Building a Regional HIV/AIDS database:

Challenges faced by West African Specialist

Physicians and Health Librarians

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Building a Regional HIV/AIDS Database: Challenges Faced by West African Specialist Physicians and Health Librarians

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The article investigates access and the use of the Internet among specialty doctors in five West African countries. It also looks at what information and communication technologies (ICT) are needed by health librarians to build a human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) database to carry out the West African regional project on HIV/AIDS information management. Two sets of questionnaires were designed: one for specialty doctors to assess their skills and the functionality of their institutional Internet access, the other to determine health librarians' ICT skills. The findings reveal factors such as power outages, irregular and slow Internet connection, nonexistent institutional Internet subscription, or half-day Internet access that resulted in minimal use of Internet by the specialty doctors. The health librarians, though skilled with information management, needed additional ICT training in Web design, electronic classification of resources, and most importantly, database building to function optimally on their project assignment. The findings led to recommendations such as improving Internet access in the West African tertiary institutions/hospitals and continuous ICT training for the health librarians.

KEYWORDS health librarians, HIV/AIDS, ICT skills, Internet access, specialist physicians, tertiary hospitals, West Africa

INTRODUCTION

West Africa comprises 16 countries and part of the continent, namely, Benin, Burkina Faso, Cape Verde, Cote d'Ivoire (Ivory Coast), Gambia, Ghana, Guinea (Conakry), Guinea (Bissau), Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, and Togo.

. Human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) has been a global health issue for more than two decades and until recently Africa's leading infectious disease. The disease more heavily affects the sub-Saharan Africa or West Africa than tE diaease t han any other region of the world. An estimated 22 million people were living with HIV at the end of 2007 and approximately 1.9 million additional people infected with HIV during that year. In just the past year, the AIDS epidemic in Africa has claimed the lives of an estimated 1.5 million people in this region. More than 11 million children have been orphaned (1). The unremitting havoc wrecked by this disease on Africans and West Africans in particular is reflected in the enormity of literature available from a Google Scholar search, *Studies on HIV/AIDS in Africa*, which produced 124,000 hits; likewise another search on *HIV/AIDS databases in West Africa* yielded 15,600 hits with relevant links. Notably, the majority of published online research papers were written by non-Africans. It appears that African research on this topic are not visible, not necessarily because they are not available but because they are not accessible electronically or otherwise through the Internet.

STUDY BACKGROUND

This study was motivated by a quest for global African visibility and the apparent lack of exposure to many scholarly studies done by African health researchers or health care givers on the topic, confirmed through a Google Scholar literature search.

The West African Health Organisation (WAHO), based in Burkina Faso, has a parallel vision of making African works on HIV/AIDS accessible electronically. This led to setting up the HIV/AIDS Knowledge Management Committee, assigned to build an HIV/AIDS information database for the region. The initial HIV/AIDS Knowledge Management Committee, referred to as HAKMCO 1, did not include all 16 West African countries and targeted only specialist doctors with postgraduate specialization qualifications in medicine and its subspecialties. Lack of success necessitated the reformation of the Committee, which was reconstituted to become HAKMCO 2.

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On HAKMCO 2 were 12 speciality doctors from fields of medicine such as virology, pathology, obstetrics & gynecology, medicine, pediatrics, and

radiology, and six health librarians (including the author) from medical school libraries across the five countries represented on the project. Some of the objectives for HAKMCO 2 were to (1) look into means of building an HIV/AIDS database with preference for all types of works done on the disease in Africa and possibly by Africans; (2) to collect and collate these works; and (3) to make them accessible electronically through a would-be Web site dedicated to the project. The larger part of the assignment lay with the specialty doctors, as they were to collect all types of work done by their colleagues and counterparts across the globe, whereas the health librarians were to classify the resources gathered by the specialty doctors and build up an HIV/AIDS Web-based database for information access and dissemination. HAKMCO 2 members expected a heavy dependence on the Internet for access, retrieval, and sharing these HIV/AIDS resources in the region. The specialty doctors and the health librarians agreed to use the Internet to carry out their assigned duties on the project and its e-mail facility to communicate freely amongst them. The project's success or failure would largely depend on access to the Internet by the group and level of health librarians' information and communication technologies (ICT) skills to create a Web-based database.

