Implementing ICT Interventions in South Africa to Combat HIV/AIDS

Information and Communication Technology for Development

Submitted by,
A Shivalaxmi
Marzia Shafin
Shumona Sharmin Sharna
Soumya Samuel
Thasomini Palaniyandy

Submitted to:
Professor Faheem Hussain
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Introduction:

HIV/AIDS (Acquired Immune Deficiency Syndrome) is one of the sexually transmitted diseases, was found in the early 1980’s, and it has became a severe problem in many countries within 30 years (Global Health Organization). According to global health organization, worldwide 25 million people have died from HIV/AIDS over the past years (Global Health Organization). The seriousness of HIV/AIDS is that it has caused numerous deaths and abandoned many families and communities in several countries. It has been estimated that over the 27 years, 90 percentages of people with HIV/AIDS are living in the developing countries that is unevenly distributed geographically (Global Health Organization). This paper analyzes the current status of HIV/AIDS and implementation of Information and Communication Technology in South Africa, while criticizing the government’s HIV/AIDS strategies. Considering the challenges in dealing with HIV/AIDS and realizing that ICT cannot be a silver bullet, a set of suggestions are recommended within the context of South Africa.

![HIV/AIDS - deaths in South Africa](image)

**Figure1: Number of HIV/AIDS Death in South Africa from 2001-2009**

Among all other continents, Africa is most vulnerable to HIV/AIDS and it has been one of the strong reasons for the social, political and economic developments have been severely
affected in many African countries, (Africa Live, nd). Within the African countries, South Africa has the highest rate of HIV/AIDS and it is hindering the further development of this country (Kates and Wilson, 2005). Lack of awareness and information about prevention and treatment are most likely the causes of the high prevalence of HIV/AIDS in South Africa (Global Health Organization). Being an upper middle income country with a GDP per capita (PPP) around $10,140 (UNDP, 2010) for a population of nearly 49 million (CIA, 2011) the country is facing several challenges to combat this deadly disease. In spite of the lack of health facilities and affordability to medicine, cultural and religious myths, misconception and stigma (health24, nd) makes the HIV/AIDS condition worse.

**ICT background for South Africa:**

Considering the revenue and customers of ICT market, South Africa is the largest in African continent (UK Trade and Investment, 2010). The telecommunication system of South Africa is well developed with 6 million installed telephones and 4 million installed exchange lines with the help of microwave and fiber optics as the transmission media (Mbendi, 2011). Covering 80% of population with mobile, South Africa is the 4th largest mobile communication market in the world (Malakata, 2011).

Internet in South Africa is thirty times larger than other African countries with wide accessibility. South Africa has about 150 internet service providers with full time availability and the current band width is 90 mbps and some are satellite providers. Internet costs USD 33 for 20 hours of use. In addition, internet penetration was estimated to be 5.3 million in 2010 (NICI in Africa, nd).

Some of the major ICT providers are Vodocom, MTN, Cell C, Virgin mobile operators, Telcom, Neotel (fixed line operators) UUNET Internet Africa, Internet Solutions, LIA, CompuServe, Global-One, Intekom, M-Web, and CiTEC. Moreover, multinational companies which include Cisco, Novell, Oracle, SAP, HP, IBM, LG, Dell, and Sahara are also considered as ICT major role players (NICI in Africa, na). As per the data of Industrial Development Corporation, ICT market is forecasted to grow at an average annual rate of 11.3% (UK Trade and Investment, 2010). Telkom which had 420,000 subscribers for its ADSL, Asymmetric Digital Subscriber line, a high speed internet access using copper telephone wires (Kayne, 2011) service,
South Africa

Vodacom with 370,000 with HSDPA, High Speed Downlink Packet Access, a protocol for transmission of data over mobile telephone (Sidlen, 2011) users and MTN had 120,000 subscriber (Telegeography, 2008). Among these subscription, ADSL and HSDPA constitute 90% and wireless access providers account for the remaining 10 percent (Telegeography, 2008).

