

The Use of Information and Communication Technologies in the Health sector in Sub-Saharan Africa

Over the past two years the number of countries in Sub-Saharan Africa that have established full Internet access has increased to a dozen. Before that, South Africa was the only Sub-Saharan country in this category.

The lack of full Internet access, however, has not prevented the use of information communication technologies in the health sector. For many years different electronic technologies have been used to communicate between health workers in Africa and those in Africa and the rest of the world.

This report seeks to examine many of the initiatives in the health sector in Sub-Saharan Africa that use ICTs to enhance their work.

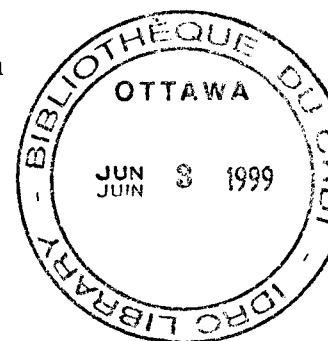
Methodology

The research for this study was restricted to the use of the Internet, library searches, and telephonic, email and a few personal fax interviews. While the attempt has been to document as many health-related initiatives that use ICTs as possible, some attention was given to documenting initiatives that were in some respect innovative in their contexts or in their fields.

The initial segment of the study involved a wide collection of data about initiatives in the health sector in Sub-Saharan Africa where ICTs are used - whether extensively or minimally. This was achieved through a number of means. Personal, telephonic and email interviews were conducted with personalities involved with ICT use in the health sector. Personal interviews involved people in government as well as NGOs in South Africa. Telephonic interviews involved a range of people in South Africa, other parts of Africa and people outside of Africa. Exploratory email messages were sent to over 100 sysops and people involved in the Association of Progressive Communications or who have links with SANGONeT (the Southern African NGO Network, a non-profit Internet service provider based in Johannesburg). These were mainly people in Africa, but included a few that had some involvement with African projects but were based outside of the continent. Messages were also sent out to SANGONeT's subscribers.

The initial segment also included extensive searches on the World Wide Web of the Internet for sites related to health. Minimal use was also made of books, papers, etc. that documented or examined ICT use in Africa generally and in the health sector particularly.

A range of electronic conferences and discussion groups relating to health and ICT use in Africa were subscribed to or regularly perused. Messages were sent out to such conferences and discussion groups asking for information.



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Through this initial phase a number of organisations and projects were identified as falling within the scope of this study. Detailed questionnaires were then emailed, faxed or administered telephonically to key people involved in these projects or organisations.

A database was set up in Microsoft Access to hold the data received through the questionnaires.

Once the questionnaires were returned with responses from the different projects/organisations, the data was then entered into the database.

The various responses were evaluated and four projects chosen as case studies. One of these is a national organisation (Progressive Primary Health Care Network), one is a regional organisation serving Francophone countries only (Droits et sante pour les femmes d'Afrique Francophone), the third is a continental project with various different organisations collaborating on disease control (MARA) and the fourth is a project that works as a partnership between an African organisation and a foreign one (Sister Library Programme).

The Context

With failing economic trends, decades of political instability following anti-colonial struggles and low levels of development, the health sector in Africa lags far behind its counterparts in many other countries of the world, especially the more industrialised nations. With large underdeveloped rural areas the problem of health care delivery is exacerbated.

What increases the problem is the lack of research and technological facilities to enhance the work of health workers. The average medical library in the US would have 3 000 journals in its collection; many in Africa have 30! Also, many of the journals published in the less industrialised nations of the world are not included on larger indexes because of requirements of frequency of publication and length of time for unbroken publication. Some of these journals are not able to meet such requirements.

Furthermore, the general technological and infrastructural development in many African countries is a great hindrance to optimal research and communication. In certain parts of Africa access to ordinary telecommunications is a challenge. Fax and other electronic facilities are generally inadequate.

In such a context, in many instances, ICT use is very limited.

For a continent that has seen fatal outbreaks of Ebola, is still trying to deal with the widespread incidences of onchocerciasis (river blindness), malaria, etc., ICTs are necessary to address on-the-ground as well as academic and research concerns

that will allow Africa to more efficiently deliver health care to its inhabitants.

Constraints

The major constraint in the compilation of this report has been the short period of time allocated for it. Certain of the organisations that were issued with questionnaires were thus not able to fill these in by the deadline; indeed, the key people in at least three will only return to their positions from their vacations after the deadline. The time constraint also did not allow as detailed interviews as we would have liked to have done with regard to certain projects that seemed particularly innovative. Thus, only superficial glimpses are obtained for some projects. Some important projects are not even documented here because of a lack of response after numerous attempts, although it is accepted that no such report can be complete without them. These include HealthLink and the Reproductive Rights Alliance, both in South Africa.