LITERATURE REVIEW

The Internet is a public, cooperative, and self-sustaining facility accessible to hundreds of millions of people worldwide allowing access to millions of pages of information (2). It offers opportunity for African countries such as bridging the digital divide between the developed and developing countries, by giving researchers access to a wealth of global information resources and even the chance to contribute to those resources by publishing their works on the Web. However, the author could find virtually no empirical data about Internet access in West Africa.

Internet Growth in West Africa

Until recently, purchase of computers and Internet access was out of reach for most working class Africans. According to *All Africa Global Media Africa*, Africa remains last among world regions in an estimated Internet penetration in spite of a growth rate of over 1000% between 2000 and mid-2008, with cybercafés having contributed to higher Internet usage in Africa and sub-Saharan regions (3, 4). Greater connectivity to the Internet potentially would increase access to reliable up-to-date health information and medical literature online as well as other obvious potentials for interactive formats that promote understanding and retention of information (5).

Internet Access in West Africa

Until very recently, Internet access was scarcer in West Africa than any-
where else in the world, though their governments view the Internet as
a key tool for development to explore (6). According to Ajuwon, the rea-
son for lagging behind is that Internet access costs are high in sub-Saharan
Africa, wheras Juma and Moyer agree that communication costs in sub-
Saharan Africa (the West Africa inclusive) are the highest in the world and
that Internet costs could be the singular overwhelming reason for limited
Internet access because provision of adequate access is simply unaffordable
(4, 7). According to Osiakwan, Africa is disadvantaged because it does not
have the critical mass of Internet users required in order to effectively reduce
Internet costs; on the contrary, Internet is too expensive to generate a critical
mass of users to make an impact on cost—thus affecting the forces of supply
and demand. Hence, Africa is in this vicious cycle that must be broken (8).

Internet Use by Physicians in West Africa

In the past, physicians generally obtained medical information from text-
books, colleagues, and journal articles. Information technology, especially
the development of medical informatics, has changed that. In recent years,
the Internet is an important resource for locating medical knowledge. In the
face of advantages such as the Internet's time-efficient and cost-effective
global information enjoyed by some West African physicians, obstacles to
access, lack of skills, and applicability of information are still barriers to uti-
lization (9). Although the Internet is available, it has not been completely
mastered by the majority of West Africans; nonetheless, it already has had a
cultural impact on the mostly urban elites (10). A study by Smith and col-
leagues reported awareness and use amongst doctors in some West African
countries, observing that the Internet has undoubtedly become synonymous
to (medical) information, knowledge, and communication; however, the lit-
erature records little about the extent to which doctors use the Internet to
access medical information or their use of electronic medical resources and
facilities (11, 12)

ICT and Librarianship in Developing Countries

In the same vein, the paradigm shift from traditional to ICT-driven
librarianship has increased the quantity of information passing through the
library using computers, software, CD-ROM, e-mail, Internet, networks, and
other information management and communication technologies that were
introduced to perform different library functions and to provide innovative
user services (12).

This change has necessitated subsequent changes in the skills needed
by information professionals. Information professionals are now expected

to be aware of and capable of using emerging information communication technologies, as well as having essential communication skills. Research on provision of electronic information by libraries in some West African countries identified a significant skills gap amongst information professionals (13). This was corroborated by Mutula and Van Brakel who indicated that there is an acute shortage of the high-skilled and hands-on personnel necessary for steering the emerging digital setting in developing countries. (14).

According to Ramzan, librarians in developing countries are faced with ICT challenges, lack knowledge of appropriate technologies, have little knowledge of what technological skills to acquire nor do they have the skill to analyze and evaluate library automation projects and, more importantly, their implementation (15). With new technologies being introduced on a daily basis, librarians need to keep pace through acquisition of new skills via formal and informal instructional programs on information management, software packages, database searching, Internet access, research methods, and other related topics (16).

