

*Full Length Research Paper*

# Knowledge and perception of health workers towards tele-medicine application in a new teaching hospital in Lagos

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**To determine the perception of health workers in the health-care towards tele-medicine application in a new tertiary teaching hospital, a modified structured questionnaire using a prospective postal survey was administered to a cross-section of health workers in Lagos State University Teaching Hospital (LASUTH)/Lagos State University College of Medicine (LASUCOM). Only 60.9% of respondents were familiar with this new emerging concept of tele-medicine / tele-health in the health care system. Although, 50% of health workers had expressed concern about the ethical and medico-legal consideration of tele medicine practice, this was irrespective of their socio-religious background. The principal factors weighing in favour of willingness to use tele-health services were knowledge of tele-health applications (28.1%); perception of tele-health benefits (14.1%), reduced barriers to tele-health care among others. Most of the respondents believed that tele-health would enhance direct access to health care services (23.4%), improve quality of care (14.1%) among others. It is desirable to offer tele-medicine to patients especially for emergency and chronic medical conditions.**

**Key words:** Tele-medicine / tele-health, health workers, perception, knowledge, Lagos.

## INTRODUCTION

Telemedicine has been described as "the use of electronic information and communications technology to provide and support health care when distance separates the participants" (Field, 2002). Although this definition can include conventional telephone use, telemedicine typically refers to more recent telecommunications systems, such as interactive video conferencing, store-and-forward image techniques, remote medical record access, and remote patient monitoring. Store-and-forward technology, defined as the process of storing images or data and forwarding them to a provider for review, was virtually unused before 1995. Total private sector teleconsultations have more than doubled each year from 1995

to 1998, reaching 90,000 consultations in the United States in 1998 (Strode et al., 1999; Allen and Grigsby, 1998).

Information technology is regarded as an important tool for increased efficiency (WHO, 1998; Little, 1992). On the other hand the health services in this perspective represent a considerable market for information technology (Roger and Santucci, 1991).

The fact that economic health depends on medical health, since health is wealth, implies that health care needed to be accessible to all including the rural communities which if compromised could undermine the entire socio-economics fabrics of the country. Today, patients are able to acquire healthcare information through the Internet, resulting in smarter patients with higher expectations and a demand for high-standard quality care. The review of the health-care system, the level of its decline, the services provided, and the gen-

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eral health status of Nigerians, with the available data revealed that the Nigerian health-care system is characterized by poor infrastructure, high infant-mortality rates, and poor nutritional status of children. This problem is equally compounded by high fertility rates and high maternal mortality rates (Awosika, 2005).

With the Nigeria's health care system undergoing profound changes and experiencing relentless financial pressures, there is need to consider telemedicine application in urban as well as rural settings. In many countries (Nigeria for example), Tele health has also recently reemerged as a potentially clinically appropriate, cost-effective means of supporting patients and providers in the changing health care system (Miller et al., 2003). It is been considered as a promising tool that addresses many of the problems of delivering health care to remote areas, as well as to areas under served by health care professionals (Miller et al., 2003; Gagnon et al., 2004). Although telemedicine is unique among health care services in lacking evidence of its effectiveness, the increasing demand for such evidence by health plans, patients, clinicians, and policymakers challenges advocates of clinical telemedicine to undertake more and better evaluations of its practicality, value, and affordability (<http://www.telemedicine.com>).

However, the diffusion of tele-health and its application will ultimately depend on its acceptance among the healthcare practitioners and the publics (Gagnon et al., 2004). To our knowledge, this is the first study in this country that addresses this issue of Tele-medicine / Tele-health as its relate to its acceptance in the healthcare sector. There is dearth of knowledge in this environment on telemedicine applications in the health-care sector. In this study, we aim to determine how know-ledge and perception of the health workers in the heath care delivery system will influence tele health/ tele-medicine practice in Lagos, Nigeria.

## MATERIALS AND METHOD

A prospective postal survey of a cross section of health workers in Lagos, Nigeria was conducted using a modified highly structured questionnaires administered to health workers (doctors, nurses/midwives, medical laboratory scientists, health records) in the new teaching hospital (LASUTH/LASUCOM). The survey instrument was composed of 31 close-ended questions and information on the questionnaire include the bio-religious data, Practice type, mode of receiving information and indication about Tele health/Tele medicine, the location of the service-facility and cost of services, perception of training by the health workers among others. We initially tested the validity and reliability of the questions in a pilot study. One thousand questionnaires randomly posted out with informed consent from the health workers concerned and given a period of one month before collection and analysis of the data.

### Data analysis

Computerized analysis of the survey carried out with percentage calculation of the data using SPSS 11 for window (SPSS, Inc., Chicago, Illinois) package.

## Ethics

The University's principles and procedures on research ethics were adhered to throughout the study. We obtained informed verbal consent from the participants in the survey after careful explanations on how confidential the information given to us for the purpose of the study is maintain. Similarly, information concerning the benefits, possible risks and discomforts from participating in the study were available to the participants.

