet their needs. In addition, he or she knows his or her own needs and how to meet them. The media are considered to be only one way of meeting personal needs and individuals may meet their needs through the media or some other way. Okorie and Oyedepo (2010) present Folarin's (1998) perspectives on the theory thus:

- a. An individual has some needs related to communication
- b. He or she selects media that appear to satisfy those needs
- c. He or she selectively consumes the content
- d. An effect may or may not occur.

In summary, the theory says that media users are motivated by a desire to fulfill certain needs and are knowledgeable enough to select the media that contain contents that meet those needs. So rather than asking how media use influences users, this theory asks how users' basic needs influence users media choices. This theory is useful in that it provided a background for studying why hospitals and by extension the health professionals use ICT media and how these media gratify their information needs which are very vital to the smooth running of the health institutions. The theory does help to answer the general intuitive question: what do health workers use the media for?

LITERATURE REVIEW

Overview on ICTs

Information and communication technologies (ICTs) are a diverse set of technological tools and resources used to communicate and create, disseminate, store, and manage information.

They are variously called New Communication Technologies (NCTs) or New Information Technologies (NITs). They make possible computer mediated communication (CMC) and have given rise to the information superhighway. These technologies allow or facilitate interactivity among users or between users of information, and as Baumann and Flynn (1997) note, they make it possible to collect and store seemingly endless amounts of information. They do not only have the ability to enhance assembling, processing, storing and exchange of ideas, messages and information regardless of distance, time and location, but make these processes easier and faster. For example, ICTs like mobile phones, micro-computers, digital radio, satellite and cable networks enable simultaneous reception, distribution, processing and retrieval of information globally (Olise, 2008). Access to up-to date information to support real-time decision making on issues of life are also facilitated by these ICTs.

ICT: An Indispensable Infrastructure in Healthcare Delivery

The provision of quality healthcare delivery in a country is guided by the level of the ICT infrastructure possessed and used by the country. It is a prerequisite for enhancing the well-being of a country. Communication has moved from the largely manual or physical documentary method to digital communication. It enables the dissemination and sharing of health information across national boundaries. For instance, a medical doctor can send an electronic X-ray of a patient to a leading expert in another country who could readily interpret and provide more details of the disease condition, as well as send a feedback to the medical doctor all within a few minutes, (Hassan, Siyanbola and Oyebisi, 2011).

ICTs Systems and their Applications for Healthcare Delivery

An ICT system is a set-up consisting of hardware, software, data and the people who use them. It commonly includes communications technology, such as the Internet.

ICT Systems are every day and ordinary, yet extraordinary in how they can add extra power to what we do and want to do. By using ICT systems we are: more productive - we can complete a greater number of tasks in the same time at reduced cost by using computers than we could prior to their invention, able to deal with vast amounts of information and process it quickly and also able to transmit and receive information rapidly. Apart from these, organisations concerned with delivering specialised services can use ICT systems to suit their peculiar needs.

The following are some of the components of the ICT system and what they can be used for:

Telephones

It makes for simple, direct, and effective instant communication. Verbal communication, short message service, teleconferencing, still and video pictures, calculations, organizing, dictionary service etc. according to Shoki and Ufuophu-Biri (2008) are some of the uses to which telephones can be put.

Computers and Networks

A computer is an electronic device which can accept data in a prescribed form, store, process the data and supply the results of the processed data in a specified format as information or as signals. When they are connected together, they form networks that enable the sharing of common information needed throughout an organization.

(Umoh and Inyang, 2003). Computer software such as word processors, data base management software, graphic software etc enable computers to be adapted for various healthcare activities.

Compact Disc-Read-only Memory (CD-ROM)/ Digital/Versatile Disc (DVD)

The CD-ROM is storage medium with high concentration of data and high density combined with motion video and high-quality audio. Its advanced form, the Digital/Versatile Disc (DVD) can be used for processing, storage and dissemination of information like text, photographs, graphics, voice etc.

Multimedia Projectors

ICTs such as the multimedia projector can be used to give presentation to colleagues and students through eye-catching slides that can be adapted for the doctor's need. This avoids the need for the medical illustration department.