Despite these constraints, this study is a fair first look at the sector for the IDRC. Any thorough analysis will, of course, entail much more thorough investigation.

What exists in Africa?

Within the kind of constraints outlined above, there have emerged some innovative initiatives in the health sector that attempt to overcome the problems associated with ICT use and to develop projects that will use ICTs in a way that would allow them to more effectively deliver health care on the continent. Some of these initiatives are partnered with organisations outside the continent while others are based, controlled and driven from within. (Most are funded by foreign foundations and aid agencies, however.)

There are significant continent-wide initiatives that seek to use ICTs to address problems that are widespread throughout the continent or to assist with communication and networking throughout the continent.

HealthNet

The most significant of these, and probably the most significant health-related ICT initiative in Africa is HealthNet, a project of the non-profit-making organisation of scientists and medical researchers known as SatelLife. HealthNet has been implemented in 20 countries throughout Africa. Not all the HealthNet projects have been documented in detail in the database. However, the documentation of a few gives a fair idea of how the others operate.

HealthNet was conceived as a means of combating the isolation of health workers in the less industrialised world and the lack of information that impedes their work. The network provides email, electronic medical publications, and access to medical databases and conferences. Access to these sources is provided through telephone

lines where this is viable. In countries/areas where the telephone infrastructure is unreliable or non-existent, HealthNet uses satellite ground stations. Through a combination then, of telephone infrastructure and low earth orbit satellite technology, HealthNet facilitates rapid and low-cost communication between health workers in Africa and between them and their counterparts in the rest of the world.

HealthNet operates in each country with a user council running its affairs. In many African countries health-related ICT projects that exist were only viable because of their use of the HealthNet network. The HealthNet system is used by government departments and agencies, medical facilities and schools, medical libraries as well as individual health workers. A few of the projects documented in this report exist as projects that are dependent on HealthNet to provide their email and other electronic services, even though exist as independent projects.

A frustration for some HealthNet users has been that SatelLife's main concern was technical in the different countries. Thus issues of management and development of a user base, etc. were ignored. While this has been suggested as a problem area by some users, it has resulted in certain instances in the technical provision serving as an incentive to local users to develop their own capacities and personal networking.

Although it has been criticised for being married to low earth orbit satellite technology, SatelLife is presently examining the possibility of changing in certain countries to an open system using PCs with Linux so that they might be able to utilise both the HealthSat technology as well as UUCP and SMTP protocols. The idea is to allow for maximum flexibility in connectivity options.

Other foreign-driven or partnership initiatives

While HealthNet is undoubtedly the most important foreign-driven initiative, there are African projects that are either driven from outside the continent or wherein foreigners play an important role. These include Ahila-Net, the Association for Health Information and Libraries in Africa Network. Ahila-Net has set up an electronic networking initiative for its various members throughout the continent. This includes an email discussion group. Ahila-Net is run from the WHO office in Geneva.

SYFED-Refer in Mauritius is another example of a project with substantial foreign involvement. It is part of an international network in Francophone countries and supported by a French agency.

Besides projects that are driven by structures from outside the country, there are also examples of projects that exist as partnerships between African organisations/institutions and foreign counterparts. A good (and successful) example of such an initiative is the Sister Library Programme, a partnership

between the University of Zambia School of Medicine Medical Library and the University of Florida Health Science Center Library.

Continent-Wide initiatives

Continent-wide initiatives that we have looked at concern mainly initiatives around disease control. The MARA project, based in Durban, South Africa, is one such initiative. (See case study on MARA.)

Other initiatives include APOC (the African Programme on Onchocerciasis Control), OCP (the Onchocerciasis Control Programme) and programmes around the Ebola epidemic. Unfortunately, information on the use of ICTs in these projects was not easily available, although there is undoubtedly a role that ICTs have played. Both APOC and OCP, which are co-operative projects between a range of agencies, have pages on the World Wide Web. However, these are hosted by foreign agencies and were thus not documented in this study. We were unable to find out how ICTs were used within Africa and between Africa and the foreign agencies in the respective campaigns.

Regional Initiatives

There are certain examples of regional initiatives or initiatives that involve a few countries. These are mainly in terms of networking and sharing of information. One such initiative is the Droits et sante pour les femmes d'Afrique Francophone based in Senegal.

SYFED-Refer is another project which, although not geographically regional, operates in Francophone countries.

Some Recommendations

While the database shows that ICTs are used to enhance various aspects of health care delivery, three areas of great potential have been largely neglected, even in South Africa where about half of the total ICT use in Africa exists. These are the areas of telemedicine, reproductive health and HIV/AIDS.

