

KNOWLEDGE, ATTITUDES AND PRACTICES OF CONDOM USE IN A RURAL AREA IN UGANDA

F. Kabikira, MPH graduate
University of South Africa
Department of Health Studies

D.M. van der Wal, DLitt et Phil
University of South Africa
Department of Health Studies

J.H. Roos, DLitt et Phil
Department of Health Studies
Corresponding author: roosjh@unisa.ac.za

ABSTRACT

During the past decade antiretroviral drugs (ARVs) revolutionised AIDS treatment in Uganda. Although this endeavour demonstrates successes, new challenges emerged, for example the continued use of condoms amidst the increasing availability of ARVs and misconceptions about what ART could accomplish. This study investigated the knowledge, attitudes and practices of condom use in a rural area of Uganda where ART has been implemented. A quantitative, cross-sectional design, with probability sampling of the general population, was utilised. Data were gathered using a self-designed questionnaire. The descriptive statistics indicate a high level of knowledge of HIV, its transmission, condoms and antiretroviral drugs. However, condom acceptance and use were low. Although respondents would not intentionally engage in unprotected sexual intercourse because of the availability of ARVs, some have engaged in risky sexual behaviours, exposing others to infection. It is recommended that HIV/AIDS preventions should provide information to the public to increase acceptance on condom use, especially people in unstable relationships. The public should be educated that protected sex by means of condom use is still necessary, even if their sexual partner is on ART/ARVs.

KEYWORDS: antiretroviral drugs (ARVs), knowledge, attitudes and practices of condom use, risky sexual practices, safe sexual practices, Uganda

INTRODUCTION AND BACKGROUND INFORMATION

The Human Immunodeficiency Virus (HIV)/Acquired Immunodeficiency Syndrome (AIDS) (HIV/AIDS) continues to exert devastating effects on the African continent, including Uganda. Concerted efforts to combat the spread of HIV infections ranged

from behavioural modifications to treatment with different drugs notably anti-retroviral drugs (ARVs). However, the HIV/AIDS epidemic continues to be a growing problem worldwide, particularly in Sub Saharan Africa (SSA). By the end of 2010 an estimated 34 million people were living with HIV/AIDS (PLWAs), of whom 23.5 million were living in SSA. The number of newly infected individuals in the world declined from 3 million to 2.5 million but SSA still had the highest incidence, numbering about 1.9 million infected people in 2010. The average prevalence rate for HIV/AIDS in Uganda for the age groups 15 to 49 was 6.5% for both genders in 2009 (AVERT, sa).

Initial attempts to curtail the spread of HIV/AIDS in Uganda focused primarily on prevention strategies, such as the promotion of safe sexual behaviours (Hogle et al., 2002:2). These proved worthwhile in terms of reducing the HIV incidence among the adult populations (**Genuis & Genuis, 2005:616**). Prevention strategies incorporated abstinence, faithfulness to partners and condom use; commonly referred to as the ABC strategy (AVERT, sa). In addition, ARVs that could slow down the development of AIDS, or improve the conditions of those with full blown AIDS, became available. Programmes to supply PLWAs with these drugs were rolled out in Uganda since 2001 (Atuyambe et al., 2008:13) enabling many patients to get free or subsidised ARVs. Since 2007, 105 000 PLWA accessed ARVs, representing only half of those in need of ARVs, despite the fact that the number of sites providing ARVs has increased from 48 in 2003 to 370 in 2006. (UAC 2007:13-15; Personal interview with ART coordinator – ACP/MOH 22 January 2010). In the eastern part of Uganda, the ABC strategy has failed to reduce HIV infections among married women (Ogunbodede, 2004:352). This situation might be complicated by the incorrect perceptions of what ART could achieve and the subsequent false security that ARVs could cure AIDS and/or prevent HIV infections.

RESEARCH PROBLEM

Atuyambe et al. (2008:14) reported that many Ugandans, living in the capital city Kampala, thought the availability of ARVs would contribute to increased indulgence in risky sexual behaviours. Consequently increased transmissions of HIV could occur if some people would discontinue using condoms because of the availability of ARVs.

