

Impact of Improved Telecommunication Services on Health Care Delivery in Nigerian Teaching Hospitals – A Survey of Opinions

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Abstract

The onset of revolutionary change in telecommunication in Nigeria is less than a decade ago. The impact has been notable in several aspects of the social life of the nation. However, the impact on the health care system of the country is still poorly documented. The main objective of this study is to assess the impact of current improvement in telecommunication on health care delivery in Nigeria. Structured questionnaire were administered to survey the opinions of certain medical staff of three tertiary health care institutions. Information regarding the use and impact of telecommunication on tertiary health care delivery and the commitment of the hospital management/government to promote an ICT-enhanced health care system were retrieved, analyzed and discussed.

Keywords: Nigeria, health care, hospitals, telecommunications.

Introduction

Information and communication technology (ICT) is arguably the most rapidly growing segment of the world ecosystem. The development in the sector permeates every human activities; social, economic, cultural, religious, political or health care (Idowu et al., 2008). The huge networking possibilities afforded by ICT has significantly transformed the health care systems in the world (Feliciani, 2003; Myers and Mary, 2003) dispersing health care information with comparative ease, bringing patient closers to care givers, making access to the best health care technology and expertise available to the remotest parts of the world.

In many industrialized countries of the world, there is a huge investment of resources into ICT in health care as a commitment to providing the most efficient and effective health care services to their teeming population. This is yet to be seen in many countries of sub-Saharan Africa. In Nigeria, knowledge and utilization of ICT is still very poor among the general populace (Bello et al., 2004). Access to the three components of ICT (computers, internet and telephones) is still largely limited to the elites and corporate institutions (Idowu et al., 2008) As observed in previous studies, telephony is the most developed and most accessible component of ICT among the general population in Nigeria. Even then, many public institutions including hospitals still lack effective internal and external telephone interconnectivity within and with the outside community respectively.

Since the year 2001, there has been a revolutionary growth in the telephony industry in Nigeria (Idowu et al., 2003; Idowu et al., 2008). This is expected to have permeated the health care institutions with significant positive impact on health care delivery. Two years after the introduction of GSM in Nigeria, Idowu et al., 2003) conducted an interview among medical practitioners in some Nigerian teaching hospitals to find out the current level of utilization of telephones for health care delivery. He noted that medical experts use their personal mobile phones to facilitate patient care at their own expense. Neither the government nor hospital management had taken up the responsibility. Currently, the number of GSM service providers in the country has increased significantly and all of them keep rolling out several service options or packages including internet services with varying benefits to attract customers. Although, A GSM based referral system was developed, validated and recommended for use in the primary health care centers (Idowu and Ajayi, 2008). The extent to which the growth in telecommunication has impacted tertiary health care and how far this has enhanced the development of an ICT –driven health care practice in Nigeria is still to be known.

The objective of this study is to assess the impact of current improvement in telecommunication on health care delivery in Nigeria and to assess the current level of commitment of government/hospital managements to providing telephony services and internet services in some Nigerian teaching hospitals.

Materials and Methods

A 12-item questionnaire was designed containing two-categories of questions; personalized questions and institution-related questions. Three teaching hospitals were selected based on convenience, these are University of Porthacourt Teaching Hospital (UPTH), University College Hospital (UCH), Ibadan and Lagos University Teaching Hospitals (LUTH). Participation was exclusively restricted to doctors who offer both out-patient and in-patient clinical services within the hospitals. Sixty questionnaires were administered in each of the study centers. Oral interview of 10 randomly selected participants from each of the study centers was done to elicit more details about the actual involvement of the respective hospital management in providing telecommunication services with or without internet options. Returned questionnaires were previewed and properly completed ones were adopted for statistical analysis using SPSS for windows version 11.0.

Results

There were 39/60 properly completed questionnaires (65% of questionnaires administered) from UPTH, 45/60 from UCH (75% of questionnaires administered) and 59/60 from LUTH (98.3% of questionnaires administered). Hence, the total number of valid respondents was 143 comprising 27.3% (39/143), 31.4% (45/143) and 41.3% (59/143) from UPTH, UCH and LUTH respectively.

