Assessing of Information Communication Technology Development in Primary Health Care for Health Promotion, a Study at the Asante Akyem North District of Ghana

Kojo Osei Frimpong¹, Prince Osei Akumiah², Dorothy Oforiwah Antwi-Asante³, Nomah Daniel Kwakye⁴

¹⁻³Presby University College, Ghana
⁴Yaroslav-the-Wise Novgorod State University

Abstract: Primary Health Care (PHC) has been singled out as the most suitable health care setting to meet the increasing need for health promotion interventions and to curb the rising number of chronic diseases. Most people depend on health care services for health information, yet PHC is poorly equipped to provide this service. The health system in Ghana has a fundamental aim of maintaining or improving the health outcomes of people living in the country. The study assessed the use of ICT in PHC for health promotion. This study was carried out in Primary Health Care facilities at the Asante Akyem North District in Ghana and sample size of 55 nurses was selected from the health centers within the district to participate in this study. The study revealed that the most common forms of ICT tools available were radio, mobile phones, Televisions, computer / laptop, digital projectors, digital cameras, DVDs, internet access, and landline telephones. ICT in PHC are used for sending reports, receiving information, communication among staff, for learning, report preparation, storage of data, education of clients / patients, leisure, entertainment, and analysis of data. Most the nurses had skills in using ICT applications such as word processing, spreadsheets, presentation tools, basic E-mailing, and basic use of the internet. Among the challenges confronting the usage of ICT in PHC were irregular power supply, high cost of purchase and installation, inadequate knowledge on ICT, lack of internet access, lack of financial support on the use of ICT, virus attack and high cost of training.

Key words: Health, Health Education, Health promotion, Primary Health Care, Public Health.

1. Introduction

Primary Health Care (PHC) has been singled out as the most suitable health care setting to meet the increasing need for health promotion interventions and to curb the rising number of chronic diseases [1]. Most people depend on health care services for health information, yet PHC is poorly equipped to provide this service [2]. Primary health care systems are responsible for providing various outreach facilities to the community. A variety of programs fall under the ambit of primary health care requiring routine reporting of information. In addition to routine monthly information, the primary health care sector needs to also deal with large amounts of extraordinary data arising from, for example, epidemics and deaths that require immediate response and action [3]. Developing Information Communication Technology (ICT) supported to health communication in PHC could contribute to increased health literacy and empowerment, which are foundations of health promotion and the notion of enabling people to increase control over their health and its determinants, and thereby improve their health [4].

The PHC sector in developing countries like Ghana is often the key asset responsible for providing health care services to the population, especially within rural areas [5]. At the moment, attempts are being made by states and local governments to introduce various reforms into primary health care, such as decentralization, integration of different health programs, strengthening of management practices, and the introduction of Information and Communication Technologies (ICTs) to strengthen the health information systems [6]. Also, there are multiple administrative levels (community, district, province and national) involved in the health information systems each with their own information needs. As such trying to harmonize and cater to these different needs is another difficult undertaking. Typically, the PHC sector is significantly under-resourced both in terms of materials and people, and staffs are overburdened with work often making it difficult to
motivate them to engage with new efforts such as the introduction of ICTs. Despite the efforts of governments in developing countries to improve living conditions, including the prioritization of health care services at the policy level, the majority of their populations still face obstinate development challenges [7]. The existing inequality of living conditions especially in the health status of the people and the distribution of basic services between, as well as within countries, adversely shape the social development processes [8].

The recent Human Development Report (HDR) 2004 describes that the majority of the population in developing countries are still living in hunger and poverty, are facing high disease burdens, and have limited access to sanitation and health care services. Poor health status is an important dimension of deprivation and adversely influences social development [9]. This needs to be strengthen, health information systems has also been emphasized by the recent World Health Report (WHR) 2004, which states that health information systems are needed to better support health interventions and improve access to health services. For example, the problem of maternal mortality often results from patients living in rural areas not being able to reach the clinic on time when needed due to distance and lack of transportation. If information about the geographical spread of pregnant women and of existing clinics can be provided more effectively, authorities can take steps, for example, to improve transportation or strengthen outreach support, to try to deal with the problem of poor access, and with it at least to some extent, the maternal mortality problem.

Therefore, the responsibility to provide health care to the broader community and to serve as the hub for the health information systems rests with the PHC structure. Other aspects of history, geography, culture, infrastructure, inadequate skill levels and pressures of everyday work heighten the complexity of the primary health care sector. The culture of information and communication, whether supported by ICT or not, typically reflects the practice of collecting data and sending it upwards to satisfy the needs of the bureaucracy, rather than to support action at the local level of the sub-district where information is needed most [10].

2. Materials and Methods

2.1. Study Setting

The study was conducted at the Asante Akyem North District in the Ashanti Region of Ghana. It has Agogo as its capital. Agogo is approximately 80 kilometers east of Kumasi, the second capital of Ghana. During the year 2000, Ghana census recorded a population of 28,271 in Agogo. The population estimate in 2010 population and housing census stands at 140,694 with 67,673 males and 73,021 females [11].

