

Using SMS for HIV/AIDS education and to expand the use of HIV testing and counselling services at the AIDS Information Centre (AIC) Uganda

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Abstract: Mobile phone users are adopting text messaging (SMS) to completely new ends never envisaged before. The SMS now constitute a feasible tool that connects users, allowing for the exchange of vital information and expert opinions in near real-time. The SMS provides a trusted resource for asking time-sensitive questions, while providing an anonymous forum for gaining insights on potentially sensitive subjects. In this article, we present an innovative approach aimed at scaling up HIV/AIDS awareness via mobile phone SMS desired at encouraging participants to access HIV Counselling and Testing (HCT). Our study, which was deemed ‘an enormous success story’, reached over 7,000 people in the Lira district for HIV/AIDS education via SMS, the outcome of which saw a high acceptance rate of the SMS survey and increase in the number of people accessing HCT.

Key words: Mobile phone, Text Messages (SMS), HIV/AIDS, Counselling and Testing

1. Background

1.1 Current HIV/AIDS situation in Uganda

The current HIV prevalence in Uganda is estimated at 5.4% amongst adults [1]. According to the Uganda HIV and AIDS Sero-Behavioural Survey, the number of people living with HIV is higher in urban areas (10.1% prevalence) than rural areas (5.7%); it is also higher among women (7.5%) than men (5.0%). It is feared that HIV prevalence in Uganda may be rising again; at best it has reached a plateau where the number of new HIV infections matches the number of AIDS-related deaths. There are many theories as to why this may be happening, including the government’s shift towards abstinence-based prevention programmes, and a general complacency or ‘AIDS-fatigue’. It has been suggested that antiretroviral drugs have changed the perception of AIDS from a death sentence to a treatable, manageable disease; this may have reduced the fear surrounding HIV, and in turn have led to an increase in risky behaviour [2].

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It is important to increase awareness of HIV/AIDS. Only 28% of Ugandan women and 36% of men aged 15-49 years have comprehensive knowledge about HIV & AIDS according to the results of the Uganda Demographic and Health Survey of 2006 (DHS) [3]. In particular knowledge levels are lower in rural areas compared to urban areas. Furthermore, the uptake of HIV testing needs to be enhanced since knowledge of ones HIV status is key to reduce new HIV infections. Persons living with undiagnosed HIV infection contribute to sustaining the epidemic as they unknowingly transmit the infection to their sexual partners [4].

In addition, they are likely to miss opportunities for timely access to treatment and support, therefore suffering greater morbidity and mortality than those diagnosed and treated early [5, 6]. HIV testing rates remain low in Uganda, one-quarter of women and one-fifth of men aged 15-49 years have ever been tested for HIV and received their results. An additional 5% of women and 3% of men have ever been tested but never received their test results. Seventy-one percent of women and 77% of men have never been tested at all, implying that they are very unlikely to know their HIV status. In addition, 41 percent of currently married women have an unmet need for family planning services [3].

1.2 Introduction

To increase HIV awareness and to enhance HIV testing in Lira District, the Deutscher Entwicklungsdienst (DED) carried out a survey in collaboration with Text to Change (TTC), using SMS messages. Mobile phones are one of the fastest spreading technologies in the world, and they are now being used for more than just their traditional functions. Uganda has over 9 million mobile phone subscribers and throughout Africa as a whole it is estimated that more than a million phone users are being added every week. Phone company research in Uganda estimates that approximately 85% of the population has “access” to a mobile phone through relatives, friends, acquaintances and mobile phone kiosks or itinerant mobile service providers [7].

1.3 Deutscher Entwicklungsdienst (DED) and Text to Change (TTC)

The Deutscher Entwicklungsdienst (DED; German Development Service) is one of the leading European development services for personnel cooperation. It was founded in 1963: since then more than 15 000 development workers have committed themselves to improve the living conditions of people in Africa, Asia and Latin America. Their aims are to fight poverty, promote a self-determined, sustainable development and to preserve natural resources [8].