Personalized questions

Personal opinions of individual respondents about telecommunication in health care delivery were sought. The responses are presented in Tables 1 and 2. Most of the participants believe that

improvement in telecommunication within the hospitals is capable of improving the quality of care. They believe that intercommunication between patients and care givers as well as among care givers can be especially improved. Ninety three percent of respondents (133/143) claimed to have been using their personal GSM phones to facilitate patient care in one way or another. Majority of them do so frequently or occasionally. Seven respondents (4.9%) never used their personal phones for that purpose while three participants did not answer the question. Most of the respondents believe that patients tend to abuse the privilege of direct access to their physicians personal phones as they make frequent disturbing calls for flimsy reasons. It is also generally thought by participants that electricity and media services are two other national utilities most necessary to complement telecommunication services as a means of improving health care delivery, especially through the vehicle of ICT in Nigeria.

Table 1. Responses to generalized questions

Do you believe that effective telecommunication system can impact positively on patient care?		Do you think the advent of GSM has had impact on patient care in any way?		In which area do you consider telecommunication service useful in health care delivery?		Since the advent of GSM, have you had to use your personal mobile phone to facilitate patient care in anyway?		Apart from telecoms, which national utility could have great positive impact on clinical practice and able to complement telecommunication?	
Yes	140	Yes	137	Clinician- Clinician interaction	19	Frequently	68	Electricity	106
No	1	No	2	Clinician- Patient interaction	1	Occasionally	50	Water supply	4
Both	-	<i>Missing</i>	4	Both of the above	109	Rarely	15	Transportation	9
<i>Missing</i>	2			<i>Missing</i>	19	Never	7	Info media	22
						<i>Missing</i>	3	<i>Missing</i>	2

Table 2. Disadvantages of free communication

The following are the disadvantages of free communication access between clinicians and patients	No of respondents	Agree	Disagree	Percentage in agreement
Patient tend to disturb too much calling for flimsy reasons	128	116	12	90.6
The cost-benefit ratio does not justify it	82	36	46	43.9
Patients may not keep clinic appointments well	123	78	45	63.4
Clinician may get a false impression from patients over the phone and be less keen about seeing them in the clinics anymore	113	68	45	60.2

Institution-related questions

Opinions expressed by respondents on the state of telecommunication in their respective hospitals are presented in Tables 3 and 4. Most (34/45) of the respondents from UCH affirmed that before the advent of GSM the hospital had an existing intercom system which was effective for communication among health care givers within the hospital. However only 11 of them volunteered an opinion as to whether the facility was adequate or not, out of whom 8 respondents felt the facility was inadequate. Conversely, majority (39/45) affirmed that there was no effective means of communication with out-patients in UCH before the era of GSM. Most (42/45) of the respondents affirmed that the hospital has currently latched on the opportunity of the GSM services to formally improve communication in relation to patient management (Table 3).

Table 3. Responses to Institution related questions

	Before the era of GSM, did your institution have an effective internal communication system that caters for Clinician-Clinician intercommunication?		If your answer is yes to the last question, was the facility adequate?		Before the era of GSM, did your institution have an effective external communication system with out-patients other than the normal interaction during clinic hours?		As at this moment, has your institution employed the opportunity of current GSM services to improve communication in relation to patient management in any way?	
	Yes	No	Yes	No	Yes	No	Yes	No
UCH	34	11	3	8	6	39	42	3
UPTH	11	28	1	10	-	39	17	22
LUTH	16	43	-	16	8	51	58	1

Majority (28/39) of respondents from UPTH believed that prior to the introduction of GSM the hospital did not have an effective intercom system for communication within the hospital. All but one of the 11 respondents who expressed contrary opinion however affirmed that the available facility was inadequate. All (39) of the respondents expressed that no form of external communication with out-patient existed in the hospital prior to GSM era. As at now opinion is divided (Table 3) as to whether or not the hospital has adequately employed the avenue of GSM services to improve communication in patient management in the hospital.

In LUTH, majority (43/59) of respondents believed that the hospital did not have an effective intercom prior to GSM era, although a considerable proportion (16/59) felt otherwise. Those who expressed contrary opinions all admitted that the facility available was inadequate. For external communication, an overwhelming majority (51/59) believed the hospital had no system in place. However, there appears to be a complete paradigm shifts as all but one respondent now believe that the hospital has effectively latched on the GSM services to improve communication in health care delivery (Table 3).