The Internet

This covers areas such as the interconnected and networked technological infrastructure that supports the World Wide Web; open and closed source software and architecture (e.g. Firefox, Wikipedia, Internet Explorer, and Google); email, chat and instant messaging (e.g. AOL, MSN); blogs and social networking sites (e.g. Face book). Interactive forum and online discussions are facilitated by the Internet.

The above do not in any way represent the full list of ICT media but are the ones within the scope of the study.

Importance of ICTs to Healthcare

Improved Healthcare Practices

ICTs have been seen to improve the quality of healthcare delivery as a result of their far-reaching capabilities. For instance advancements in technology have made available gadgets that serve as decision aids for practitioners, for prompts, reminders, care pathways, guidelines ; clinical management tools such as electronic health records, audit tools; educational aids for guidelines, medical teaching as well as electronic clinical communications tools for referral, booking, discharge, correspondence, clinical e-mail, etc. Moreover, electronic medical records are also available for record linkage.

Research and Studies

Medical knowledge is a dynamic and fast growing area. Medical research and practitioners need to have access to a wide array of information. With the Internet, access to information relating to healthcare worldwide is possible thus eliminating the problem of limited data for research on disease conditions as well as help to distribute new medical knowledge.

Networking and Advocacy

The expansion of communication networks and e-mail has markedly enhanced the development of professional networks and on-line communities of practice by making it possible to reach across geographical boundaries and communicate with someone or many people quickly and easily. The idea of networking for better exploitation of the opportunities offered by ICTs is also widely reported in previous studies. Membership in such electronic discussion groups is meant to be self-selecting and might be active or passive, allowing anyone with a genuine interest to participate at the level of activity they chose.

Moreover, on-line discussion groups, in conjunction with face-to-face interaction at conferences or trainings, enrich professional relationships and reinforce new learning.

Improved Efficiency

Since health workers play important roles in a nation's socioeconomic and political growth, their efficiency in these areas can be greatly enhanced through the opportunities offered by the use of ICTs to meet their needs.

ICT enabled processes and clinical information systems can improve patient records, collection of bed-side data, laboratory reports, pharmaceutical receipts and demographic movements between hospitals, thus becoming very vital for doctors, and other health professionals. Ndukwe (2007) believes that the development of mobile communications, teleconferencing facilities and multi-media capabilities of ICTs, have been of immense benefit especially in healthcare delivery. By this revolution, spatial differences between medical specialists, medical centres and patients have been eliminated.

METHODOLOGY

The researcher adopted the survey for the investigation. The evaluation covered ICT components such as telephones Computers CDs, DVDs, multi-media projectors, software packages.

The population of the study was health professionals in three tertiary hospitals in South-South, Nigeria namely: University of Uyo Teaching Hospital, University of Port Harcourt Teaching Hospital and Federal Medical Center, Asaba. The stratified random sampling technique specifically the proportionate stratified sampling was used to select 351 from the over 3000 health professional from the three hospitals .This is in line with the Krejcie and Morgan's (1970) table of sample determination. The questionnaire was used to gather data. Out of 351 copies of the questionnaire distributed, (117 to each hospital) the researcher was able to retrieve 320 copies. However, 296 were found useful for the analysis.

PRESENTATION OF DATA AND DISCUSSION

Table 1. Distribution of responses based on frequency of use of ICTs for healthcare delivery purposes

| <i>Items</i> | <i>Responses</i> | | | |
|------------------------|------------------|---------------------|-----------------|-----------------|
| | <i>Often</i> | <i>Occasionally</i> | <i>Rarely</i> | <i>Total</i> |
| <i>ICTs</i> | <i>Freq (%)</i> | <i>Freq (%)</i> | <i>Freq (%)</i> | <i>Freq (%)</i> |
| Telephones | 155 (52) | 73 (25) | 56 (19) | 296 (100) |
| Computers | 191 (65) | 11 (24) | 34 (11) | 296 (100) |
| CDs, DVDs | 120 (41) | 85 (29) | 91 (31) | 296 (100) |
| Multi Media Projectors | 106 (36) | 106 (36) | 84 (28) | 296 (100) |
| Software Packages | 124 (42) | 93 (21) | 79 (27) | 296 (100) |

The table shows that telephones and computers were used often by a majority of healthcare workers, 65% and 52% respectively. CDs and DVDs, multimedia projectors and software packages were not often used by many of them.