DED places development workers at the request of governmental and nongovernmental organizations in its partner countries and on the basis of framework agreements with the respective governments. Amongst other activities, DED supports local civil organizations and municipal structures by providing specialist advice, if required supplemented by financial support. One of the areas of work is health: support for rural health systems, promotion of reproductive health, HIV/AIDS intervention. The German Development Service (DED) has been working in Uganda since the beginning of the 70's in order to contribute to sustainable development and to achieve improved living conditions for the people. Currently more than 30 development workers, 15 volunteers and another 30 national experts commit themselves in our programmes. With regards to HIV prevention DED Lira offers a moonlight HIV testing programme. People can come for a free HIV testing at night in all anonymity. The service starts at 6.00 p.m. and end at 11.00 p.m.

1.4 Text to Change

Text To Change (TTC) is a non profit organization, founded in 2006. It uses state of the art mobile phone technology to collect and disseminate health information. TTC works demand driven and sets up complete programs with local and international partners. Together with its partners, TTC aims to support change by increasing awareness and enabling citizens to make

informed choices. TTCs mission is to empower citizens by unleashing the potential of mobile telephony to provide and collect information, increase awareness and knowledge levels, enhance transparency and strengthen advocacy [9].

Text to Change is specialized in interactive and incentive based SMS programs addressing a wide range of health issues such as HIV/AIDS, malaria and reproductive health. TTC has been one of the pioneers in using mobile phones for health monitoring and advocacy in Africa reaching out to the general public at a large scale. Besides Uganda TTC is currently present in Kenya, Tanzania, Namibia and Madagascar and will be expanding to West Africa and South America in 2011.

1.5 Program objectives

The overall objective of this study was to improve HIV/AIDS knowledge levels and contribute to an increase in the number of people going for HCT services in Lira district with a view to decrease HIV transmission.

2. Methodology

2.1 Study population

The study population consisted of people living in the Lira and its surrounding communities who use a mobile phone on one of the 4 major networks in Uganda (MTN, UTL, ZAIN, and WARID). The program also targeted family and friends of the mobile phone users. Lira-town has an estimated 80,000 inhabitants according to Ugandan Population census 2002 and approximately 145,000 people live in Lira-district. To initialise the survey, we utilized radio and flyers to boost participation.

2.2 Mobile messages

In total, seven question messages were sent on HIV knowledge and three questions on family planning (Table 1). After receiving the response from the participants, the TTC platform automatically replied if the answer was correct or incorrect and additional information was provided. In this way participants were educated on the issues. In addition, demographic questions concerned gender, age and place of residence. Participants were asked about their HIV testing history. Finally, three general messages about the contents and set up of the survey were sent.

Table 1: SMS questions on HIV knowledge and family planning Lira survey

HIV knowledge	<p>A woman can transmit HIV to her baby during pregnancy or breastfeeding.</p> <p>The HIV virus can be cleared from your body by taking Antiretroviral drugs (ARVs).</p> <p>HIV is NOT present in: 1). Semen; 2). Sweat; 3). Blood; 4). Breast milk</p> <p>You can easier get the HIV virus if you have an STI (Sexual Transmitted Infection)</p> <p>HIV weakens the immune system of an infected person by killing: 1). White blood cells; 2). Red blood cells; 3). Antibodies against HIV</p> <p>Women are infected more easily with the HIV virus than men.</p> <p>ARVs need to be taken as prescribed under medical supervision, for the rest of your life.</p>
Family planning	<p>Only women are responsible for family planning, not men.</p> <p>Is withdrawal or pulling out a safe method of family planning?</p> <p>Family planning methods can make a woman infertile.</p>

2.3 Study procedure

The survey was conducted in February 2010 in Lira Uganda. The participants were informed about the survey through a one hour radio talk show broadcasted on two radio stations in which it was explained how people could subscribe to the survey. Participants could opt in by sending an SMS to a toll free short code. After the shows, radio spots were broadcast 5 times a day in local language (Luo) and English during two days to further encourage people to participate. In addition, 10,000 flyers were distributed in Lira town (with a description how to opt in) and some telephone numbers were collected face to face by community health workers.