## RESULT

The differential characteristics of respondents (health workers) were medical laboratory scientist (39%), health record officer (8%), nurse/midwives (14%), pharmacist (5%), physiotherapist (11%), general practitioner (2%) and resident/specialist (22%). 60.9% of respondents were familiar with the new emerging concept of tele-medicine / tele-health in the health care system. The majority sources of their information on this subject came from media-10.9 and 14.9% through internet and professional partners. 68.8% of the health workers agreed that telemedicine was beneficial in the health care delivery in Nigeria. Although, 50% of health workers had expressed concern about the ethical consideration of tele medicine practice this was irrespective of the health worker's socio-religious background. 78.1% of the health workers indicate their willingness to adopt Tele medicine in health care delivery if available and when giving appropriate training on its usage. The principal factors weighing in favor of willingness to use tele-health services were knowledge of tele-health applications (28.1%), perception of tele-health benefits (14.1%), reduced barriers to tele-health care among others.

A large majority of respondents believed that tele-health would enhance access to health care services (23.4%), improve quality of care (14.1%), and reduce health care expenditures (6%). Regarding available tools in Nigeria for telemedicine practice, telephone is seen as the only significant tool used mainly for the purpose of counseling, information sharing, consulting and treatments of patients. Regarding tele-medicine tools available in Nigeria, the telephone was the only significant findings. 50% of the respondents have home computers with 15.6% internet accessible and 42.2% browse e-mail occasionally.

## DISCUSSION

The return rates of materials and the level of interest generated towards the subject in our own study especially among the related specialties of health workers was overwhelming. The return rate was 64%, similar to 65% return rate in Barbosa et al. (2005) study and did not differ by institution or specialty with a male: female ratio of 1:1.2. The educational qualification of the different health workers were mainly postgraduates (42.2%) and

post secondary (57.9%). Majority of the respondents have expressed a lot of anxiety especially being conscious of the subject matter for the very first time, though actively immersed in their day-to-day activities but lack understanding of the concept at the initial. There appear to be no data on this subject after extensive literature review in our environment. As expected, the knowledge based of the respondents with regards to the concept was 58.1%, higher than the public opinion as seen in similar study (Gagnon et al., 2004). Similar to Gagnon et al. (2004) study, legal and ethical responsibility were the leading consideration expressed by 50.0% of health workers. Hence, the definition of tele-health stresses a focus on delivery of services across distances with a sense of concern for ethical provision of services and confidentiality of the health care needs in our society (Yellowlees, 2003).

Tele service which involves telephone/ cell phone usage appear to be most popular with 85.9% of respondents having confirmed usage mainly for counseling (advice on health matters) of their patients and others which include treatment (prescription of drugs, etc), consultation and information sharing. This will reduce self-medication practice since, the patients know that they have readily available access to the physicians and other practitioners as the case may be and will be willing to get first hand information from them rather from their equally ignorant friends/neighbours. 23.4% of respondents stated that tele-medicine should be offered to all patients who are in emergency especially road traffic accidents victims, chronic disease conditions, chronic psychiatric condition, etc. Evidence also suggests that increased access to electronic means of communication and education will be well received among individuals with chronic and disabling diseases (Tetzleff, 1997).

About 65.6% of the respondents are optimistic of the success tele-health/tele-medicine practice have in the country and recommendation for its adoption was stated by 60.9% of respondents that believe for the purpose of improving and promoting the recently launched National health insurance scheme in the nation health care delivery system. Tele-medicine has the potential to reshape health care in both positive and negative ways and to alter the personal face-to-face relationship that has been the model for medical care for generations. Tele-medicine offer rooms for supervision training of available health workers centers with quality of care resulting from that relationship (Miller et al., 2003).

78.1% of the health workers were willing to offer tele-health to their patients when the need arise, this is similar to findings of Gagnon et al. (2004) and Abrar and Kvedar (2003), in their studies where 50% of their patients were willing to use tele-health services when offered to them. Although, 18.7% of respondents had expressed doubt, if given a choice, the health workers would still prefer to use traditional delivery mechanisms resulting in the under utilization of telemedicine and tele-

health solutions, even when they are in place (Andre-lacroix et al., 1999). In this study, only 50% of respondents have home computers with internet accessible and using e-mail occasionally contrary to the finding in other study (Abrar and Kvedar, 2003). There is need for basic training and familiarity with the computer and associated communication systems in order to facilitate the acceptance amongst the health workers and equally help gain a sense of confidence with basic tools, which eventually will lead to a willingness to work and technologically capable of participating in tele-medicine and tele-health applications and systems (Andre-lacroix et al., 1999). The direct collaboration of health care professions in developing tele-health technologies can ameliorate these concerns and contribute to the development of responsible, safe, ethical, and useful systems (<http://www.dhs.vic.gov.au/ahs/archieve/Tele-med>).

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