Table 2. Distribution of responses on extent of carrying out healthcare delivery activities with ICTs

| <i>Healthcare Delivery Activities</i> | <i>Responses</i> | | | |
|---|------------------|---------------------|-----------------|-----------------|
| | <i>Often</i> | <i>Occasionally</i> | <i>Rarely</i> | <i>Total</i> |
| | <i>Freq (%)</i> | <i>Freq (%)</i> | <i>Freq (%)</i> | <i>Freq (%)</i> |
| Communication with patients and colleague | 282 (95) | 14 (5) | 0 (0) | 296 (100) |
| Browsing the Web | 151 (51) | 117 (40) | 28 (9) | 296 (100) |
| Personal Assistants | 197 (67) | 99 (33) | 0 (0) | 296 (100) |
| Word Processing | 103 (35) | 153 (52) | 12 (4) | 296 (100) |
| Storage /Analysis | 142 (48) | 128 (43) | 26 (9) | 296 (100) |
| Multimedia Presentations | 154 (52) | 119 (40) | 23 (8) | 296 (100) |
| Medical Diagnosis | 56 (19) | 84 (28) | 156 (53) | 296 (100) |
| Research and Publication | 173 (58) | 89 (30) | 34 (11) | 296 (100) |
| Chat/News Group Interactions | 72 (24) | 182 (61) | 42 (14) | 296 (100) |

Table 2 shows that majority 280 (95%) of the respondents used ICTs often to communicate with colleagues and patients, 151(51%) used ICTs often to browse the net while ICTs were used as personal assistants often by 197 (67%), while 103 (35%) and 142 (48%) used ICTs often for word processing and for storage and analysis of data respectively.

Health professionals who used ICTs often for multimedia presentations were 154 (52%) while 56 (19%) used ICTs often for medical diagnosis and 173 (58%) used ICTs often for research/publication. Finally, 72 (24%) used ICTs often for chat room and news group interactions.

Table 3. Responses on benefits derived from using ICTs

| <i>Healthcare Delivery Functions</i> | <i>Responses</i> | | | |
|--|-------------------------|----------------------|-----------------------|------------------|
| | <i>Large Extent (%)</i> | <i>Minimally (%)</i> | <i>Cannot Say (%)</i> | <i>Total (%)</i> |
| Aids in assembling health professionals during emergencies | 296 (100) | 0 (0) | 0 (0) | 296 (100) |
| Improves patient management | 248 (84) | 28 (9) | 20 (7) | 296 (100) |
| Provide access to updated information | 296 (100) | 0 (0) | 0 (0) | 296 (100) |
| Improves diagnosis | 199 (67) | 82 (28) | 15 (5) | 296 (100) |
| Increase speed & productivity | 117 (40) | 92 (31) | 2 (9) | 296 (100) |
| Enhances networking | 230 (78) | 51 (17) | 15 (5) | 296 (100) |

Table 3 shows that all the respondents (100%) were unanimous in their views that ICTs aid in assembling health workers during emergencies as well as in providing access to updated medical information. Majority (84% and 78%) also indicated that ICTs improved patient management as well as enhanced networking respectively, among healthcare workers. Many (67%) were of the view that ICTs improved diagnosis while few (40%) were emphatic on the ability of ICTs to improve productivity and speed of health workers.

DISCUSSION OF FINDINGS

Research Question 1

Which ICTs do healthcare personnel in tertiary hospitals in South - South Nigeria use frequently for healthcare delivery activities?

Data from Table 1 provide answers to this research question. The table shows the ICTs that health workers in the hospitals often used for healthcare delivery activities: Computers topped the list with 191 (65%) of the respondents; telephones as attested to by 155 (52%) health professionals said they used always. This was followed by of the respondents. Software packages as well as storage devices such as CD ROMs and DVDs were also used often by 42% and 41% of the respondents respectively while about 36% used multimedia projectors frequently for their daily activities.

That a large number of healthcare personnel use computers often reveals the fact that they are aware of the indispensability of the computer and the information it stores to patient safety initiatives. Also the widespread use of telephones for healthcare delivery activities also align with findings from a study by Olatokun and Adeboyejo (2009), where mobile phones were found to be the tools mostly uses by the respondents for communication between the wards during patients' referrals, reaching other physicians/consultants and getting material or equipment into a particular ward or room. This is as a result of the fact these ICT devices now possess functions which make them easily adaptable to various tasks.