Similarly, HIV positive women wanted to conceive because drugs preventing mother to child transmission (MTCT) were available (Atuyambe et al. 2008:15). This was also corroborated by Bunnell et al. (2008:621) Ugandan study which reported that 77% of the HIV positive respondents engaged in sexual acts during the year preceding the research, and 84% of them engaged in unprotected sex, resulting in a number of pregnancies among HIV infected women. Of these HIV infected pregnant women, as many as 47% did not plan their pregnancies.

Although the Uganda AIDS Commission (UAC, 2006:21) reported an increase in the number of condoms procured during 2004/5 to about 95 million, they also noted problems related to condom availability due to poor distribution systems at sub-county level. Figures from the National Drugs Authority (NDA) indicated that the number of condoms procured for 2008 was 56 569 726 and for 2009 it was 56 297 698 (Personal interview with Condom coordinator – NDA 22 January 2010), showing a decrease in the annual number of condoms procured for Uganda. The increased availability of ARVs, and problems with condom distribution, necessitated an investigation about people's attitudes and practices relating to condom use and the effects of ARVs on these behaviours.

Although there is information about Uganda as a country on reducing the chances of HIV infections (MOH, 2006:44-45), the impact of ARVs on these behaviours, and specifically on condom use, has not been documented. Data about the knowledge, attitudes and practices surrounding condom use in the Eastern Central region of Uganda, an area where ART services are available, remain deficient.

THE PURPOSE AND OBJECTIVES OF THE STUDY

The purpose of this study was to assess the knowledge, attitudes and practices towards condom use in a rural area of Uganda where ART was readily available. The objectives for this research were to determine respondents' knowledge about HIV and its transmission as well as about ARVs and condoms; to describe respondents' attitudes to sexual practices in relation to HIV/AIDS, ARVs and condom use. This information would be used to recommend ways in which condom use could be enhanced, people's knowledge about HIV/AIDS could be increased and the prevalence and incidence of HIV/AIDS could be reduced in this area of Uganda.

DEFINITIONS OF KEY CONCEPTS

Antiretroviral Therapy (ART) refers to the treatment of infection caused by the Human Immunodeficiency Virus (HIV), using antiretroviral drugs (ARVs) (New Mexico AIDS Education and Training Centre, 2006; The AIDS Education & Training Centers, 2006).

Antiretroviral drugs (ARVs) refer to drugs used to treat infections caused by retroviruses including the human immunodeficiency virus (The AIDS Education & Training Centers, 2006).

Attitude refers to "someone's opinion or feeling about something, expressed through behaviour" (Rundell, 2006:76). The Cambridge Advanced Learner's Dictionary (2010) defines attitude as "a feeling or opinion about something or someone, or a way of

behaving that is caused by this”. In this study attitudes refer to the opinions and feelings of the respondents regarding the use of condoms, HIV/AIDS and ARVs.

A condom is a latex or rubber tubular sheath used during sexual intercourse to form a two way barrier that prevents the passage of genital fluids and their contents, including organisms, between sex partners (MOH, 2003:19). Both male and female condoms are available. In this paper, the word “condom” refers to the “male” condom only.

Knowledge, according to the Cambridge Advanced Learner’s Dictionary (2010), entails “understanding of or information about a subject which a person gets by experience or study, and which is either in a person’s mind or known by people generally”. In this study knowledge refers to what respondents knew about the use of male condoms, HIV/AIDS and ARVs.

According to Rundell (2006:1104), practice refers to a “... way of doing something especially as a result of habit, custom or tradition”. The Cambridge Advanced Learner’s Dictionary (2010) defines practice as “something that is usually or regularly done, often as a habit, tradition or custom”. In this study practice refers to the habit, custom or tradition surrounding the way in which male condoms are being used.

RESEARCH METHODS AND DESIGN

A quantitative, descriptive, cross-sectional study design was adopted collecting data by using a self-designed questionnaire. Data were analysed at the descriptive level, including the calculation of Pearson Chi Square values at the 5% level of probability.

Research setting

The study was conducted in Uganda, in the Budondo sub county of the Jinja District; an East Central rural area with a total population of 45 205 inhabitants and located about 15 km north of Jinja, the main district town. Data were collected during the second semester of 2009.

Research population and sample

The target population included all the people living in Jinja District; an area relatively homogeneous with regard to language, cultural characteristics, and socio-economic conditions. The accessible population comprised the people living in the Budondo sub-county.