![Mobile Phone Users Over the Years](image)

**Figure 2: Number of Mobile phone users from 2000-2009 in South Africa.**

Some of the major problems regarding ICT in South Africa are that the service is too expensive and therefore people could not afford it. Later, several problems arose such as dismantling many phones due to non-payment. ISDN and ADSL access is available in most cities and towns, but are very expensive and limited. Sometimes it takes even a year to install or repair the required ISDN service. ADSL is dependent on the state of the local telephone exchanges and the telecommunication companies do not provide any support for the problems regarding this (Mars, nd). 3G and HSDP services are available in most cities, and GSM coverage is estimated at 93% but again the cost is high which is almost inaccessible for the poor population (Market Tree, nd). The domestic telecommunication infrastructure provides modern
and efficient service to urban areas, but at comparatively high costs and with limited coverage in rural areas (Market Tree, nd). Although there are issues with availability, accessibility, and affordability, South Africa has a well developed telecommunication network. However, in 2009, the internet broadband penetration in South Africa was 2 percentages which was too below the global average (22.5%). The government made partnership with many communities to build the necessary infrastructures which will pave the way to ensure the availability of accessible and affordable broadband services (Mail and Guardian Online, 2009). It is predicted that ADSL and wireless together would help increase the broadband penetration and usage in the next three years. Therefore, the possibility for citizens’ activities online would likely to increase. Currently, people prefer to take more for wireless and HSDPA, which are more mobile (Market Tree, nd). Along with these, there are more possibilities to make the broadband access faster with the use of WIMAX even though it is not a cheaper solution (Market Tree, nd).

**Challenges in South Africa:**

**Political and Socio-cultural Challenges:**

South Africa is a country with 11 official languages along with several others, thereby, not many people are fluent in the global language English which discourages the use of internet even though this country contains a structured educational system and a sophisticated technology sector. The more complicated part of the problem is, existing multiple ethnicities which create variation among the citizens in terms of literacy, exposure to technology and income, varying the abilities of general people to access technology. The apartheid education policies include purposeful negligence for the black people in terms of education and social hierarchies which are still inherited in the post apartheid society. Along with irrational ethnical behavior, severe inequalities exist between genders, provinces, rural-urban gap and rich-poor differences. In addition, dearth of proper infrastructure, training and skill building at local level, unwilling manufacturers has led to a simple solution for problematic computers and other technical equipments which is dumping (Machanick, nd).

Moreover, the bureaucratic attitudes from the government officials have made the situation worse as the government give more concentration in getting the expected aid rather than
relying on local capacity to deal with the problems. Lack of employment opportunities and the ignorant government in this issue has created more inequalities among the people in terms of income rate giving more access to disparities in disposable income. Therefore, South Africa deals more with bureaucratic government rather than socio-cultural disparities, poor infrastructure and less technical feasibility (Fakir, 2009).

**Awareness of HIV/AIDS:**

South Africa is a country which is very rich in natural resources such as gold, platinum, coal and diamonds, emerges as a self-sufficient economy along with good infrastructure (South Africa Web, nd). However, high rate of HIV/AIDS is being a major issue to the government that hinders the development of the country. Lack of co-operation between government and private sector, poor governance, poor health care system (Central Intelligence Agency) and high rate of crime makes the situation more critical (Irinnews, nd). Though 88 % of the people are considered literate, most of them lack in sex education and thus 5.6 million people living with HIV/AIDS due to lack of precautions (UNDP, 2009). This clearly demonstrates the failure of government awareness campaigns as only 15% of the total population uses condom even when it’s provided free. Moreover, older people are reluctant to take any kind of precautions and teenagers are ignorant about the effects of unsafe sex. Unwillingness to have test for HIV/AIDS diagnosis just adds to the increasing risk of transmitting (Avert, 2010). Besides, the human sciences research council’s house hold survey mentions that people living in rural and urban informal areas seem to be at highest risk of HIV infection due to lack of communication and geographical isolation from the information society of South Africa.