The six West African health librarians selected to be on HAKMCO 2 were assumed to be at par with their counterparts in developed countries, who are primarily information providers, equipped with ICT expertise and skills in content analysis The health librarians ICT aptitudes would contribute either to the success or failure of HAKMCO 2.

RESEARCH METHODOLOGY

Both the specialty doctors and health librarians chose to depend on the Internet as the major technological tool for gathering and dissemination of the HIV/AIDS resources for the project as the Internet could comprehensively support information management activities such as electronic information acquisition, management, indexing, abstracting, and article database (17)

The Committee identified the following questions for research:

- Do the specialty doctors in the study have access to the Internet at all and how frequently do they use it?
- What challenges do they encounter in using the Internet and how do they manage the challenges?
- Do doctors and librarians find the Internet a (perfect) means of information retrieval and communication, especially in carrying out the project assignment? Could there be other preferred or optional means of communication?
- Do the health librarians have the requisite information and communication technology (ICT) skills to build a functional HIV/AIDS Web-based database for the West African region?

Questionnaires were devised in two parts for both the specialty doctors and health librarians. Each set of questionnaires was a self-assessment of participants' ICT skills and institutional information technology (IT) infrastructure, needed to carry out assignments on the project.

The questionnaire for the specialty doctors consisted of eighteen questions on demography, computer skills, Internet infrastructure available to them, affordability, and other possible alternatives (Appendix 1).

Knowing full well that professional and practicing librarians should have some ICT skills, the health librarians' questionnaire was designed to allow self-evaluation of their ICT skills in relation to literature searching, information retrieval and management, Web design, as well as those needed to build an HIV/AIDS database for the West Africa region (Appendix 2).

ANALYSIS OF RESULTS

Of the 14 questionnaires sent out to the physicians, 12 (85.7%) completed questionnaires were returned electronically. The remaining two from Ghana and Gambia (14.3%) were not returned despite many futile reminders and attempts to retrieve them. Non-return of the two questionnaires would not have an untold effect on the survey, as the affected two countries have other representatives participating in the survey. Breakdown of questionnaires returned by the specialty doctors is as follows: 6 from Nigeria; Gambia, 1; Sierra Leone, 2; Ghana, 2 and Burkina Faso, 1. All the six questionnaires sent to the health librarians were completed and returned.

Henceforth, the study analysis would be in two sections, based on the returned questionnaires only. In this study, all participants (both the specialty doctors and health librarians) are from government-funded tertiary hospitals/teaching hospitals and their medical school libraries respectively. All the medical school libraries in West Africa handle the information needs of both the medical school and the teaching hospital used for clinical practice and training. The result of the study could collectively be applicable to other teaching or tertiary hospitals in West Africa with similar facilities.

This first section of the results is the analysis of the 12 questionnaires returned by the specialty doctors and the second section is the analysis of questionnaires returned by the six health librarians.

Section 1: Analysis of Specialty Doctors' Questionnaires

This section analyses the 12 questionnaires returned by the specialty doctors. Collated response rates were analyzed using simple addition, subtraction, and percentages.

Question 1a–e was demographic in nature. Question 1e revealed that Nigeria had the highest representation of six participants, probably because

Nigeria has the highest population and highest number of Federal tertiary institutions. Gambia and Burkina Faso had one respondent each, whereas Ghana and Sierra Leone had two respondents respectively. Question 1d revealed that all the respondents were specialty doctors in fields such as obstetrics and gynecology (3), medicine (4), pathology (1), pediatrics (2), radiology (1) and virology (1), with an average post qualification age not less than 10 years.

Answers to questions 2 and 3 revealed that all the specialty doctors are computer literate; 91% had institutional Internet access and 9% did not. (The only participant without an institutional Internet access was from Nigeria. He did a postscript on the questionnaire reporting a "private arrangement with some colleagues outside campus, pending the completion of his institutional Internet project in the next few months.") Notably, 83% of the study group claimed institutional Internet access was through broadband whereas 8% had satellite connection.