Probability sampling was conducted providing all eligible people from the accessible population an equal chance of selection to participate in the study. A multistage sampling

technique was used dividing the accessible population into clusters of parishes and sub clusters of villages. Simple random sampling was then carried out at each cluster and sub-cluster, where homesteads were numbered consequentially and a sample of 135 homesteads were selected from a list of homesteads in each sub cluster.

Data collection instrument

A questionnaire was designed based on the literature review. The items in the questionnaire comprised demographics (age, gender, education); knowledge, perceptions and attitudes towards condom use; and knowledge, perceptions and attitudes towards ARVs.

Closed-ended items required respondents to choose from pre-coded choices. The questionnaire was designed to collect nominal and ordinal data. Responses were ranked (Aday & Cornelius, 2006:53) according to Likert scales containing items relating to the research topic accompanied by four opinions ranging from strongly agree to strongly disagree.

Pre-testing of the questionnaire

The questionnaire was pre-tested on a convenience sample of 16 people who were not part of the study population, to assess the questions for clarity of meaning and language. Improvements were implemented before the questionnaire was finally adopted.

Reliability and validity

Reliability is defined by Kumar (2005:156-159), in relation to the measuring instrument, as the degree to which the results are consistent. Reliability could be affected by the wording of the questions and mood of respondents. The Cronbach alpha (reliability coefficient) for the questionnaire as a whole was 0.618. This was deemed acceptable for a newly designed research instrument in view of Tredoux and Durrheim's (2002:216) citations indicating that an $\alpha = 0.65$ is sufficient for scales used to compare groups of people (Aiken 1982 cited in Tredoux & Durrheim, 2002:216) and an $\alpha = 0.70$ is sufficient for research instruments (Nunnally cited in Tredoux & Durrheim, 2002:216). Bowling (2002:149) supports these authors that scientists do not have consensus over the accepted minimum standard for reliability. Some consider 0.5 as the minimum whereas others consider 0.7 as the minimum.

Face validity was achieved having based the questionnaire on the result of a relevant literature review and on the objectives of the study. The content in the questionnaire was further compared to similar surveys in Uganda such as Bunnell et al. (2008) and instruments made available by the World Health Organization (WHO).

Data collection

Data were collected during the second semester of 2009 by the researcher and four trained field workers. The identified respondents in the selected households were briefed on the research purpose and requested to sign the consent form if they were willing to complete the questionnaires. Respondents who could read and write completed questionnaires on their own, while respondents who were not sufficiently fluent in English, were assisted by field workers.

Data analysis

The collected raw data were processed using descriptive statistics, including the Pearson Chi Square, using the Statistical Package for the Social Sciences (SPSS version 15). The four point Likert scales were reduced to alternative (two point scales) during final data analysis.

ETHICAL CONSIDERATIONS

The Research and Ethics Committee of the Department of Health Studies, University of South Africa, reviewed and approved the research proposal. Permission was also granted by the Uganda National Council for Science and Technology (UNCST) and from the local leadership of Budondo sub-county and Jinja district.

Prospective respondents were briefed about the study, including their rights to refuse participation, to opt out at any time and not to answer specific questions (Aday & Cornelius, 2006:4) without incurring any negative consequences. Those who agreed to participate in the study, signed consent forms. One spouse completed a questionnaire per household. These respondents were not subjected to any physical assessment or known psychological harm (Aday & Cornelius, 2006:5).

All data obtained were treated confidentially and no names or addresses were recorded on the questionnaires, research reports or any other documents. Respondents provided answers on a voluntary basis and were not coerced or remunerated in any way.

ANALYSIS AND DISCUSSION OF RESEARCH RESULTS

A total of 133 questionnaires obtained from the 135 respondents were used. Of these 133 completed questionnaires, not all respondents completed all the questions and totals and percentage were calculated from the number of responses to a particular item. Missing values are thus not included in denominators and $n=$ (denominator) thus indicates the number of responses to an item or question and f indicates frequencies (counting up to the $n=$ value for any individual item, question or variable).

Demographic information

As displayed in table 1, there were more females (52.6%; f=70) than males (47.4%; f=63), while the mean age for the respondents was 33.2 years.