**Availability of Nursing/healthcare:**

Heywood, founder of the treatment action campaign and AIDS law project, has mentioned that the health care system of South Africa is unequal and the government of South Africa is being criticized in terms of their irresponsibility in combating HIV/AIDS epidemic. In addition, the government does not have enough resources to tackle the disease effectively. For instance, though there are health care workers and NGOs, they often lack supervision and technical instruments. As an example, he found that due to less salary, the workers cannot afford
to buy plastic gloves, thus they use plastic bags as their gloves while dealing with HIV patients (Aziz, 2010). While supplied with 77 doctors per 100,000 people, dealing with the patients of HIV/AIDS increases the work load for the doctors and nurses which leave numerous patients without proper care in time (Mars, nd). Reasons for the less health care professionals with the increasing demand includes, unsatisfactory working conditions, low wage, fear of being infected, and stigma related with the disease. Thus, some health professionals or nurses shift to other countries or continents to find their jobs. It is also mentioned that as South Africa does not have many health institutions such as AIDS care units; the nursing staffs have to treat every patient as potentially HIV-positive (Aziz, 2010). On the top of the poor health care system, the price of drugs (Anti retroviral) used for treating HIV/AIDS are really expensive as the disease requires multiple drugs to restrain the virus (JournAids, 2011).

**Privacy and Confidentiality:**

Privacy is one of the major concerns in South Africa while dealing with HIV/AIDS affected patients. HIV positive patients are unwilling to expose their health deficiency in front of other people. Sometimes they tend to hide sharing their personal information to the health professionals regarding the disease. (Afroaidsinfo, nd) However, with all of these critical challenges, South Africa has various advantages and useful resources which can be used to fight against this deadly disease.

**Undertaking HIV/AIDS strategies:**

South Africa, being a member of SADC, South African Development Community, has adapted to a strategic framework to address HIV/AIDS. SADC task force met in 1999 and formulated key plans to address HIV/AIDS in 7 different sectors. There are three social sectors which include health, human resource development, and culture, information and sports, three economic sectors such as mining, tourism, transportation and communication, and one integrative sector of employment and labor. (DOH, 2000)

Based on the consultation within each of the seven sectors, some plans were created which include identification of HIV/AIDS risk behaviors, then seeking help from health sectors, sharing the learned lessons with other sectors as well as within the same sectors of other member
countries, and create innovative plans that can be verified in combining the other sectors. Although SADC countries functioned according to the plan, there was very less integration of all the sectors (Department of Heath, 2000).

South Africa’s National Plan

In 2000-2005, the National AIDS plan for South Africa had two main goals: to decrease the new infection mainly among young population and to decrease the effect of the disease from individuals to community level. These goals are more or less same as the goals in 2007-2011.

- The focused areas are prioritized as prevention, treatment, care and support, research monitoring and surveillance, and human and legal rights. For prevention of the disease, the goal of the plan is to reduce the new infections to be halved by 2011. In order for effective prevention, poverty eradication, women empowerment, stopping gender-based violence, adopting safe sex practices, increasing PMTCT (Preventing the Mother To Child Transmission) programs in various geographical areas, safe blood medical products and safe blood transmissions are the crucial steps adopted. The targeted communities are young population, mothers, infants, sex workers, migrant workers, and other mobile communities.

- The goal of Treatment, Care and Support area is to reduce the morbidity and mortality. Under this area, the action plan is to improve HIV screening and early diagnosis, expansion of diagnosis centers in various geographical areas, access to testing, managing TB/HIV epidemics, strengthening the community or home based care services. The targeted individuals are infants, adults, children, disabled people, and older persons who are both with HIV positive and negative.

- In Research, Monitoring and Surveillance area, developing and implementing a framework for monitoring and evaluation, supporting scientific and policy related research are the sub-areas of focus. In order to address the stigma and discrimination regarding the HIV positive people, the human and legal rights area focuses on creating
social environment for acceptance, encouraging the openness of people, and monitoring human rights abuses (DOH, 2006).

Regardless of the strategies, inclusion of ICT in the implementation process will certainly make a difference in practical use. The emerging ICT sector in South Africa can be used to set up the market situation, empower the marginalized people and inform the population with useful information to fight against this disease.