Research Question 2

What do healthcare personnel in tertiary hospitals in South- South Nigeria use ICTs frequently for?

Data from Table 2 answers this question. From the table, the healthcare delivery activity which the healthcare professionals used ICTs most often for was communicating with colleagues and patients. This was the view of 280 (95%) of the respondents. This was followed by the use of ICTs as personal assistants, that is as reminders, schedulers, etc. as attested to by 197 (67%), for storage and analysis of patients' data by 195 (66%), for multimedia presentations during seminars and lectures by 165 (56%). ICTs were also used for research and publication of academic papers by 163 (55%), for browsing the net for medical information by 137 (46%).

That majority of health professionals use ICTs often for communication with patients and colleagues corroborates the findings by Olatokun and Adeboyejo (2009) which showed that 308 (or 90.0 per cent) of the respondents used ICTs for communication. The researchers attributed that scenario to the fact that communication could not be disconnected from the nature of the medical profession, where new discoveries are made every day and in order to remain current in their field, medical personnel must communicate with colleagues frequently. Moreover, the findings of this study which showed that 18.91 per cent of the health professionals used ICTs for medical diagnosis agree with previous findings which indicated that ICTs were least used for medical diagnosis by health professionals (Shittu

Ajayi and Garba, 2008). This is not very impressive even-though this activity is an exclusive preserve of the physician group. Olatokun and Adeboyejo (2009) who also recorded low responses on health professionals' use of ICTs for diagnosis were of the opinion that may be the inadequate access to ICTs was responsible.

Previous studies also found that health professionals used ICTs for research and publications, e-mailings, as well as accessing online journals (Hassan, Siyanbola and Oyebisi, 2011; Olatokun and Adeboyejo, 2009). Information and Communication Technologies (ICTs) such as the Internet, provide access to information relating to healthcare worldwide thus eliminating the problem of limited data for research on disease conditions. Moreover, the postulations of the Uses and Gratifications theory that audience members use media that they identify to have the capacity to satisfy their needs is also confirmed by the findings of this study.

Consequently, as the study reveals, health professionals in tertiary hospitals have deployed ICTs to a large extent and this, it is believed, can have a significant effect on healthcare delivery activities in tertiary hospitals in the South-South Region of Nigeria. Hassan et al (2011) are of the view that the responses across sectors and especially in the health sector are indications that most Nigerians have keen interest in using ICTs for their various works and activities so as to enhance efficiency and productivity. This position has been buttressed by the findings of this study.

Research Question 3

What benefits do healthcare personnel in South-South Nigeria derive from using ICTs?

Data from Table 3 provide answers to the above question. Table 3 shows that all the respondents (100%) were unanimous in their views that ICTs aid in assembling health workers during emergencies as well as in providing access to updated medical information. Majority (84% and 78%) also indicated that ICTs improved patient management as well as enhanced networking respectively, among healthcare workers. Many (67%) were of the view that ICTs improved diagnosis while few (40%) were emphatic on the ability of ICTs to improve productivity and speed of health workers.

The findings generally point to the fact that health professionals derive benefit from using ICTs confirming earlier views of scholars that ICTs as relevant tools in healthcare delivery as it greatly improved medical practice and revolutionized service delivery particularly in the case of making it easier to communicate with and assemble doctors during emergencies.

Moreover, ICTs improved the quality of healthcare provided as it enabled better access to all types of relevant information, as well as linking them to their peers. (Espinoza, 2005; Kalu, Akpan and Kalu, 2006; Ajayi et al, 2008; Olatokun and Adeboyejo, 2009)

CONCLUSION

Even when scholars believe that the potentials of ICTs are yet to be fully utilised in hospitals in developing countries of which Nigeria is one, it can be seen that so far ,efforts have been made towards changing the status quo. Health workers from the findings have applied ICTs to various activities such as communicating with colleagues and patients; using ICTs as personal assistants, (reminders, schedulers etc); as well as for storage and analysis of patients' data. Multimedia presentations during seminars and lectures, research and publication of academic papers, as well as browsing the net for medical information etc., are other activities for which health workers utilized ICTs.