The speed of Internet connection could determine promotion or discouragement in using the facility. In assessing their institutional Internet speed, 66.6% indicated their institutional Internet access was slow but bearable; 16.6% claimed their access was fast; only 8.3 % claimed it was very slow and unbearable. Slow Internet speed was attributed to institutional peak periods between 12 noon and 4:00 PM daily (Figure 1).

Another challenge facing this study group was irregular electricity supply. To counter the irregular power supply, all the respondents suggested provision of alternate sources of power by their respective institutions. With peculiar challenges such as power outages, slow and non-Internet access, a total of 83.3% of the specialty doctors resorted to public cybercafés, though patronage was not often and 16.6% out-rightly did not patronize the commercial cybercafés (Figure 2).
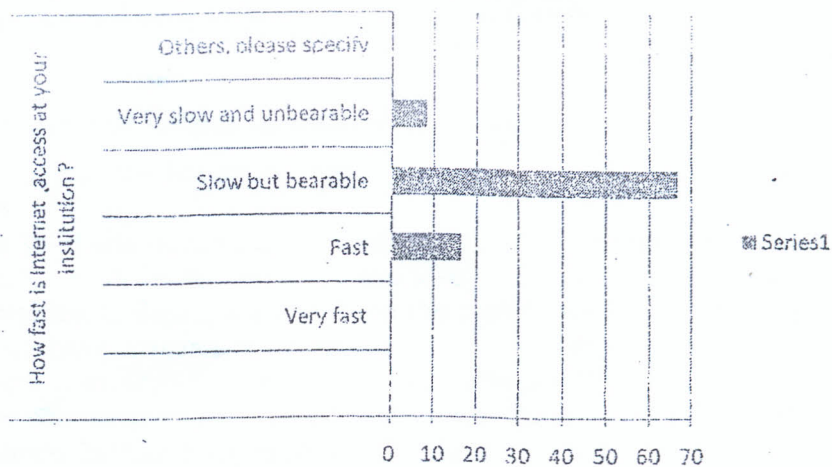

FIGURE 1 Speed of institutional Internet connectivity (color figure available online).
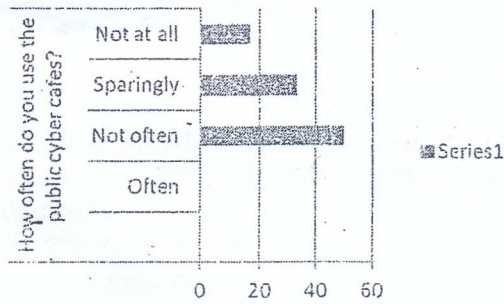
FIGURE 2 Commercial cybercafé patronage by specialty doctors (color figure available online).

One must bear in mind that in order for the commercial cybercafés to break even, power problems are better handled by cybercafés than by most West African tertiary institutions. Cybercafés provide standby generating sets as an alternate source of power. Furthermore, in most West African commercial cybercafés, patrons are billed by the minute with the minimum time being 30 minutes, and payment is upfront. Whether time was utilized or not is immaterial. Eighty-three percent of the specialty doctors patronizing these public cybercafés spend, on the average, between 12 and 20 USD weekly. (The exchange rate of local currency to US dollar varies from country to country and is strongly determined by the strength or weakness of each country's economy.) However, the general consensus amongst these specialty doctors was that although patronage of commercial cybercafés is affordable, it is far from being convenient (Figure 2).

The specialty doctors appraised Short Messaging System (SMS), the text function of mobile telephones, as an inexpensive and convenient alternate means of communication and information sharing amongst the group. The use of a mobile phone and its functions is a recently introduced yet highly embraced means of telecommunication in most West African countries.

Section 2: Analysis of Health Librarians' Questionnaires

This section analyses the librarians' responses to all the 10 questions on the questionnaire.