**HIV/AIDS project with the Integration of ICT**

Effective communication with appropriate information is one of the main problems in South Africa to fight against HIV/AIDS due to misconception, myths and lacking information about cause, symptoms, treatment of HIV/AIDS. Therefore, ICT can play a major role in reducing the communication gap in general people. The appropriate information about how HIV/AIDS transmits into another body, its symptoms and the treatments can develop the capacity to act quickly before infection and the necessary steps after one gets infected with HIV/AIDS. Information and communication became the core part of fighting against this deadly disease and different AIDS program. HIV/AIDS projects which are enable to connect the risk group with appropriate information need to consider different factors where the appropriate program or campaign can work on different sector to fight against HIV/AIDS. Those conditions are prevention, education, treatment, awareness and research. There is several case studies illustrates the ICT intervention in different country to fight against HIV/AIDS. Those case studies can help to formulate new and integrated intervention in case of South Africa in prevention, education, connection to rural and marginalized people and research to learn the actual situation.

Projects using ICTs to combat HIV/AIDS have been initiated throughout Africa, but many are small-scale and operate in relative isolation. Since HIV/ AIDS require massive, sustained interventions, the effective use of ICTs will be an important component of success for public initiatives. ICTs hold the potential to help Africans combat HIV/AIDS by improving
treatment and prevention programs, by helping them to change sexual behaviors and practices, and by enabling them to share effective precautions.

Use of Internet by individuals to cope with HIV/AIDS

Sexually transmitted diseases, although not always transmitted via having sex has a very big stigma attached to it and to the infected person. These are the ones who are marginalized and who need much support with appropriate information. Internet on the other hand is a very great tool with tons of updated information when used effectively. Therefore anyone with a computer system and access to necessary technologies will be able to tap the crucial information and social support from internet. Study conducted by Patricia M. Reeves, with a group of diverse people in Southern part of US, reveals how individuals with HIV/AIDS use Internet to cope up with their problem. First, it is found that the primary use of Internet among the study group is to find information regarding health issues, especially HIV/AIDS. With instant access to internet, any information with large quantity can be accessed. In addition, as HIV has also gone through many phases, Internet facilitates these individuals to get easy up to date information. Internet, serving as a gate way also allows people to interact with other online communities and individuals with almost no bound for infected people. Second, it promotes the individuals to involve in advocating other individuals or a group thus making their voices heard, and takes action against discrimination. Third, it gives the patients a platform for entertainment, relief from mental stress, and to divert their focus on things that are refreshing. Information and Communication tools mainly Internet, mobile phones, Personal Digital Assistance have become an effective tool for observation of medication and reduction of the risk behaviors (Patricia, 2001).

Use of Internet, cell phones and PDAs in Health sector:

A study on people living with HIV in two community-based clinics in Peru, demonstrates that ICT tools can promote empowerment, social support, and facilitate to help others. Some people are using alarms in their cell phones to remind themselves for the medications on time. In a slightly contrast way, few uses mobile to send and receive text messages to connect for social and sexual purposes. Internet although used as an effective information access tool were being
used or once used by some users to find sex partners online. The study underscores that majority of the people would like to receive information regarding sexually transmitted diseases, safe behaviors and generally about HIV information in a pre-recorded voice calls and as a text message to their mobiles. Although PDA’s were not used by any members of the study group, they are yet perceived as a both advantageous and disadvantageous too. The advantages of having PDA will help the people to use PDA to access information, make reminders for medications, communicate with doctors, and conduct counseling. It is much similar to the activities of desktop computer yet it is handy and mobile promoting anytime, anywhere access. Their disadvantages stated are it is more prone to be lost or stolen, costly, less familiar, battery problems, access problems, and size issues. Since it is handy, people afraid that it can be easily found by others thus hindering the privacy and confidentiality part of having PDA (Curioso and Kurth, 2007).

**Radio Project for HIV/AIDS, Mekong Sub-region:**

The Minority Language Radio Project for HIV/AIDS targets the ethnic youth and young women to educate them about trafficking and drug abuse. The Asian Development Bank funds for this radio project to promote effective prevention education system of HIV/AIDS in the cross border areas of the Mekong Region. The goal of this project was to educate the minority group of youth, specially women on trafficking, HIV/AIDS and drug abuse prevention through radio broadcasting in local languages such as Lahu and Shan(Thailand), Hmong(Lao PDR)and Jingo and Naxi(Yunnan, China). The main component of this project was broadcasting different program like soap opera and discussion program regarding HIV/AIDS. The positive impact of this project was to educate the group about the risk factors regarding HIV/AIDS, how human trafficking associates the HIV/AIDS and the effect of inappropriate drug use and unsafe injection (Geers, 2007).