The district has one hospital namely Agogo Presbyterian Hospital and three community health centers and eighteen community-based health planning and services (CHPS) centers.

2.2 Study Population

The target population for this study was primary or public health care nurses working in the Health Care Centers of the district under Ministry of Health in the Asante Akyem North District. The Primary Health Directorate of the Ministry of Health has staff population of 150 primary health care nurses in the district of the four public health facilities at Agogo Presbyterian Hospital, Juansa, Amanteman and Ananekrom. Per the four public health facilities the staff strength for Agogo Presbyterian Hospital, Juansa, Amanteman and Ananekrom are 62, 43, 15 and 30 staffs respectively (District health Directorate).

2.3. Sample Size

Fifty-five (55) public health nurses working within three health centers of the district were sampled as subjects for this study. List of all primary health care nurses working within the health centers was obtained from the Health Directorate in the district. Three of the public health centers were selected which were Juansa, Amanteman and Ananekrom. Per the three health centers selected the total staff strength made up a total of 88 public health nurses.

From the three centers Juansa, Amanteman and Ananekrom 30, 10 and 15 public health nurses were selected respectively.

2.4. Method of Data Collection

Questionnaires were administered to respondents who were assisted to fill. The main instrument for data collection were in the form of open and close ended questions. The questionnaire made up of five (5) sections. First section is on bio data of respondents. Second section contains items on availability and level of ease of using ICT in health promotion. Third section asks questions on usefulness and level of skills of ICT respectively. The last part asks questions on the challenges associated with the usage of ICT in health care for health promotion.

2.5. Method of Data Analysis
3. Results and Discussions

3.1. The Demographic Characteristics

Majority of the nurses, 50.9% were within the ages of 25-29, followed by 20 -24 age group with 21.8%, 30 – 34 years with 10.9%, 35 -39 years with 7.3%, 40 – 44 years with 5.0% and above 44 years with 3.6%.

20 of the respondents (36.3%) had Diploma in community health whereas 19 (34.5%) had Certificate in community health. The remaining 16, representing 29.2%, had gone through varied level of education notable among them were Diploma in General Nursing, BSc Nursing, and Post Diploma in Nursing.

Majority of the nurses is 31 out of the 55 nurses were single, representing 56.4%. 41.8% were married, 1.8% divorced.

With regards to number of years in service, collectively, 94.5% of the nurses have had at least one (1) year of experience in nursing whilst the remaining 5.5% have had less than one (1) year experience.

67.3% were affiliated to Christianity, 29.1% were Muslims and 3.6% African traditional believers.

3.2. Availability and Rate of Ease in Using ICT Tools

49 (89.1%) of the nurses indicated that the television as ICT tool is available to them however, 63.6%, 9.1% and 16.4% of the nurse indicated their level of ease of using TV in PHC delivery as very high, high and medium respectively. In contrast, 6 (10.9%) indicated their level of ease of using as very low.

In response to availability of mobile phone for PHC, 47 (96.4%) of the nurses indicated that mobile phone is available. With their levels of ease of using ICT tool – mobile phone, 34 (61.9%), 7 (12.7%), 6(10.9%), 2(3.6%) and 4 (7.3%) were very high, high, medium, low and very low respectively. In contrast, 2 (3.6%) said mobile phone is not available for PHC delivery but their level of ease of using such tool is medium.

All respondents indicated that the radio is available for PHC delivery in Asante Akyem North District, 39 (70.9%) of mentioned that they have very high skills in using radio, 6 (10.9%) said high level, 5 (9.1%) indicated medium, 2 (3.6%) of them said they have low skills in using radio whereas 3 (5.5%) said they have very low skills in using radio for PHC.

41 (74.5%) of the nurses indicated that computer / laptop as ICT tool is available to them however, 32 (58.2%), 2 (3.6%), 5 (9.1%) and 2 (3.6%) of the nurses indicated their level of ease of using computer / laptop in PHC delivery as very high, high, medium and low respectively. In contrast, 14 (25.5%) of them reported not having computer / laptop available to them for PHC delivery.

With regards to internet availability for PHC delivery, 29(52.7%) of the nurses indicated that they have internet available which consisted of 24(43.6%), 3(5.5%) and 2(3.6%) of very high, high and medium level of ease of using respectively. 26(47.3%) of the nurses said that they do not have internet available for PHC.

In response to availability of digital camera for PHC, 30(54.6%) of the nurses indicated that digital camera is available. With their levels of ease of using digital camera as an ICT tool; 20(36.4%), 4(7.3%) and 6(10.9%) were very high, high and low respectively. However, 25(45.4%) said digital camera is not available for PHC.

With regards to digital projector availability for PHC delivery, 32(58.2%) of the nurses indicated that they do not have digital projector available with their levels of ease of using digital projector as very high, high, medium, low and very low respectively level of ease of using digital projector. 23(41.8%) of the nurses reported to have digital projector for PHC.

Majority of the nurses indicated that printers and landline telephones are available for PHC with varied level of ease of using these tools for health delivery and promotion. However, nurses mentioned that scanners are not available.