Table 1: Demographic information of respondents

GENDER DISTRIBUTION (n=133)	FREQUENCY (f)	PERCENTAGE (%)
Females	70	52.6
Male	63	47.4
AGE DISTRIBUTION (n=130)	FREQUENCY (f)	PERCENTAGE (%)
15 – 20	11	8.4
21 – 30	48	37.0
31 – 40	40	30.8
41 – 50	31	23.8
MARITAL STATUS (n=133)	FREQUENCY (f)	PERCENTAGE %
Married	91	68.4
Co-habiting	9	6.8
Single	26	19.5
Divorced/Separated	4	3.0
Widowed	3	2.3
EDUCATIONAL STATUS (n=133)	FREQUENCY (f)	PERCENTAGE (%)
Primary	50	37.6
O-Level	63	47.4
A-Level	3	2.3
Tertiary	17	12.8

Most respondents were in the age group 21 to 30 years (37.0%; f=48). Of the respondents 68.4% (f=91) were married, 6.7% (f=9) were cohabiting, 19.5% (f=26) were single, 3.0% (f=4) were divorced or separated while 2.3% (f=3) were widowed. Nearly half (47.4%; f=63) studied up to an O level (ordinary secondary school leaving level), while 37.6% (f=50) attained education up to primary school level. Another 2.3% (f=3)

attained an advanced secondary level education and 12.8% (f=17) achieved tertiary level education (see table 1).

Knowledge of HIV, HIV transmission, ART and condoms

Mahalakshmy et al. (2011) in De Santis, et al. (2012:8) pointed out that although HIV is no longer regarded as a terminal illness, but “a chronic manageable illness”, knowledge about HIV infection and its transmission is still required in an ongoing effort to combat its spread. The respondents demonstrated high levels of knowledge of HIV, with 96.2% (f=127) having heard about it and 88.0% (f=114) acknowledging that HIV was a serious infection. However, only 47.7% (f=61) knew that HIV was different from AIDS; among those who knew the difference 67.7% (f=42) stated a correct difference. The higher the respondents’ levels of education, the more knowledgeable they appeared to be about these differences. Those with an advanced level of education had the highest level of knowledge 100% (f=2), while only 25.0% (f=12) with primary school level education had this knowledge. Respondents with a primary school level of education were more likely not to know the difference between HIV and AIDS. The Pearson chi square at $p=0.001$ supports this notion as statistically significant. This finding is in contrast to the finding of De Santis et al. (2012:13) who found that the “educational level is not a significant predictor of HIV knowledge”.

The level of knowledge of HIV transmission was high; 78% (f=103) knew to get infected with HIV was not related to bad luck; 86.3% (f=113) knew unprotected sex with an HIV infected person might cause HIV infection; 76.9% (f=100) of the respondents knew that blood transfusions could cause HIV infection; 80.3% (f=106) knew that an infected mother could transmit the HIV to her unborn baby; and 67.4% (f=89) of the respondents did not believe that protected sexual intercourse with an infected partner on ARVs could result in HIV transmission (see table 2).

Table 2: Respondents’ knowledge about HIV transmission

ITEM	YES		NO		TOTAL	
	(f)	(%)	(f)	(%)	(n)	(%)
HIV is contracted through bad luck	29	22.0	103	78	132	100
A person cannot be HIV positive and spouse be negative	54	41.5	76	58.5	130	100
HIV can be transmitted through unprotected sex with an HIV infected partner not taking ARVs	113	86.3	18	13.7	131	100

HIV can be contracted through blood transfusion	100	76.9	30	23.1	130	100
HIV can be transmitted from an infected mother to her unborn baby	106	80.3	26	19.7	132	100
HIV can be contracted through un-sterilized skin piercing instruments	129	97.0	4	3.0	132	100
Unprotected sex with infected partners taking ARVs could result in contracting HIV	125	94.0	8	6.0	133	100
An infected mother can transmit HIV to a child during breastfeeding	120	91.6	11	8.4	131	100
Engaging in protected sex, with an infected partner on ARVs can result in HIV transmission	43	32.6	89	67.4	132	100
HIV can be transmitted even if one engages in protected sex and one's partner is HIV positive and on ARV's	30	25.0	90	75.0	120	100