Consequently, healthcare delivery services have been enhanced as healthcare workers can be assembled fast during emergency situations, service delivery is faster and productivity improved, thanks to better patient management procedures occasioned by easy access to updated information.

RECOMMENDATIONS

The study has revealed commendable efforts towards utilizing ICTs for healthcare delivery activities by healthcare workers in tertiary hospitals in South –South Nigeria. However, there is still need for improvements. Consequently, the following recommendations are made:

1. More software packaged that ease the complicated health care processes should be provided by hospital management and health care worker trained on how to apply them.
2. Health workers should engage in online discussions using chat rooms and news groups in order to avail themselves of the opportunities to interact with other health care providers with similar interests.
3. Hospitals should adapt ICTs like computers and internet more for medical diagnostic purposes.
4. Medical records and patient data should be stored more in soft copies to enable easy retrieval and use by health care workers.

REFERENCES

- [1] Ajayi, A., Garba, S., and Suleiman, I. (2008). Paramedical Workers' Knowledge and Utilisation of Information and Communication Technologies for Healthcare Delivery in Zaria Metropolis. *The Nigerian Journal of Communication*, 6(192), 256-270
- [2] Espinoza, S. (2005). *Evaluating the Impact and Affordability of ICTs in Rural Primary Healthcare Centres of Peru*. Retrieved December 13, 2011, from http://guzdial.cc.gatech.edu/inta8803/uploads/27/INTA%20paper_v1.doc
- [3] Folarin, B. (1998). *Theories of Mass Communication: An Introductory Text*. Ibadan: Stirling-Horden Publishers.
- [4] Hassan, O., Siyanbola, W., and Oyebisi, T. (2011). Effect of Information Technology Policy on Nigerian Health Sector. *Journal of Emerging Trends in Computing and Information Sciences*, 2(6). Retrieved December 11, 2011, from <http://www.cisjournal.org>
- [5] InfoDev Working Paper (2005). In: Shields T., Chetley, A. and Davies, J. (Eds.) *Improving Health, Connecting People: The Role of ICT in the Health Sector in Developing Countries*. Retrieved August 13, 2008, from http://www.healthlink.org.uk/world/ICT_health.html
- [6] Kalu, Q., Akpan, S., and Kalu, N. (2006). The Impact of Mobile Phones on Medical Practice in Nigeria. *A paper presented at an International Conference of Women Medics, Sweden March 5th - 8th*.
- [7] McQuail, D. (2005). *McQuail's Communication Theory*. (5th ed.). London: Sage.
- [8] Ndukwe, E. (2007). ICTs as Tools for Achieving MDGs. Retrieved December 11, 2011, from www.nigermuse.com. Accessed
- [9] Olatokun, M., & Adebeyejo, C. (2009). Information and Communication Technology Use by Reproductive Health Workers in Nigeria: State of the Art, Issues, and Challenges. *An Interdisciplinary Journal on Humans in ICT Environments*, 5(2):181–207. Retrieved January 02, 2012, from www.humantechnology.jyu.fi
- [10] Olise, F. (2008). *Communication for Development and Modern ICTs: Nigeria at a Crossroads*. In: Mojaye, E., Oyewo, O., M'Bayo, R. and Sobowale, I. (eds.). *Health Communication, Gender Violence and ICTs in Nigeria*. Ibadan: Ibadan University Press.
- [11] Shittu, A., Ajayi, A., and Garba, S. (2008). Information and Communication Technologies (ICT) Knowledge and Utilisation for Healthcare Delivery among Zaria Medical Doctors. *The Nigerian Journal of Communication*, 6(1&2), 28-43.
- [12] Shoki, G. and Ufuophu-Biri, E. (2008). *Implication of GSM Usage among Delta State University Students on Conventional Media*. In: Mojaye, E., Oyewo, O., M'Bayo R. and Sobowale, I. (ed.). *Health Communication, Gender Violence and ICTs in Nigeria* (pp. 223-232). Ibadan: Ibadan University Press.
- [13] Umoh, U., & Inyang, U. (2005). *Basics of Modern Computing*. Uyo: EMSEL.