

Appraisal of the inherent socio-demographic dynamics of HIV/AIDS epidemic in four districts of South-Western Uganda

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Abstract

Although HIV prevalence in Uganda is much lower than it once was, AIDS is still claiming many lives each year with clear signs of escalating rural epidemics. The objective of this study was to appraise the socio-economic and demographic dynamics of HIV/AIDS epidemic in South-Western Uganda. Data were collected with standard closed ended semi-structured questionnaires self-administered to consenting, 605 HIV/AIDS patients, selected using the multistage random sampling technique, logistic linear regression, randomized block design and Pearson's Chi square test ($\alpha=0.01$) were used to analyse the data obtained. The duration of carriage was inversely proportional ($r=-0.94$) to population of HIV/AIDS patients surveyed. There were 98.2% Bantu (55.5% Banyankole and 22.6% Baganda); 77.5% females and 22.5% males; more widows (38.0%) than married (35.5%). HIV/AIDS prevalence generally decreased with increasing level of education. The highest (66.7%) HIV/AIDS prevalence was recorded in Bushenyi, followed by 58.4% in Masaka, 57.9% in Mbarara and 53.3% in Rukungiri. Rukungiri patients above 60 years of age harboured 57.1% HIV/AIDS followed by 45.5% among Masaka patients aged 11 - 20 years and 40% among Mbarara patients less than 10 years of age. HIV/AIDS prevalence was significantly ($p<0.05$) dependent on socio-economic and demographic factors of surveyed population. Therefore socio-economic and demographic factors underlie HIV/AIDS prevalence in this region. Observed differences in prevalence of HIV/AIDS between the surveyed districts were remarkable and warrant regular surveillance for updated disease epidemiology. Education can debunk the generally misconstrued roles of social, economic and demographic factors in the spread of HIV/AIDS.

Keywords: Socio-demographic and economic factors, HIV/AIDS prevalence, Uganda.

Résumé

Bien que la prévalence du VIH en Ouganda soit nettement inférieure à ce qu'elle a pu être, le Sida continue à emporter de nouvelles vies chaque année, avec de claires indications d'une progression de l'épidémie en zone rurale. L'objectif de cette étude était d'évaluer les dynamiques socioéconomiques et démographiques de l'épidémie de VIH/Sida dans le Sud-ouest de l'Ouganda. Des données ont été recueillies au moyen de questionnaires standard à questions fermées semi-structurés et auto-administrés distribués à 605 patients séropositifs consentants, sélectionnés au moyen d'une technique d'échantillonnage aléatoire à plusieurs degrés, une régression linéaire et logistique ; un dispositif aléatoire par blocs et le test du chi-carré de Pearson ($\alpha=0.01$) ont été utilisés afin d'analyser les données obtenues. La durée de la présence de la maladie était inversement proportionnelle ($r=-0.94$) à la population des patients séropositifs étudiés. Cette population était comme suit: 98.2% de Bantu (composés de: 55.5% de Banyankole et 22.6% de Baganda); 77.5% de femmes et 22.5% d'hommes; un plus grand nombre de veuves (38.0%) que de femmes mariées (35.5%). La prévalence du VIH/Sida diminue généralement avec une hausse du niveau d'éducation. La prévalence la plus élevée (66.7%) du VIH/Sida a été enregistrée à Bushenyi, suivie de: 58.4% à Masaka, 57.9% à Mbarara et 53.3% à Rukungiri. Les patients âgés de plus de 60 ans à Rukungiri présentaient des taux de VIH/Sida de 57.1%, suivis de 45.5% chez les patients de Masaka âgés de 11 à 20 ans, et de 40% chez les patients de Mbarara âgés de moins de 10 ans. La prévalence du VIH/Sida était étroitement associée ($p<0.05$) aux facteurs socioéconomiques et démographiques de la population étudiée. Par conséquent, des facteurs socioéconomiques et démographiques influencent la prévalence du VIH/Sida dans cette région. Les différences observées dans la prévalence du VIH/Sida entre les districts étudiés étaient marquées et nécessitaient une surveillance régulière afin de pouvoir disposer d'une épidémiologie à jour de la maladie. L'éducation peut réfuter les rôles généralement mal interprétés des facteurs sociaux, économiques et démographiques dans la diffusion du VIH/Sida.