Knowledge of transmission of HIV through blood transfusion was highest among the married respondents (82.1%; $f=73$) and lowest among the divorcees (50.0%; $f=2$). Of the respondents, 51.1% ($f=68$) correctly defined condoms, according to technical definitions. Almost all respondents (97.9%; $f=129$) knew that condoms can prevent HIV transmission and sexually transmitted infections (STIs); all respondents (100%; $f=130$) knew that condoms can prevent pregnancies. Of the respondents 57.4% ($f=74$) had attended condom demonstration sessions and 51.9% ($f=67$) knew that condoms did not disappear in women's vaginas.

Knowledge about ART actions and effects was high as 92.3% ($f=120$) of the respondents knew that ARVs do not cure HIV; 71.5% ($f=93$) respondents knew that ARVs could be obtained in their sub-county. As many as 82.6% ($f=109$) of the respondents knew that people taking ARVs could lead normal lives and have active sexual lives provided that they use condoms, 85.3% ($f=110$) knew that ARVs do not kill HIV; 86.7% ($f=111$) knew that once a person started taking ARVs, he/she should not stop taking them despite getting better. However, 77.1% ($f=101$) of the respondents exhibited limited knowledge about ARVs and the prevention of MTCT.

Table 3: Respondents' knowledge about antiretroviral drugs (ARVs)

ITEM	YES		NO		TOTAL	
	(f)	(%)	(f)	(%)	(n)	(%)
Antiretroviral drugs cure HIV/AIDS	10	7.7	120	92.3	130	100
ARVs can be used for preventing HIV infection	30	22.9	101	77.1	131	100
People taking ARVs suffer fewer episodes of illness	104	80.0	26	20.0	130	100
ARVs can be obtained from Budondo sub-County	93	71.5	37	28.5	130	100
People taking ARVs can lead normal lives again	109	82.6	23	17.4	132	100
People on ARVs can have active sexual relations again	95	72.0	37	28.0	132	100
People on ARVs are less likely to transmit the HI-virus to during sexual intercourse without using condoms	27	20.5	105	79.5	132	100
People on ARVs are less likely to re-infect themselves	29	22.5	100	77.5	129	100
People on ARVs can stop taking ARVs when they get well	17	13.3	111	86.7	128	100
People on ARVs are cured from AIDS	23	17.4	109	82.6	132	100
It is safe to have unprotected sex with someone on ARVs	10	7.6	121	92.3	131	100
ARVs can kill the HI-virus that causes AIDS	19	14.7	110	85.3	129	100
It is safe to have unprotected sex with a person on ARVs	4	3.0	128	97.0	132	100

Attitudes to condoms and sexual practices in relation to HIV/AIDS, antiretroviral therapy and condom use

Half (50.0%; f=61) of the respondents reported that condoms reduced sexual pleasure; 51.1% (f=68) disagreed that condoms had been accepted in the village as part of daily life. More females (54%; f=34) than males (44.2%; f=31) believed that the community had accepted condoms. Respondents, aged 15 to 20, had the highest acceptance rate of condoms (63.6%; f=7). The married (53.9%; f=49); co-habiting (55.5%; f=4) and widowed (66.7%; f=2) respondents accepted condoms but all divorcees (100%; f=4) and some single respondents (65.4%; f=17) rejected condoms. Single and divorced respondents thus seemed unlikely to accept condoms, a statistically significant association with a Pearson chi square at $p=0.005$. Kelly et al. (2011:821) reported similar findings in

their research and also referred to Ridge et al. (2007) where sex without a condom, was described as “real sex”. A further associated finding of the current research suggested that being divorced seemed to relate to engaging in more sexual acts compared to other marital categories, a finding statistically significant with a Pearson chi square at $p=0.019$.