People who subscribed to the survey were automatically added to the survey database and received text messages. The SMS questions were sent daily from the Text to Change SMS platform for 3 weeks and targeted an audience of approximately 8000 mobile phone users across all networks. Respondents were asked to send back there answers via SMS (free of charge). The responses of the survey participants were captured in the TTC system. All responders received automatic replies from the TTC platform with additional information regarding the question. Participants in the survey could win prizes such as airtime, mosquito nets, mobile phones, football jerseys, and radios. Participation in the survey was confidential. The questions were sent in English. Announcements were also sent out to encourage people to go for free HIV/AIDS testing offered by AIC via the program until February 12, 2010.

3. Related Studies

Numerous applications have explored the possibility of addressing health challenges using mobile phones and other mobile devices in Africa and other regions of the developing world. These applications, referred to as mobile health (“mHealth”), are critical in places where existing health infrastructure cannot meet demand. MHealth applications fall into five broad categories: remote data collection, remote monitoring, communication and training for healthcare workers, diagnostic treatment support, and education and awareness similar to our current study.

Cell phones have been recognized by scholars for their potential in eHealth. Kaplan describes its promise as tremendous, but not yet fully realized due to technical, financial and regulatory barriers [12]. Much of the researches are pilot or feasibility studies with anecdotal reports. These types of research are limited in providing rigorous and grounded evidence for effectiveness (Kaplan, 2006). That notwithstanding, there is a strong drive towards cell phone eHealth. The cell phone and the SMS particularly is an information and communication technology that is widespread and seemingly ubiquitous with high rates of consumer penetration.

In the sexual health context, texting services(SMS) were seen as effective in encouraging enquiries among youths about sexually transmitted infections and related issues to access relevant information (Levine, McCright, Dobkin, Woodruff, & Klausner) [13]. It was revealed that the nature of the platform attracted the audience’s attention; in addition, the increase in awareness level of the health issue was the highest among individuals who signed up with the least expensive cell phone providers. This suggests that the accessibility and the convenience that a medium provides play a crucial role in determining the success of an intervention program.

3.1 Relevance of the Study

Through this survey, we sought to contribute to research in the following ways; first TTC addresses logistical gaps in implementing SMS projects identified by previous research. The investment costs are kept low since the survey was based on an existing mobile network, and short-messaging-service (SMS) is cost-effective. In addition, it is non-intrusive, which eliminates potential barriers caused by stereotypes toward HIV/AIDS. On the second level, TTC aims to achieve multiple objectives for public health, namely data collection, increase of awareness for HIV/AIDS, advocacy of behaviours pertaining to HIV/AIDS, and determine the efficacy of presenting incentives to participate.

4. Results

In total, 8,272 unique phone owners subscribed for participation in the survey, of which 1,222 did not respond to any SMS message. They were discarded from further analyses, leaving 7,050 participants. The majority of the responders were male (81%). The mean age of participants was 28 years with a range of 12 to 79 years. In total, 19% lived in Lira town, 50% in the Lira region outside the town and 31% lived outside the targeted region (Table 2).

Table 2: Characteristics of participants

	N	%
Gender		
- male	3685	81%
- female	871	19%
Mean age in years (range)	28 (12-79)	
Age category		
- under 18 years	200	5%
- 19-30 years	2944	67%
- 31-40 years	856	19%
- 41-50 years	313	7%
- over 51 years	91	2%
Place of residence		
- Lira Town	874	19%
- Lira District, outside town	2326	50%
- Elsewhere	1463	31%

4.1 Knowledge on HIV and family planning

Questions concerning HIV knowledge and family planning were answered by 53% of the participants (Table 3). The majority of responders answered correctly, on average 74%. Women were significantly more likely to provide the correct answer to the proposition that women have a higher chance than men to become infected with HIV and that a woman may transmit HIV to their baby during pregnancy or breastfeeding. Furthermore they responded

more often correctly to the question of the presence of HIV in body fluids, and they had a better knowledge about the risks of withdrawal as a family planning method.