There are many organisations and projects throughout Africa dealing with reproductive health and HIV/AIDS issues. Some of these are local or national organisations and some are international. Examples are the Planned Parenthood Association, the Southern African Network of Aids Service Organisations, AidsCap, etc. While many of them are very active in their fields, the use of ICTs is negligible or non-existent. In South Africa, even the Planned Parenthood Association, which is a local chapter of an international organisation, hardly uses email at all. This is a great pity as ICT use in certain campaigns and programmes could certainly

enhance these. Furthermore, reproductive health issues do not enjoy high prominence on the continent, mainly because it is largely a women's issue and therefore muffled. HIV/AIDS issues lend themselves particularly well to electronic networking in order to increase the sharing of information and co-ordinating campaigns.

Telemedicine is a well-used field in the north. In Africa, however, it has not even begun to realise its potential. We have found scanty information of just a few small attempts at telemedicine in South Africa. In one initiative there was, for a while, some telepathology exchange between an individual in Transkei and an individual at the University of Witwatersrand Medical School. Slides were electronically transmitted to Wits for diagnosis, etc., and results electronically forwarded back. There has also been limited use of teleradiology in the private sector, but this has been mainly between different rooms of the same specialist rather than between disadvantaged or remote communities and advanced centres. This is another area then that attention needs to be given to in order to enhance health care delivery in Africa. Telemedicine lends itself well to be used by remote communities to use the resources of hospitals and specialists. With the kind of network that already exists through HealthNet, it would not require too great an infrastructural investment.

An interesting project that has been developed but is not yet fully operational is the Health Hub of the Council for Scientific and Industrial Research in South Africa. The CSIR's WWW page includes a facility for on-line consultations. Users can click on an icon requesting a consultation and are presented with a standard consultation form which is designed to elicit information that would be necessary for a doctor to use for a diagnosis. The form is filled in and emailed to a doctor who then diagnoses the patient's condition and suggests to the patient the course of action s/he could take. There is great potential for such a method to be used especially by people in remote areas (where there is access to some ICT technology). Even in countries where there is no World Wide Web service available, such a method could be redesigned for email use.

List of Experts

The following is a list of people that have been involved in a central way in various of the projects documented. They are useful resource people, some in the technical field, others in terms of the health perspective, and others in terms of their networking and knowledge of existing resources in the health sector.

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The following are four case studies drawn from the database.

National Progressive Primary Health Care Network

The NPPHCN is an advocacy organisation that uses various types of electronic communication, especially in its attempt to access and disseminate policy-related information to communities.

An NGO, the NPPHCN was established to promote primary health care (PHC) in South Africa and to develop a national PHC strategy. It promotes participatory research, collaboration in policy formulation and organisational development.

The network has a project called Public Health in Legislative Advocacy Work or Philaw which extensively uses ICTs. The aim of Philaw is to access public health legislation and policies from government sources, summarise, simplify and / or translate these and make them accessible to communities. ICTs are used mainly in

the first of these processes i.e. accessing of information. In a sense, therefore, rather than giving communities access to ICTs, Philaw seeks to make available to communities information which is easily accessible at an electronic level.

The Philaw project uses mainly email and the World Wide Web to keep in touch with parliament and the National Health Ministry.

The other main objective of Philaw is to influence the development of public health policies in such a manner that it might be beneficial to communities. The project thus also facilitates opinion flow in the opposite direction i.e. regularly consulting with communities, assessing their needs and receiving their feedback on government policies, and channelling such information to government and policy-making structures.

The NPPHCN has Internet access in its nine provincial offices and its head office through SANGONeT, the Southern African NGO network, an Internet service provider serving mainly NGOs in South Africa. It also has a World Wide Web page hosted on the SANGONeT system. The web page contains information about the NPPHCN and its various activities. It also has links to other health related sites. The various offices are used for the dissemination of the information transformed by Philaw.

Despite such connectivity, an NPPHCN staff person said one of the obstacles for the organisation was that the ICT culture is non-existent. Only a few persons utilise electronic services of the organisation, mainly because of a lack of training.

The NPPHCN has numerous member organisations that have some interest in PHC. It also networks with a range of other organisations including trade unions and organisations involved in reproductive health.

The Sister Library Programme à Univ of Zambia Medical Library & Univ of Florida Health Science Center Library

The Sister Library Programme is a project run by the University of Zambia Medical Library and the University of Florida Health Science Center Library. The entire project is centred around the use of Information and Communication Technologies.

The programme is an innovative one whereby two university libraries, one in a Northern country and the other in a Southern country are twinned so that the latter might be able to extend its access to information. The low-cost access to current and useful information resulted in increased motivation of user groups at the UNZA School of Medicine. Such is the hidden motivation from ICT that can let sleeping ambitions go to waste or can wake them up and light up whole array of academic activities, said Regina Shakakata, former librarian at the School.