Mots clés: Facteurs sociodémographiques et économiques, prévalence du VIH/Sida, Ouganda.

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Introduction

At the end of 2008, 33.4 million people were known to be living with HIV-1, 2.7 million individuals became newly infected, and 2.1 million people died of AIDS (UNAIDS, 2008). Sub-Saharan Africa now accounts for 68% of persons living with HIV/AIDS worldwide and for 76% of all deaths due to AIDS (UNAIDS, 2006, 2007). As of 2008, 61% Africans infected with HIV-1 were women and 90% of HIV-1 infected children live in Africa. Infection with HIV-2 is associated with a slower progression to immune deficiency, and HIV-2 may be less efficiently transmitted, even from infected women to their offspring (Jaffar, Grant, Whitworth, Smith, & Whittle, 2004).

Most countries in the world have concentrated HIV-1 epidemics, in which HIV-1 infection is detected in specific groups at risk, including homosexuals, injecting drug users, sex workers, and the regular partners of such persons (Cohen, Hellmann, Levy, DeCock, & Lange, 2008). In African settings of generalised epidemics, the risk of infection with HIV-1 is not equal across societies but is increased in persons with higher rates of partner change or who acquire classical sexually transmitted diseases (STDs) and/or in persons who experience other significant potential exposure(s) to HIV-1, such as injection drug use (Cohen *et al.*, 2008).

Uganda is one of the few African countries with reports of declining rates of HIV infection, and it is seen as a rare example of success in a continent facing a severe AIDS crisis. The Uganda approach clearly communicated the reality of the AIDS epidemic in terms of a rational fear of the risks of casual sex, which drew on and mobilised indigenous responses at the community level (Okware, Opio, Musunguzi, & Waibale, 2001). The accurate and generally acceptable interpretation of HIV declines in Uganda is still uncertain because of speculations that decline related more to the effects of HIV on mortality and fertility, inaccuracies of surveillance systems, urban bias, migration, civil war, or natural HIV dynamics (UNAIDS, 1998; 1999). There are reasons to support the fact that reductions in HIV incidence in Uganda can be linked to intervention outcome including change in risky behaviour (Green, Halperin, Nantulya, & Hogle, 2006; Mermin, Musunguzi, Opio, Kirungi, Ekwaru & Hladik, *et al.*, 2008).

Although HIV prevalence in Uganda is much lower than it once was, AIDS is still claiming many lives each year with clear signs of escalating rural epidemics. There are few national and community-based studies on the distribution and determinants of HIV infection, there is inadequate information on behaviour change, promotion of condom use, counselling and control of sexually transmitted diseases among HIV/AIDS patients. There is relatively little information available from rural remote settings, where the dynamics and epidemiology of HIV infection is likely to be different, and there are no update on the socio-demographic and biological factors which underlie the course of HIV/AIDS epidemic (Arroyo, Saterén, Serwadda, Gray, Wawer, Sewankambo, *et al.*, 2006; Zablotska, Gray, Serwadda, Nalugoda, Kigozi, Sewankambo *et al.*, 2006; Kamali, Kinsman, Nalweyiso, Mitchell, Kanyesigye, Kengeya *et al.*, 2002; Wawer, Serwadda, Musgrave, Konde-Lule, Musagara, & Sewankambo, 1991, Uganda-MOH 2006). Therefore the aim of this community-based prospective cross-sectional study was to appraise the socio-economic and demographic dynamics of HIV/

AIDS epidemic in four districts of South-Western Uganda with the ultimate goal of providing updated surveillance paramount in formulating effective prevention and control strategy.