**Interactive Voice Response System, India:**

Interactive Voice Response System (IVRS) or the electronic Helpline project in Rajasthan is another good example of ICT intervention to fight against HIV/AIDS. The helpline
uses a computer connected with a four channel voice card, linked with two telephone lines using modified software. This framework allows a client to get informed about general information about HIV/AIDS, prevention system, symptoms, testing and treatment facilities and support to HIV positives (Srivastava and Noznesky, 2005).

**Text To Change:**

TTC, text to change is a NGO in Uganda that works for promoting healthcare education in some parts of Africa. Although TTC has not yet reached South Africa, it has a great potential to make South African citizens aware of HIV/AIDS through their plan. TTC system sends text messages to the participants of health related quiz programs. The participants can reply their answers using the free text messages offers provided to them by the NGO and the respective telecom provider. This approach is very participation motivating and incentive based. The winners and participants are at the end encouraged to approach testing and counseling centers and also the winners get prizes like mobile phones. Some draw backs of the projects are the need to use different technologies or means of communication to make aware of the program (AIC/TTC, 2009).

**Using Information and Communication Technology to Combat HIV/AIDS:**

In Uganda for combating HIV/AIDS using ICT as a tool, a project, Using Information and Communication Technology to Combat HIV/AIDS was implemented aimed at youths by the USA-based Education Development Center (EDC) and its partners. The project’s objectives are peer learning, social action, and small business projects as well as enable youth to develop IT skills. The broader goal is to examine the potential of ICTs to facilitate youth and community learning about HIV/AIDS in Uganda. The project activities include website development, e-mail, and CD-ROM development to complement existing HIV/AIDS Information Education and Communication (IEC) campaigns designed to reach youth and their communities. Online specific activities that include many sections to encourage students and teachers to explore myths and misunderstanding conduct research and discuss about the prevention of HIV/AIDS in their lives and communities. Also, HIV/AIDS and ICT related workshops in schools to create
awareness among students especially female adolescents are required. Apart from the students in the educational institutions, young people along with family suffering from HIV/AIDS are trained in ICT and entrepreneurship skills to help them contribute to their communities through income generation, capacity building, and knowledge sharing (Soul Beat Africa, 2010).

AIDSWEB Project:

World Links and its project partners have been running the AIDSWEB project in secondary school in Africa using information and communications technology to promote HIV/AIDS education and prevention activities. Medicus Mundi Switzerland, network health for all, has mentioned that the result of their project shows that technology can play a complementary role in helping combat HIV/AIDS. The report mentions that overall HIV prevalence rate among African youth shows the continuing need for HIV/AIDS educational prevention activities targeted specifically for the young people who are not yet affected. It is mentioned that technological resources such as e-mail, CD-ROMs and the World Wide Web should be provided to HIV/AIDS educators and activists around the world and reach the youth specifically. It also mentioned that world links and the World Bank’s AIDS campaign team for Africa designed a HIV/AIDS prevention and care online project to fifteen schools in four African countries including Ghana, South Africa, Uganda, and Zimbabwe. The project continued to work with more schools exchanging questions, answers and discussion via e-mails. Later five more countries, Botswana, Kenya, Nigeria, USA, and Zambia also joined in this online project. The project aimed to achieve five educational goal activities such as cultural exchange, basic facts of HIV/AIDS, importance of HIV/AIDS, challenge of HIV prevention, and social action. According to the feedback from the participants, the project was effective and successful in terms of raising awareness among the students, enhancing research skills, helping the incorporation of HIV/AIDS education into school curriculum and emphasizing the teachers’ responsibility as a facilitator (Medicus Mundi Switzerland, 2002).

Siyakhana Health trust-South Africa:

Siyakhana Health Trust is a project that established by MBSA, Mercedes- Benz South Africa, the Eastern Cape based Border-Kei Chamber of Business, the East Cape Government and
the German Development Agency aimed at awareness, training, counseling, testing, and treatment for HIV/AIDS. This trust is a private-public entity which has partnership with small and medium enterprises. The project mainly focuses on providing skilled nurse and training for the doctors specifically for the treatment of HIV/AIDS and tuberculosis which is a leading cause of death among the HIV positive patients (HIV&AIDS Project MBSA, 2010). This project was intended to administer the major problems related to HIV/AIDS faced by the employees which helps to minimize their absence during working time. Their aim is to provide high quality medicine to the HIV positive employees. In addition, tests for diagnosing AIDS services were implemented and by the end of 2009, they were able to provide HIV/AIDS treatment to 510 patients (Innovative Workplace Support, 2009).