Question 1a–d was demographic in nature whereas the remaining eight questions were essentially to determine the level of librarian ICT skills and expertise in relation to their assignments on the project. All six health librarians claimed to have a master's degree in information and library science (MLS) and were computer literate. They all rated their ICT skills as "good," claiming to be conversant with online literature searching. Half of the health librarians claimed having a diploma in ICT, the other 50% claimed to be knowledgeable in the classification of electronic resources.

When asked to indicate both their knowledge and database software of preferences, all participating health librarians indicated no knowledge or experience in building a database. However, 43.4% of them claimed knowledge in Web design, whereas 66.6% had no knowledge in Web design. At this point, hopes were dashed for the librarians to develop an easily accessible database.

The last question on the questionnaire gave the health librarians the opportunity to suggest means of achieving success on the project. In spite of their claims of computer literacy, versatility in information navigation and filtering tools, all the librarians recognized their ICT inadequacy, and suggested collaboration with at least a computer analyst or programmer for the project. Notably, all the health librarians in the survey wanted training in Web design, classification of electronic resources, and database building.

DISCUSSION

The specialty doctors Internet experiences are likely to be similar to that of the health librarians given that they were selected from the same institutions. The fact that all but one respondent out of both specialty doctors and health librarians in the survey groups used institutional Internet facility for both professional and personal needs indicate that most government-owned tertiary institutions in West Africa have Internet connectivity. This is positive progress to bridging the digital divide between the West (developed countries) and the developing countries.

Hours spent weekly using the Internet by these specialty physicians were moderately short considering the enormity of health information accessible on the Net. This could be a reflection of the busy schedules of the clinicians as well as the frustrating electricity problems and slow Internet speed (18).

Nearly 84% of the specialty doctors patronized commercial cybercafés, though they all claimed that it was not convenient for research. This was corroborated by Awasom and Smith who noted that physicians used commercial cybercafés more for e-mails, word processing, and chitchat, whereas commercial cybercafés are the very last place to use for medical and scientific literature (11, 19).

This study throws more light on some infrastructural challenges hindering Internet use in West Africa, and, perhaps, reasons why these challenges ultimately limit health care givers access to the vast online medical information and electronically enhanced skills in patient management available to their counterparts in the developed world. A daily experience of Internet peak periods between 12 noon to 4 PM reported by as much as 66% of specialty doctors coupled with the limited Internet access (<24-hour Internet access) of 33% of the specialists, as well as the slow Internet

connection speed could be discouraging to them or any professional in the same situation. Information in the literature indicates slow speed access and nonaccess throughout the day could be due to low bandwidth subscription or poor computing facilities, and could be appropriately addressed, with an increased bandwidth, which would enable Web sites to handle more traffic at the same time (20). Alternate sources of power especially in West Africa tertiary hospitals should be highly considered as a priority to ameliorate the poor power supply experienced by these hospitals/institutions.

On the other hand, the health librarians are accustomed to sourcing for information and information retrieval online, indicating that they use net facilities more than their counterparts in the health sector. Conversely, all the challenges encountered by West African specialty doctors were likely encountered by the health librarians, except that professionally they had no option but to endure them.

Building a Web-based database, however, is a new terrain to the health librarians and none of them had the knowledge to carry out the project. This is a further confirmation that technology has taken librarianship to a newer dimension, with higher expectations and premium roles placed on librarians. The emerging roles of librarians in the past two decades have further evolved to encompass the burgeoning technological developments with the implication that health librarians will be involved in strategic alliances, participate in network activities (as experienced in this study), and contribute to the bridging of the digital divide (21). If librarians decide to be seen and heard, they must be ready to thrive on change, read constantly, and experiment endlessly; be able to self-teach, be inclined to take risks, and have a keen sense of both the potentials and pitfalls of technology (22).

Notable was the acknowledgement by health librarians on the HAKMCO 2 project of their ICT their shortfalls and their readiness to acquire more ICT skills in the areas of database and Web design as well as classification of electronic materials.