Materials and methods

Sampling area and inclusion criteria

HIV/AIDS patients attending clinics at The AIDS Support Organization (TASO, Uganda Cares, Comboni hospital and Ishaka Adventist hospital all located in Masaka, Rukungiri, Bushenyi and Mbarara districts of South Western Uganda participated in this study. HIV/AIDS patients included in this study had the following characteristics: they must have tested positive to HIV using any two immune-serological methods including enzyme-linked immunosorbent assay (ELISA), must have had HIV/AIDS clinical staging done not earlier than one month prior to this investigation and must be currently registered HIV/AIDS patients at any of TASO, Uganda Cares, Comboni hospital and Ishaka Adventist hospital. Selection of districts and HIV/AIDS centres were based on (district and centre) participation in our previous similar study in which we appraised the oral lesion status of a similar HIV/AIDS cohort (Agwu, Ihongbe, Tirwomwe, Pazos, Tirwomwe, & Casadesus, 2008). Those who chose not to participate did so due to strictly personal reasons, or could not understand how the study will improve their individual situations, because of lack of financial or other material incentives or due to stigma.

Ethical considerations

This study was approved by the Uganda National Council of Science and Technology, Kampala International University Research & Ethics Committee; TASO, Uganda Cares; Comboni hospital; Ishaka Adventist hospital, and patients through informed consent. Letters were written in English and interpreted into local languages spoken at the various TASO centres. TASO clients were expected to sign or have their thumb printed to show approval for sample collection. Where the clients could not read or write in English or local languages, the letter containing the benefits of the research study was read and interpreted to the clients. Participants were informed that participation was free, optional and attracted no consequence for those who chose not to participate.

Study design and data collection

This was a prospective cross-sectional study designed to appraise the inherent socio-demographic and cultural dynamics of HIV/AIDS epidemic in four districts of South-Western Uganda. Closed ended questionnaires were self-administered to consenting HIV/AIDS patients selected using the multistage random sampling techniques (Grais, Rose and Guthmann, 2007). Contents of the questionnaires were interpreted in local languages for patients who could not read or write and afterwards were assisted to fill the questionnaires. Data obtained from consenting patients included time patients knew their HIV status, ethnicity, tribe, gender, marital status, occupation, educational level, age and district of residence. Demographic characteristics of randomly selected HIV/AIDS patients at the community level were used to predict the impact of known and existing culture and tradition of South-Western Uganda, in the HIV/AIDS epidemic.

The 605 patients sampled were guided by the upper limit required to give 95% level of confidence at an expected prevalence of about 55%

(Tirwomwe, Rwenyonyi, Muwazi, Besigye, Amboli, 2007), using the precise prevalence formula: Sample size (n) = $Z^2 P (100-P)/D^2$ (EpiInfo, Version 6: database, 1995), where Z is a constant given as (1.96), P is expected prevalence (55%), and D is acceptable error (5%).

Data analysis

Using the statistical package for social sciences (SPSS) version ten, logistic linear regression was used to test the strength of association between duration of HIV carriage and prevalence of HIV/AIDS. The randomized block design (RBD) and completely randomized design (CRD) ($\alpha=0.1$) summarised as [Total sum of squares (SS_t) = Sum of squares due to different effects (SS_d) + Error sum of effects (SS_e)] (randomized block design, 2006), for one observation per treatment were used to test for the relationship between demographic data and prevalence of HIV/AIDS among the studied population. Fisher's least significant difference (FLSD; $\alpha=0.05$) was used to test for levels of significance identified relationships. In selection, Pearson's Chi square test was used to test for the independence of each frequency distribution observed ($\alpha=0.01$).

Results

Six hundred and five HIV/AIDS patients (484 (80%) from TASO clinics, 61 (10%) from Uganda Cares; 48 (8%) from Comboni hospital and 12 (2%) from Ishaka Adventist hospital) consented to this study. Five (0.8%) had known their HIV/AIDS status for 12 - 20 years, 40 (6.6%) had known their status for 7 - 12 years, 248 (41.0%) had known their status for 2 - 7 years, 304 (50.2%) had known their status for 1 - 2 years, and 8 patients had no record to help determine the duration of their carriage of HIV/AIDS. The duration of HIV carriage was inversely proportional ($r=-0.94$) to number of sero-positive HIV/AIDS patients.