Table 3: Percentage correct answers on items by gender

Knowledge Item	Correct answer	Response*	Male	Female	Total
A woman can transmit HIV to her baby during pregnancy or breastfeeding.	Yes	48%	84%	88%**	85%
The HIV virus can be cleared from your body by taking Antiretroviral drugs (ARVs).	No	47%	86%	85%	85%
HIV is NOT present in: 1). Semen; 2). Sweat; 3). Blood; 4). Breast milk	2). Sweat	45%	60%	66%**	61%
You can easier get the HIV virus if you have an STI (Sexual Transmitted Infection)	Yes	51%	91%	91%	91%
HIV weakens the immune system of an infected person by killing: 1). White blood cells; 2). Red blood cells; 3). Antibodies against HIV	1). White blood cells	54%	81%	80%	81%
Women are infected more easily with the HIV virus than men.	Yes	58%	65%	73%**	66%
ARVs need to be taken as prescribed under medical supervision, for the rest of your life.	Yes	59%	96%	95%	95%
Only women are responsible for family planning, not men.	Disagree	55%	88%	86%	88%
Is withdrawal or pulling out a safe method of family planning?	No	54%	81%	87%**	82%
Family planning methods can make a woman infertile.	No	56%	81%	79%	80%

* Proportion of unique responders that replied to the SMS question

** Statistically significant higher proportion of women than men answer correctly (p<0.001)

4.2 HIV testing history

In total 86% reported to be ever tested for HIV, of whom 44% was tested in the last year. Women were statistically significant more often ever tested for HIV than men (91% versus 86%). Of all participants tested, 98% obtained their test results. Of those who were never tested for HIV, 97% stated that they would consider going for testing.

4.3 HIV test uptake in AIC Lira

The AIDS Information Centre offered free HIV testing during the survey. Figure 1 shows the distribution of the number of HIV tests in the centre preceding and during the survey. A remarkable increase in test uptake was noticed after the announcements for free testing were sent out. In the second week of February 398 HIV tests were carried out, a double number compared to the 185 in the first week of February.