Condoms were used mainly to prevent HIV (46.6%; $f=62$); prevent STIs (42.1%; $f=56$) and for family planning (35.3%; $f=47$). Even though the highest frequency (f) for condom use during the month prior to the research, was observed amongst those who reported 0 to 9 sexual acts (97.4%; $f=110$), the Pearson chi square at $p=0.000$ indicated that more respondents' who reported more frequent sexual acts were less likely to use condoms. Regular condom use was reported by only 38.9% ($f=49$) of the respondents. Such regular use was reported by those with an advanced level of education (66.7%; $f=2$). The group aged 15 to 20 reported the highest level of not always using condoms (72.8%; $f=8$), followed by those aged 31 to 40 (61.1%; $f=22$). Respondents of all ages did not regularly use condoms. Being married (63.2%; $f=55$) or cohabiting (77.7%; $f=7$) was associated with a high chance of not using condoms. However, no statistically significant was found in this regard ($p=0.589$). Females (63.5%; $f=40$) and males (50%; $f=35$) reported not using condoms during their last sexual encounters.

Of the respondents, 82.0% ($f=108$) reported that they would not engage in unprotected sex with HIV infected persons even though such people were taking ARVs. Respondents who were married (80%; $f=71$), cohabiting (100%; $f=8$), single (73%; $f=18$) and divorced (100%; $f=4$) considered people taking ARVs to engage in risky sexual behaviours.

CONCLUSIONS

Knowledge and awareness of HIV, its transmission, condoms and ARVs was high among the respondents. However, some respondents could not differentiate between HIV and AIDS. Nonetheless, the programmes meant to educate the population in Uganda about HIV, its transmission, prevention and ART seemed to be effective.

There was an overall low acceptance of condoms among the respondents from Budondo. This non acceptance was highest among the divorced and single respondents. This could imply that persons in unstable sexual relationships were less likely to use condoms than those in stable relationships. Although this association was found to be statistically significant, a high frequency of non-condom use was also found among the married and those in cohabiting relationships. Being a female was also associated with limited use of condoms. These findings suggested a contradiction between attitudes toward condoms and the actual use of condoms.

It is unlikely that the respondents would intentionally engage in risk taking by engaging in unprotected sex with an HIV infected partner, even if he/she was taking ARVs.

However, respondents considered ART patients to practise risky sexual behaviours. Having a low education level; being aged 15 to 20; being married or in a co-habiting relationship; being female were all associated with lower levels of condom use.

The respondents knew the most important information about the actions and limitations of ARVs. Based on statistically significant findings, a greater proportion of the respondents agreed that HIV transmission is reduced by taking ARVs and practising safe sex. Respondents also deemed it unsafe to practise unprotected sex with a person who is HIV positive and taking ARVs.

RECOMMENDATIONS

The HIV/AIDS prevention programmes should continue to provide information to the public, especially about the differences between HIV and AIDS, and the actual effect of ARVs, including that ARVs do not prevent one from becoming HIV infected. As no frequencies observed are completely (100%) in accordance with what one would want them to be, all aspects relating to HIV/AIDS, ARV's and condom use need to be re-enforced in the Budondo community across age, marital status and gender groups. This needs to be done at the community level as not all members of the community will be able to achieve the higher levels of education, associated with having sufficient knowledge of HIV and AIDS and associated condom use and expectations from ARV's. Incorporating these topics in school health programmes, pointing out the interplay amongst knowledge on HIV/AIDS, ARVs and ART and sexual practices (using condoms) could assist young people to commence and sustain sexually active lives without becoming HIV infected. In addition, efforts should be increasingly aimed at promoting acceptance of condoms by changing peoples' negative perceptions about condoms. These efforts should be directed specifically at those who are divorced and single as these groups were more likely to be involved in unstable and unprotected sexual relationships.

Educational programmes need to continue sensitising people with regard to the triad of HIV/AIDS, ARVs/ART and condom use (safer sexual practices) as they seem to be heeding the HIV preventive messages. A concerted effort should also be directed towards persons designated for, and persons on, ARVs and ART emphasising the triad.

LIMITATIONS OF THE STUDY

The sample was small and limited to one sub-county, in one district in Uganda. This means that the results and conclusions cannot be generalised to the rest of Uganda. The second limitation was that the study was descriptive in nature and thus did not test hypotheses. Only questionnaires were completed. In-depth individual qualitative

interviews might have revealed different perspectives on people's reluctance to use condoms consistently and effectively.

ACKNOWLEDGEMENTS

The authors thank all persons and institutions that granted permission for this study to be conducted and all respondents who agreed to be interviewed.