Two Ethnic (598 (98.2%) Bantus and 7 (1.2%) Nile Hermites) made of five tribes (336 (55.5%) Banyankole; 137 (22.6%) Baganda; 68 (11.2%) Bahororo; 59 (9.8%) Bakiga; 2 (0.3%) Banyarwanda and those whose tribe were not recorded were 3 (0.5%)) participated in this study (Table 1). Prevalence of HIV/AIDS was significantly ($p<0.01$) dependent on tribe and ethnicity.

Females 469 (77.5%) were more than males 136 (22.5%, Table 2) with the highest (84.3%) female HIV/AIDS prevalence coming

from Mbarara district followed by 76.3% in Bushenyi, 75.4% in Masaka and 71.7% in Rukungiri districts of Uganda. The 28.3% male positive HIV/AIDS prevalence was the highest recorded in Rukungiri district, followed by 24.6% in Masaka, 23.7% in Bushenyi and 15.7% in Mbarara districts of Uganda. Prevalence of HIV/AIDS was significantly ($p<0.01$) dependent on the gender (Table 2) of studied population.

Table 2. Gender-specific percentage positive prevalence of HIV infections among the 605 patients surveyed*

Districts	Number sampled	Female	Male
Mbarara	197	166 (84.3)	31 (15.7)
Bushenyi	114	87 (76.3)	27 (23.7)
Rukungiri	152	109 (71.7)	43 (28.3)
Masaka	142	107 (75.4)	35 (24.6)
Total	605 (100.0)	469 (77.5)	136(22.5)

*Prevalence of HIV/AIDS varied significantly ($p<0.05$) with districts and gender.

Widows were highest in number 230 (38.0%), followed by the married 215 (35.5%), the single 121 (20.0%) and the separated 39 (6.5%). Peasant farmers 434 (71.7%), were the majority, followed by 90 (14.9%) the jobless, 31 (5.1%) traders, 27 (4.5%) students and 23 (3.8%) teachers. Prevalence of HIV/AIDS was significantly ($p<0.01$) dependent on marital status and occupation (Table 3).

Table 4 revealed that the population with primary education had the highest HIV/AIDS prevalence across the districts (Mbarara 57.9%, Bushenyi 66.7%, Rukungiri 53.3% and Masaka 58.4%). This was followed by those with no education (Mbarara 33.0%, Bushenyi 23.7%, Rukungiri 39.5% and Masaka 28.2%), those with secondary education (Mbarara 9.1%, Bushenyi 9.6%, Rukungiri 5.9% and Masaka 11.3%) and those with tertiary education (Mbarara 0.0%, Bushenyi 0.0%, Rukungiri 1.3% and Masaka 2.1%).

Prevalence of HIV/AIDS was not significantly ($p>0.01$) dependent on educational status (Table 4).

Table 5 shows the highest (57.1%) HIV/AIDS prevalence among Rukungiri patients above 60 years of age followed by 45.5% among Masaka patients aged 11 - 20 years and 40% among Mbarara patients less than 10 years of age. Table 5 also depicts the age group 31 - 40 years showing a uniformly high HIV/AIDS positive prevalence across the districts surveyed (Mbarara 36.0%, Masaka 23.4%, Rukungiri 22.0%, Bushenyi 18.6%). The age group 41 - 50 years also uniformly showed high HIV/AIDS prevalence across the districts surveyed (Mbarara 33.0%, Rukungiri 28.9%, Masaka 19.6%, Bushenyi 18.5%). Other patients presented positive prevalence of HIV/AIDS as shown in Table 5. Prevalence of HIV/AIDS was significantly ($p< 0.05$) dependent on age.