In order not to delay the project, the health librarians suggested adding a computer programmer to the project to facilitate a smooth start, pending the acquisition of the necessary ICT skills. Health librarians will need to acquire new skills to access Internet resources, and develop new strategies and services to meet the challenges of the knowledge age. Ultimately health librarians will emerge as technology experts, guides, scouts, researchers, analysts, knowledge engineers, editors, navigators, gatekeepers, brokers, and asset managers (23).

CONCLUSION

Physicians and researchers in other areas of the globe may benefit from understanding constraints faced by their counterparts in developing countries through a fuller understanding of some of the challenges faced by

specialty doctors in West Africa, which could equally be an important step towards tolerance and improvement on collaboration from their colleagues in the developed countries (23).

Continuous ICT education is unavoidable for the librarians and their readiness to go an extra mile in the acquisition of necessary ICT skills will definitely re-position them to function most favorably in discharging their duties in correlation with the emerging responsibilities

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APPENDIX 1 Questionnaire for Specialist Doctors

1. a. Name:
    b. Age:
    c. Post Qualification Age:
    d. Area of Specialization: Year of Specialization:
    e. Country of Residence:

2. Are you computer literate?

Yes

No

3. Do you have institutional Internet access?

Yes

No

4. How often do you have access to the Internet?

Daily

More than thrice a week

Thrice a week

Twice a week

Once a week

Other, please specify

5. What type of Internet Provider Service does your Institution subscribe to?

                   Dial-up
                   Radio
                   Broadband
                   Satellite
                   Other, please specify

6. How fast is the Internet access at your institution?

                   Very fast
                   Fast
                   Slow but bearable
                   Very slow and unbearable
                   Other, please specify

7. Are there peak and low access periods in your institution?
    (If your answer is *Yes*, please answer Question 8)

                   Yes
                   No

8. When are the periods for peak access?

                   8.00 a.m. - 12 noon
                   12 noon - 4.00 p.m.
                   4.00 p.m. - 8.00 p.m.
                   Other times, please specify

9. Does your institution have 24-hour Internet access?
    (If your answer is *No*, Why?)   Yes
                               No

10. Do you have a regular electricity supply in your institution?
    (If your answer is *No*, please answer Question 11)

                   Yes
                   No

11. Does an irregular electricity supply affect your access to the Internet?
                   Yes
                   No

12. How much does it affect your access to the Internet?

                   Very much
                   Slightly
                   Not at all
                   Other, please specify

13. Does your institution have an alternate power supply?

    Yes

    No

14. How often do you use the public cybercafés?

    Often

    Not often

    Sparingly

    Not at all

15. An average of how many hours do you spend using the Internet every week?

    25 hours and above

    15–25 hours

    10–15 hours

    Less than 10 hours

    Other, please specify

16. What is the cost implication per week?
    (Cost implication in US $ for uniformity)
    Please indicate.

17. Would you agree that the public cybercafé is affordable?

    Yes

    No

    Other, please specify

18. Is it convenient to use the public cybercafé?

    Yes

    No

19. What other means of communication could make information sharing and accessibility easier for this group?

    Telephone

    E-mail

    SMS (Short messages
    via Mobile Phone)

APPENDIX 2 Questionnaire for Librarians

1. a. Name:
   b. Age:
   c. Qualification and Date:
   d. Present Place of Work:

2. Are you computer literate?
   (If your answer is *Yes*, please answer Question 3)

   Yes
   No

3. How would you rate your ICT skills?

   Excellent
   Good
   Fair
   Weak
   Other, please specify

4. Do you perform literature searches for your library patrons?

   Yes
   No

5. Do you have an academic qualification in ICT?
   (If your answer is *Yes*, please answer Question 6)

   Yes
   No

6. What type of ICT academic qualification do you have?

   Diploma
   Degree
   Post-Graduate Degree
   Other, please specify

7. Do you find information retrieval easy?

   Yes
   No

8. Can you design a (user friendly) Web page?

   Yes
   No

9. Can you classify electronic resources?

   Yes
   No

10. Could you please give two suggestions to enhance optimal performance on this project?

Thank you.

Helen Komolafe-Opadeji