The project began in 1991. Its broad objective was to encourage Northern libraries to share information with their Southern counterparts. Specifically, it aimed to allow the UNZA Medical School to access health literature and information through ICT use, thereby enhancing library services at the school.

Beneficiaries for the programme include researchers, under- and post-graduate students, teaching staff and health workers and patients in different parts of Zambia.

The project was initiated by SatelLife, and was prompted by the installation of a HealthSat ground station at the UNZA Computer Centre and the subsequent installation of a fidonet point at the UNZA Medical Library.

The project involves the email request for literature searches by the UNZA Medical Library to the Univ of Florida Health Sciences Center Library and the supply of full text articles by the latter. Articles are generally supplied in hardcopy format and are couriered to Zambia. The two libraries have also drawn up a list of relevant topics (e.g. malaria, rehydration, HIV), and the Florida Library supplies article reprints on these topics.

The project over the past five years has seen greater involvement in research, improved quality of student projects, an improved quality of teaching and a better interaction among health workers in Zambia.

Although the programme has thus far utilised mainly email, attention is now being given to the possibility of utilising the WWW as well, since this has become available in Zambia.

Unlike most other projects, finance is not a major problem for the project; the main cost involved has been the courier service for articles. Two issues have been highlighted as problems faced by the project. One relates to the involvement of people on the Florida side of the partnership. Seemingly, the project on that side relies on only a few individuals. Those involved in the project believe this needs to change for the long-term sustainability of the project. The other problem is a lack of training for many of the people in UNZA. The project could be much more successful if some training were provided in the use of ICTs.

Droits et sante pour les femmes d'ÉAfrique Francophone

Droits et sante pour les femmes d'ÉAfrique Francophone is an organisation based in Senegal whose main objective is to use information and communication technologies to strengthen communication and co-ordination between women in Francophone countries on the issues of health and women's rights.

The organisation started earlier this year, although planning for it began in 1995.

To date the organisation has been able to train 18 women from 15 different countries and facilitated communication between various of them. All the women that were trained were also issued with modems. An electronic conference is to be set up in September 1996 to enhance the networking between the women.

The organisations that form part of the network are women's organisations mainly involved in reproductive health issue and development. Some of the women that have actively been using email to communicate are from Morocco, Mali, Burkina Fasso and Senegal.

The organisation was conceived and implemented by Synfev (Synergie Genre et Developpement), itself a project of ENDA (Environment and Development in the Third World), a Senegalese Internet service provider that serves mainly the NGO community. It is regarded as the first attempt to get women from Francophone countries to network electronically.

This project has been funded by World Association for Christian Communication, PADIS, the APC Women's Networking Support Programme and Women in Development Europe.

One of the objectives the group has set for itself is the sensitisation of other women's NGOs in the different Francophone countries to electronic means of communication.

The main difficulties the organisation faces relate to the poor state of infrastructure, e.g. the loss of electricity (sometimes over days) and the poor telephone connections (e.g. in Zaire in Chad). There is also a severe lack of competent human resources. there are only two sysops in the region: in Senegal and Cameroon. Many countries have no technical backup whatsoever. Legislation is also a problem, with some countries - like Tunisia and Guinea - having strict regulation over the development of electronic communications.

The training programme, however, has ensured that a small number of women are trained in the basic installation, configuration and operation of email systems.

Mapping Malaria Risk in Africa (MARA)

MARA is a project implemented by the South African Medical Research Council. Based in Durban, South Africa at the University of Natal Medical School, the project is, however, a continental initiative.

The objective of the project is to develop a geographic Information System for malaria in Africa. It represents the first initiative to collate all malaria information in Africa into a single information platform.

The project intends developing a base map of malaria risk in Africa from available geographic, demographic and malriometric data using a GIS and making the information available to national, regional and international organisations. It will also develop an underlying stratification of non-malaria data which characterise the different risk categories. Part of the process will involve developing a mask layer which is a composite of factors which exclude malaria and to highlight areas of no data. A spatial database of other existing data relevant to malaria control will be developed.

The mapping and databases will allow a focusing of intervention strategies to the areas of most need and greatest benefit.

Various health organisations throughout Africa serve as regional centres for MARA. These include the Navrongo Health Research Centre in Ghana, the Kenyan Medical Research Institute/Wellcome Trust Labs in Kenya, the Malaria Research and Training Centre in Mali, West African Rice Development Association in Cote d'Ivoire, the Tropical Disease Research Centre in Zambia, and organisations in Mozambique, Zimbabwe, Namibia and Botswana.

MARA, which has just begun (in 1996) is a two-year project. The MARA project utilises email, has two WWW pages on the Internet, and uses FTP for transferring digital and scanned data sets.

The project involves training of people in all of the involved centres listed above. Thus there is a high rate of capacity building.