When asked about the areas where GSM has had the greatest impact in their respective hospitals' health care delivery (Table 4), opinions were uniform across the three hospitals as most respondents believed that intercommunication among clinicians was the most improved area. Patients follow-up was next most improved in UPTH and LUTH while in UCH, scheduling of clinic appointment was comparatively slightly more improved than patient follow-up (Table 4). Lodging of complaints was the least popular use to which GSM facility has been put in the three hospitals.

Table 4. Positive impact of GSM

Which of the following aspect of clinical practice do you think GSM has had positive impact in your own hospital?	UCH	UPTH	LUTH
Intercommunication among clinician	44/45 (97.7%)	38/39 (97.4%)	54/59 (91.5%)
Scheduling of clinical appointments	37/45 (82.2%)	21/39 (53.8%)	31/59 (52.5%)
Lodgement of complaints outside clinic hours	31/45 (68.9%)	20/39 (51.3%)	28/59 (47.5%)
Post-procedure follow up	36/45 (80%.0)	25/39 (64.1%)	40/59 (67.8%)
Overall reduction of time wastage in patient care	25/45 (55.6%)	15/39 (38.5%)	26/59 (44.1%)

Highlights from Oral Interview

In UCH, respondents said that the hospital management has provided a GSM phone to each consultant medical staff and 3 phones to every clinical specialty unit for the use of three cadres of resident doctors on call duties i.e. house officer, junior and senior registrars. The wards and clinics are also provided with table top telephone boxes. The phones are specially linked (cloned) for easy and effective intercommunications. The management pays for the services through a special arrangement with the service provider (Starcomms) and respondents claim the system has been very effective but only for intercommunication among care givers within the hospital. However, they noted a shortcoming in that no arrangement for internet service was included.

In UPTH, The management has provided table top telephone boxes to the clinics and wards. The phones are also cloned and management pays for the service. This arrangement is also made with the same service provider as in UCH (Starcomms). However, respondents claim that the arrangement so far has not been effective throughout the hospital and it does not include internet service.

In LUTH, the hospital management provides two GSM phone for every clinical specialty unit for the use of consultant and senior registrar on call duties. Provisions are also made for the wards and clinics. These phones are also cloned for free intercommunication among the staff. Payment for service is by the hospital management and the same service provider as others (Starcoms) is involved. Similarly, no internet service option is included.

Discussion

The Nigeria Federal Ministry of Health (FMOH) created its ICT committee in 2003 with one of the goals being to achieve electronic linkage of the ministry with its hospitals, the aim was to create a Wide Local Area Network (WLAN) whereby the tertiary hospitals can all access each other, exchange information and create a reliable central database (Awolola and Lawson, 2006). Six years down the line, there have been no significant steps towards the realization of this objective. However, the liberalization of the telecommunication industry in the year 2001 paved ways for the introduction of the GSM telephony⁵. Today, the GSM and other telephony services have revolutionalized telecommunication in Nigeria with impacts in every sector including social, economic and health (Adomi, 2005; Idowu et al., 2008).

In the year 2003 (Idowu et al., 2003) observed that telephony had become useful among medical experts in some Nigerian teaching hospitals as a means of facilitating patient care. They noted some areas where this has been particularly useful which basically include the contacting of wards and laboratories for vital information, materials and equipment and calling on colleagues for second opinions. The authors also noted that individuals' personal GSM phones were being used without any form of reimbursement from government or hospital management. Some of the medical experts interviewed also decried the non provision of internet services in the hospitals. Most of them had to visit cybercafé to get updates on current developments in their fields.

Six years down the line, we observed that the growth of telecommunication industry in Nigeria has been reasonably fast. More operators have been licensed, different service packages are available with each operator and some operators now provide combined internet services. In this study, we surveyed the opinion of some medical staff of three tertiary hospitals to assess for a corresponding increase in the impact of telecommunication on tertiary health care delivery and by so doing, to evaluate the stage of integration of ICT in the national health system.

Compliance rate among selected participants was reasonable, the minimum being 65% from UPTH, followed by UCH at 75%, and the maximum 98.7% from LUTH. Participants generally believed that GSM telephony has improved health care delivery in one way or another. As observed by Idowu et al⁵ 6 years earlier, most of the participants have had to use their personal phones frequently or occasionally to facilitate patient care at one time or the other. The situation might have improved however since the management of the three hospitals under study have now taken up the responsibility of providing and funding the facilities.