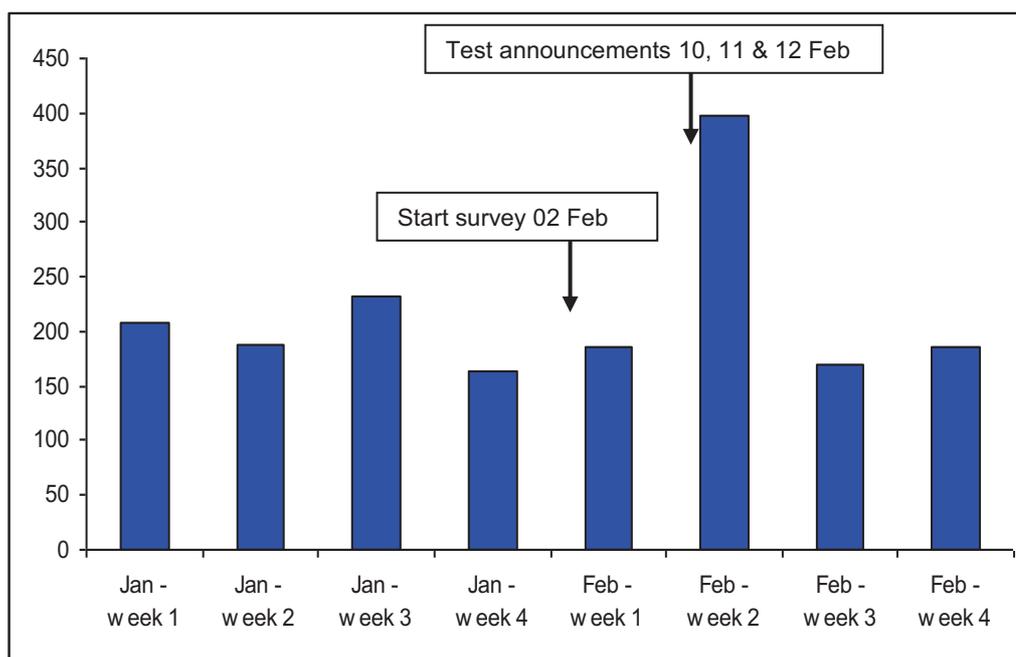


Figure 1: HIV test uptake in numbers in AIDS Information Centre in Lira

4.4 Acceptability of the SMS program

Of all responders, 80% first heard about the SMS survey by radio, 7% through flyers and 13% by family or other relatives. Men reported more often than women that they heard about the survey through the radio (82% versus 73%) while women were more likely than men to hear about the survey from relatives (19% versus 11%). Ninety six percent of participants stated that the survey helped them to gain knowledge on HIV, 4% said they did not gain any knowledge. See annex 2 for testimonials of the participants.

5. Conclusions

The DED-TTC survey reached over 7,000 people in the Lira district for health education by SMS. The acceptability of the SMS survey was high. Far more men than women participated in the survey; the median age of responders was 28 years. In general, participants had good knowledge of HIV and family planning issues. On average, 74% of all questions were answered correctly. Women had better knowledge than men on several issues. The majority of participants was ever tested for HIV, however only 44% of them was tested recently. HIV testing at the Lira AIDS information centre increased considerably after sending out the SMS reminder of the free service; test uptake doubled.

The level of knowledge in our survey is high compared data from the Domestic Household survey of 2006 where only 28% of women and 36% of men had comprehensive knowledge about HIV/AIDS [3]. This may be due to local prevention activities taking place in the Lira district although 96% of participants stated that the survey helped them to gain knowledge. In addition, the number of questions in our survey was limited compared to the DHS survey and this may have impacted the overall outcomes on knowledge. In contrast with the results of the DHS, women were better informed about family planning issues than men. The majority of people in our survey reported previous HIV testing. The test uptake is much higher than the test rates of the whole country shown in the DHS report [3]. However; the proportion that is tested recently (in the last year) is low. Knowledge of one's HIV status is important to reduce the transmission of HIV since persons living with undiagnosed HIV infection unknowingly transmit the infection to their sexual partners [4]. In addition, it is important to timely access treatment and care once diagnosed [4, 5]. Results of this survey

show that more needs to be done to get people tested regularly. One way of encouraging HIV testing is offering testing free of charge. During the survey, free testing was offered at the AIDS Information Centre in Lira. This way of testing reached many people; test uptake almost doubled after the SMS reminder. This is an important way to enhance (timely) HIV testing by reducing (financial) barriers.

Radio appeared to be a good medium to inform a large audience of people about the survey. Eighty percent of participants had first heard about the survey by radio. Consistent with much of Africa, radio ownership in Uganda is high: 78% nationwide, 84% in the Western and Northern regions.

Radio is the preferred media-access choice for most Ugandans for several reasons: language, affordability, broad coverage and diversity of programming. This project takes advantage of the medium of radio to lay the groundwork for the campaign, by producing and broadcasting radio messages and explaining the rules how to subscribe to the survey. If the survey would not have been announced on the radio, the number of people reached in Lira region would have been much lower. However, 31% of all respondents reported a place of residence outside Lira district. Although information on health will also benefit this population, this area was not initially targeted for this project. The radio shows reached mainly men. Women were more likely to subscribe to the survey when they were informed by family or other relatives. This demonstrates that radio needs to be complemented with other media to reach both men and women.

The SMS survey was highly valued by the participants; almost all stated that they gained knowledge. SMS constitutes a new and exciting approach to disseminate information that can be widely dispersed directly into people's hands whenever, wherever. Mobile phones are one of the fastest spreading technologies in the world, and they are now being used for more than just making calls. Like SMS, or text, messaging, users are adopting the devices – and the technology – to completely new ends never envisaged when mobile phones first began to be adopted widely in the late 1990s [10].

Text To Change has a strong history of behaviour change communication interventions (www.texttochange.com). The collaboration with DED and the Lira Municipal Council worked out very well in this project and the combination of an SMS reminder for HIV testing was very successful. Testimonials of participants (Annex 2) show that the SMS messages were highly valued and the information was shared with family and friends. Hence, this TTC-DED survey effectively reached even more than 7,000 people in Lira district.

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