REFERENCES

- Aday, L.A. & Cornelius, L.J. 2006. *Designing and conducting health surveys*. 3rd edition. San Francisco: Jossey- Bass.
- Atuyambe, L., Neema, S., Otolok-Tanga, E., Wamuyu-Maina, G., Kasasa, S. & Wabwire-Mangen, F. 2008. The effects of enhanced access to antiretroviral therapy: a qualitative study of community perceptions in Kampala city, Uganda. *African Health Sciences*. 8(1):13-19.
- AVERT sa. HIV and AIDS in Uganda. Available from: <http://www.avert.org/aids-uganda> (accessed on 04/02/2013)
- Bowling, A. 2002. *Research methods in health*. 2nd edition. Philadelphia: Open University Press.
- Bunnell, R., Opio, A., Musinguzi, J., Kirungi, W., Ekwaru, P., Mishra, V., Hladik, W., Kafuko, J., Madraa, E. & Mermin, J. 2008. HIV transmission risk behavior among HIV-infected adults in Uganda: results of a nationally representative survey. *AIDS*, 22 (5):617-24.
- Cambridge Advanced Learner's Dictionary. 2010. 3rd edition. Cambridge University Press. Available from: <http://dictionary.cambridge.org/dictionary/british/> (accessed on 10/07/2010).
- De Santis, J.P., Provencio-Vasquez, E., McCabe, B. & Rodriguez, R.A. 2012. Predictors of HIV knowledge among Hispanic men. *Hispanic Health Care International*, 10(1):7-17.
- Genuis, S.J. & Genuis, S.K. 2005. HIV/AIDS prevention in Uganda: why has it worked? *Postgraduate Medical Journal*, (81):615-617.
- Hogle, J.A., Green, E., Nantulya, V., Stoneburner, R. & Stover, J. 2002. What happened in Uganda? Declining HIV prevalence, behavior change, and the national response. Available from: http://www.usaid.gov/our_work/global_health/aids/Countries/africa/uganda_report.pdf (accessed on 5/6/2007).
- Kelly, C., Lohan, M., Alderdice, F. & Spence, D. 2011. Negotiation of risk in sexual relationships and reproductive decision-making amongst HIV sero-different couples. *Culture, Health & Sexuality*, 13(7):815-827.
- Kumar, R. 2005. *Research methodology. A step by step guide for beginners*. New Delhi: Sage.
- Ministry of Health (of Uganda). 2003. *Policy for reduction of the mother-to-child HIV transmission in Uganda*. Kampala.
- Ministry of Health (of Uganda) & ORC Macro. 2006. *Uganda HIV/AIDS sero-behavioural survey 2004-2005*. Calverton, MD: Ministry of Health and ORC Macro.
- MOH - see Ministry of Health(of Uganda)
- National Drug Authority. 2010. Kampala; Uganda. <http://www.nda.or.ug/uploads/Guideline%20on%20GMP.pdf> (accessed 2/2/2013)
- New Mexico AIDS Education and Training Centre. 2006. What is antiretroviral therapy (art)? Available from: www.aidsinonet.org/factsheet_detail.php?fsnumber=403 (accessed on 18/06/2007).

- Ogunbodede, E.O. 2004. HIV/AIDS situation in Africa. *International Dental Journal*, 6(1):352-60.
- Rundell, M. 2006. *Macmillan English Dictionary for Advanced Learners*. International student edition. Oxford: Macmillan.
- The AIDS Education & Training Centers (AETC). 2006. CD4 monitoring and viral load testing. Clinical manual for management of the HIV-Infected adult. Available from: http://www.aidsetc.org/aetc?page=cm-107_cd4_monitor (accessed on 31 May 2007).
- Tredoux, C. & Durrheim, K. 2002. *Numbers, hypotheses and conclusions: a course in statistics for the social sciences*. Cape Town: University of Cape Town Press.
- UAC – see Uganda AIDS Commission.
- Uganda AIDS Commission. 2006. *The Uganda HIV/AIDS status report. July 2004 – December 2005*. Kampala: Uganda Publishing and Printing Corporation.
- Uganda AIDS Commission. 2007. *Moving toward universal access: national HIV & AIDS strategic plan 2007/8 – 2011/12*. Kampala: Uganda AIDS Commission, Republic of Uganda.