Aids Foundation South Africa:

The AIDS foundation was founded in 1988 by a volunteer group in South Africa with an aim to spread awareness about the prevention of HIV/AIDS in the community. Recognizing the need of fund and health professionals they replicated their foundation into many other organizations. AIDS foundation is an agency in South Africa which works on identifying HIV positive cases and helps in reducing the impact with available resources as all the citizens have equal rights over the use of available of resources. The major strategies of the AIDS foundation are to raise and distribute funds which include both national and international funds and distributing for HIV prevention initiatives at first priority. Secondly, it aims to build up partnership with local and international organizations and the major private entities in the country. Thirdly, it focuses on promoting organizational services for funding and to develop skill building programs which focus on improving the condition of the existing organization (ISISA Charities, nd).

The major challenges that AIDS foundation has recognized in South Africa includes the lack of access to information and resources by the women living in the rural areas. Migration is emerging as the number of men travelling from rural area to urban areas making the women isolated in their community. Therefore, these women are more subjected to have forced sex by
other men. Moreover, men who migrated might be a carrier of the disease and/or contribute to new infection. The third problem found is the affordability of AIDS drugs by the people. Mostly the antiviral drugs are available and accessible but not in an affordable price. Fourthly, the increasing rate of tuberculosis and Pneumonia is a barrier as it is turning out to be the leading cause of death among HIV positives. HIV, which attacks the immune system of human body, makes the body weaker and prone to other diseases. When the infected people catch new disease, he/she will not be able to fight against them with this weak immune system. Lastly lack of community services and home based support for the HIV patients are considered to be a stigma in the society (ISISA Charities, nd).

There are about 150 organizations in South Africa focusing on AIDS which are working according to the need of the community. The major strategy of the AIDS foundation is fund raising and distribution of funds to different projects and organizations that works mainly for the HIV education and support. The priority of the funding goes to the AIDS awareness programs, promotion of safer sex, for training the health professionals, and programs in which school children, women and marginalized youth, sex workers are the focused group (ISISA Charities, nd).

Masiluleke Project-South Africa:

The project Masiluleke was founded after the rate of HIV/AIDS has been increased in South Africa when about 1,000 people died per day. This project is supported by Pop Tech Conference Organizers, American innovation group Frog Design, and African Phone Network. The project aimed at increasing HIV awareness, testing and treatment across the country via mobile phones. In the first stage of the project they send out free text messages about HIV to all the people of the country who has cell phones and urged the citizen to call back if they have any concerns regarding HIV and AIDS. It had a successful result as they got responses from the targeted groups. Their plan for the future is to provide free home HIV testing kits and with the help of text message remember the patients about the medical treatment and doctor consultation. This project is crucial for the KwaZulu-Nata area where this project is founded as one among six people is affected with AIDS and about 40% of the pregnant women are carrying the virus. The
reason why the organization chose text messaging as an effective way to make people aware is because of the well developed mobile technology of the country. About 90% of the people have access to mobile phones and mostly at least one person in a family has mobile, there exist a universal coverage in South Africa (Johnson, 2008).

**Rural Community Access pilot, Tsilitwa, South Africa**

Tsilitwa is a rural community with about 2000 people situated in the province of Eastern Cape. The communication and transportation is poor between villages to get health care services and information. This village also suffers from low penetration of public service, and inspite of having a clinic, the nurse patient ratio is really low to get sufficient health services. The rural community access pilot project encourages efficient rural communication among the villages. A Telecenter has been established in the village with an inventive wireless network that allows nurses to connect with specialist doctors in the nearest hospital. The health staff or nurse consults with the doctors through synchronous communication. Synchronous communication includes sending voice, text and message in order to describe their problem and symptoms (Center for Health Market Innovations, nd).