The findings of this study are in consonance to several studies reported on ICT use among Reproductive Health Workers (RHWs) [12]. Idowu, Ogunbodede and Idowu, 2003 reported that while ICT capabilities (personal computers, mobile phones, Internet) were available in Nigerian teaching hospitals, mobile phones were spreading fastest. Their findings also revealed that computers and mobile phones were in use in all the teaching hospitals but not much Internet connectivity was available, meaning that most of the medical experts used external (non-hospital) Internet services, such as cybercafés, for even rudimentary Internet access, such as e-mail. They further explained that while just 1.4% of the medical staff did not use the Internet in any fashion, the vast majority (70.7%) of those using the Internet did so only for e-mail.

3.3. Usefulness of ICT in PHC

The results showed that at least 50% (53) of the nurses indicated ICT is useful in sending reports, receiving information, communication among staff, for learning, for report preparation, for storage of data/ information and for analysis of data.
Furthermore, the results show that at least 70% (44) indicated that ICT is useful for education of clients / patients, for leisure, and for entertainment.

The findings are in concordance to the findings of the United Nations Development Programme in 2003 [13]. ICTs contribute to health education, knowledge sharing, health monitoring, statistics gathering and analysis, the delivery of care and in meeting internationally agreed upon health targets with respect to a number of diseases. ICTs’ impact on health care have been particularly significant in developing countries and in rural settings, where long distances and the quality of the infrastructure hinder the movement of physicians and patients [14], reducing the quality of the health services delivered.

3.4. Level of Skills in the Use of ICT Applications

The results point out that all of the nurses (100%) had fair to excellent knowledge on word processing application software. On spreadsheet software, 50 (90.9%) of the nurses had capabilities. On the use of ICT presentation tools, 53 (96.4%) of the nurses had capabilities ranging from excellent to fair. On communication via the e-mail, 54 (98.2%) of the nurses said they had fair to excellent skills in basic e-mailing. Also with regards to basic internet browsing, most of the nurses 51 (92.7%) said they had fair to excellent knowledge in internet browsing. 39 (70.8%) of the nurses had fair to excellent skills in using graphics. On both the issue of designing webpage and graphics, most (not more 72.7%) the nurses had some capabilities ranging from fair to excellent skills.

A survey involving four general hospitals, 10 primary health-care centers, and six private hospitals in Nigeria [15], reported that none of the institutions had e-mail access or a Web site, only 5% of the workers possessed personal computers, only 7% of the health-care workers were computer literate, only 2% had any measurable computer skills, and just 65% had access to a mobile phone, but not necessarily their own. This was in spite of the fact that the state of Lagos has the largest concentration of Internet service providers, telecom operators, and cybercafés, intended to create a reasonable platform for ICT use.

3.5. Challenges Associated with the Use of ICT in PHC

Among the challenges confronting the usage of ICT in PHC delivery in Asante Akyem North District in the Ashanti Region of Ghana are presented in Figure 4.1 are: inadequate knowledge in ICT (12%) (17), high cost of purchase and installation (17%) (24), irregular power supply (26%) (35), lack of financial support on the use of ICT (12%) (16), lack of internet access (17%) (23), high cost of training (7%) (9) and virus attack (9%) (13).

The above challenges are not different from report of Chandrasekhar and Ghosh, (2001) [16] that some of the more obvious constraints common to developing countries in using ICT in health delivery include the limits of physical access to ICTs, the high cost of providing access for nations trying to balance multiple financial priorities, and the exclusion from access of large segments of the population due to inadequate infrastructure.

4. Summary

The study sought to assess ICT development in PHC for health promotion in the Asante Akyem. The major findings of the study include the following:

Most of the community nurses were below 30 years more than 70% and having between 1 to 3 years working experience.

The most common forms of ICT tools available were radio (100%), mobile phone (96.4%), TV (89.1%), computer / laptop (74.5%), digital projector (58.2%), digital camera (54.6%), DVD (54.5%), internet (52.7%), and landline telephones. The nurses indicated varied levels of ease of usage ranging from very high to very low.

The usefulness of ICT in PHC were for sending reports, receiving information, communication among staff, for learning, report preparation, storage of data / information, education of clients / patients, leisure, entertainment and analysis of data. Most the nurses had skills in using ICT applications such as word processing, spreadsheets / excel, presentation tools, basic E-mailing and basic Internet browsing.

Among the challenges confronting the usage of ICT in PHC were irregular power supply (26%), high cost of purchase and installation (17%), inadequate knowledge on ICT (12%), lack of internet access (17%), lack of financial support on the use of ICT (12%), virus attack (9%) and high cost of training (7%).

5. Conclusions

Based on the findings of the study, the following conclusions could be made from the study:

ICT based solutions offer a modern measure to meet both current and future challenges of exploding health expenditures of the population. However as concerns have been raised regarding data security and safety issues as well as acceptance by public health nurses, stakeholders have to appreciate their societal duty to minimize risks and optimize benefits of technical innovations. The presented data found evidence that public health nurses were highly aware of the ongoing trends towards digitalization and surveillance society. The rapid progress in the future demands of health care requires for intensified co-
operation and networking of stakeholders at a quite early stage of planning of public health strategies and implementation of health promotion related ICT tools.

6. References