It would appear that up till now, the main area where telecommunication has had tangible impact is intra-hospital communication among various units and personnel as noted in this study and previous ones. Although, free intra-hospital communication increases efficiency by reducing the bottlenecks of physical contacts which delay execution of treatment plans, improvement in inter-hospital communication is also much desirable. Facilitation of direct and prompt referral to hospitals with adequate and appropriate facilities and manpower for specific treatment needs is a very important step in saving lives. In this era of improved telecommunication, a situation where victims in emergency are taking to several hospitals before finding an appropriate facility should not be tolerated any longer.

Another area where improvement was observed in this study is interaction between patients and physicians. To achieve an optimally efficient health care system, easy communication between patients and clinics, hospitals or physicians is essential. The benefits range from scheduling and rescheduling of appointment dates, individualized time schedule to reduce waiting time in clinics and so control patient load per clinic hour, and prioritization of patients based on exigency of needs. Also, in emergencies prior phone contacts could make adequate preparation possible ahead of victims' arrival. Hence, it is important to make interconnectivity between the people and public hospitals as well as among public health institutions a priority. If truly committed, the options for government are many; the federal ministry of health can compile and make available to the people, a telephone directory of public hospitals in the different categories of primary, secondary or tertiary centers. An understanding could as well be reached with GSM operators to provide services that enable the public to dial a specific code number and derive information about available hospitals in given vicinity able to provide specific treatment needs. Since GSM has already become a common tool in the hands of the public, incorporation of these services can help to maximize the potential for improved health care.

Just as improvement in telecommunication has had some impact on health care, most of the participants opined that electricity and information and media services are also able to improve the national health delivery system and are more likely to complement telecommunication. This is reasonably so considering that epileptic power supply is the bane of most industry in Nigeria. A regular and stable power supply could cheapen the cost of providing ICT facilities in hospitals, homes and other public places and thus enhance the accomplishment of eHealth in Nigeria.

Similarly, Information and media services are veritable tool for educating the public on the use of ICT facilities to facilitate eHealth. Some of the noted demerits currently in the system can be addressed through the media. Participants opined that patients tend to abuse the opportunity of making direct calls to hospital and their physicians. They also opined that both patient and physicians tend to feel falsely secure by paying less value on physical follow-up visits even when this is required. An effective information media can help to educate the public and professionals on the appropriate use and limitations of ICT and eHealth.

Based on the opinions expressed, UCH appear to be the hospital with the most effective intercom system prior to the advent of the GSM. However, none of the hospitals had an effective out-patient telephone interaction prior to this era. It is cheering to note that all the hospitals have now improved on their intrasystem intercommunication and communication with out-patients to varying degree by latching on the GSM revolution. This paradigm shift appears to be more noticeable in UCH and LUTH compared to UPTH.

The area of greatest impact as expressed by participants is still clinician-to-clinician communications or intra-hospital communications. Pleasantly, patient follow-up is also being significantly improved in all the hospitals. Mbah reported a study (s report (NJCP) where up to 68% of their post-surgical patients were effectively followed up using their GSM phone contacts (Mbah, 2007). This observation beams a ray of hope as it appears that with increasing availability of GSM phones and extension of connectivity to the rural areas, the problem of difficult patient follow-up which has been the bane of longitudinal study design in Nigeria may be over soon. The use of telephone to schedule clinic appointments is also emerging, particularly more prominently

in UCH. This is also a useful aspect which must be encouraged in all the hospitals, considering the enormous benefit derivable from such practice which includes overall reduction in time wastage and its economic consequence.

The oral interview conducted shed more light on the state of the facilities for communication so far provided at the three hospitals. Obviously, the participants from UCH and LUTH feel better satisfied with the services on ground than those from UPTH. It was however noted that the non inclusion of internet service is a concern in all the hospitals. We observed that the same operator (Starcomms) services the three hospitals. This is most unacceptable as it suggest a kind of monopoly which does not promote a healthy competition that is able to stimulate growth. If this observation is the same in other tertiary health institution not included in this study, the situation requires urgent intervention as other service providers also need to provide usable packages for health care promotion.

Conclusion

Judging from the foregoing, it appears that the dream of ICT driven health sector is realizable in Nigeria if successive government can persist in the effort to improve national infrastructures especially in the areas of telecommunications, electricity and information and media. If the introduction of other ICT component such as computer and internet in health care would be given the same attention being given to telephony, access to quality health care in Nigeria can be improved rapidly.

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