**Analysis and Recommendations:**

- Integration of all sectors into the strategy is essential for the accountability of all citizens of the nation. In the SADC HIV/AIDS tacking plan, the committee focused only on seven sectors excluding education which incorporates the young population of the country (DOH, 2000). As discussed already, young population are more vulnerable to adopt unsafe sex and be careless about infection. Thus, ensuring the inclusion of different sectors and age categories specially youth in education sector is very important.

- As we have seen that many health workers tend to go abroad, there is a serious lack of people to support and care for HIV/AIDS patients (Mars, nd). Thereby, the government of South Africa should encourage those workers to serve their own community people by providing incentives and safe working environment.
- The government should be responsible to establish equality regardless of ethnicity, color, economic condition, and gender to fight against the HIV/AIDS by developing a unity among local, provincial and national structures.

- Health care services lack equipments with advanced technology to provide proper care to the patients. Therefore, among the different developmental areas, health care services should be given a priority considering the severity of HIV/AIDS death rate and new infections. More attention must be paid to health sector to provide them with appropriate resources.

- As The Diana, Princess of Wales HIV Research Unit provide health care access to HIV/AIDS patients considering the medical history, and current stage of HIV/AIDS of the individual, they provide safe laboratory tests (Diana Princess of Wales HIV Research Foundation, 1999). South African Government must learn from other charity and non-governmental organization to ensure the safe tests in all health sectors.

- In Malawi, the correct amount of fund was denied due to improper drafts for asking funds (Sachs, 2005). Even though these are very minor problems, they must be focused to attain the targeted fund for the projects. Therefore, methods to obtain funds from the international organization such as World Bank, World Health Organizations should be made effective in South Africa.

- According to the estimation of 2009, the increasing number of media like newspapers, journals, and periodicals is more than 5000 (Press Reference, nd), plans to disseminate information regarding precautions, treatment, and consultations to be carried out via media.

- The government should implement AIDS treatment training based on local context to the health workers in order to increase the nurse-patient ratio. In addition, informal training to medical students and volunteers who willing to take care of the patients should be provided meanwhile they knew the precautions.

- Policies regarding privacy should be formulated in a confidential way that doctors require permission from the patient to inform others about their infection.
• In one of the above projects, Text To Change, the program has targeted only MTN telecom subscribers (AIDS Information Centre, 2009). However, it will be more effective when all service subscribers can have access to it, thereby a wide range of audience can participate.

• In the ICT project dealing with HIV/AIDS in Peru, Personal Digital Assistance (PDA) was not encouraged. Although, PDA has battery issues as a disadvantage (Curioso and Kurth, 2007). The advantages outweigh those by providing a combination of a computer with internet and a portable mobile phone. Comparing to the direct interaction with doctors and/or other individuals, using PDA for a consulting ensures a comfortable interaction to an extent.

• As the relative prevalence of radio and television in South Africa is high, it can be used to raise awareness among illiterate people who were not informed or aware. The goal of this Lovelife project is to conduct nationwide media campaign, including television and radio programming leading by young casts in discussion. These early interventions illustrates that through different area, if the ICT can be implemented as a fighting tool against HIV/AIDS, the high rate of affected people in HIV will be reduced in future. In addition, these early case studies of ICT intervention help to recommend with consideration of different sector such as, prevention, education, connection, affordability, research, treatment and evaluation (Forman, 2003).

**Conclusion:**

South Africa, with the increased number of infection and death rates due to HIV/AIDS, suffers with the cultural stigma and negligence of proper care, lacks greatly in effective health care services, nursing assistances, proper use of technologies, and aid in treatment, awareness, and prevention. On the other hand, it is rich in natural resources, high literacy rate, and well developed information and communication sectors. Therefore, there is a huge potentiality of combating this fatal deficiency, which hinders the country’s development severely, by using ICT. In most of the HIV projects, ICT as a tool must be properly implemented considering
different sectors, age groups, ethnicities, languages, and other public and private institutions as it can have greater effect among the general people. The existing positive aspects of this country are enough for being a potential zone of effective ICT interventions which can be backed up by the sophisticated technology infrastructure. Consequently, though South Africa is lagging behind in today’s world due to highest HIV/AIDS prevalence, proper and necessary steps can solve the problem and help this country to compete with the developed world to make their own identity.


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