Discussion

The result of the tribal status of the 605 HIV/AIDS studied population (Table 1) may denote that every population of 98.2% 'Bantu' ethnics has more 'Banyankole' tribe (55.5%), followed by Baganda (22.6%), 'Bahororo' (11.2%), 'Bakiga' (9.8%), and

Table 1. Percentage positive prevalence of HIV infection in relation to the ethnic and tribal status of 605 patients surveyed*

Description	Number (%) positive
Ethnic status	
Bantu	598 (98.8)
Nile Hermites	7 (1.2)
Tribal status	
Munyankole	336 (55.5)
Muganda	137 (22.6)
Muhororo	68 (11.2)
Mukiga	59 (9.8)
Munyarwanda	2 (0.3)
Others	3 (0.5)

*Prevalence of HIV/AIDS was significantly ($p<0.01$) dependent on tribe and ethnicity.

Table 3. Percentage positive prevalence of HIV/AIDS in relation to marital status and occupation of 605 patients surveyed*

Marital status	Number (%) positive	Occupation	Number (%) positive
Single	121 (20.0%)	Peasant farmers	434 (71.7%)
Married	215 (35.5%)	Traders	31 (5.1%)
Widowed	230 (38.0%)	Students	27 (4.5%)
Separated	39 (6.5%)	No occupation	90 (14.9%)

*Prevalence of HIV/AIDS varied significantly with marital status ($p < 0.05$) and occupation ($p < 0.01$).

Table 4. Percentage positive prevalence of HIV infection in relation to educational status of 605 patients surveyed*

District	Number sampled	No education	Primary	Secondary	Tertiary
Mbarara	197	65 (33.0)	114 (57.9)	18 (9.1)	0 (0.0)
Bushenyi	114	27 (23.7)	76 (66.7)	11 (9.6)	0 (0.0)
Rukungiri	152	60 (39.5)	81 (53.3)	9 (5.9)	2 (1.3)
Masaka	142	40 (28.2)	83 (58.4)	16 (11.3)	3 (2.1)

*Prevalence of HIV/AIDS was not significantly ($p > 0.01$) dependent on education status.

Table 5. Age-specific percentage positive prevalence of HIV infection among patients surveyed*

Age (years)	Number sampled	Mbarara	Bushenyi	Rukungiri	Masaka
1 - 10	5	2(40.0)	1(20.0)	1(20.0)	1(20.0)
11 - 20	11	1(9.1)	4(36.3)	1(9.1)	5(45.5)
21 - 30	81	22(27.2)	14(17.3)	22(27.1)	23(28.4)
31 - 40	264	95(36.0)	49(18.6)	58(22.0)	62(23.4)
41 - 50	173	57(33.0)	32(18.5)	50(28.9)	34(19.6)
51 - 60	57	20(35.0)	12(21.1)	12(21.1)	13(22.8)
>60	14	0(0.0)	2(14.3)	8 (57.1)	4 (28.6)

*Prevalence of HIV/AIDS was significantly ($p < 0.05$) dependent on age.

'Banyaruwanda' (0.3%). Ethnicity and tribe are significant ($p < 0.01$) factors in the regional spread of HIV/AIDS (Table 1).

The 77.5% female susceptibility to HIV/AIDS compared with 22.5% in males observed in this study (Table 2) was similar to earlier Uganda report (Calvares, Bame, & Nume, 2007), but different from a Tanzanian report of higher male susceptibility to HIV/AIDS than females (Blystad, 2004). Gender was a significant ($p < 0.05$) risk factor for spread of HIV (Table 2). In the Tanzanian reports by Blystad (2000; 2004), higher risks in men were associated with multiple sexual partners (either by polygamy or infidelity) and higher prevalence in men may pose a potential threat to women, because socio-cultural values deny women the power of negotiation in sexual relationships with their partners. Meanwhile, studies on sexuality in different cultures of Uganda have identified the following eight reasons why women are particularly more vulnerable to contracting HIV and other STDs, than men (Ssegendo and Sakatawa, 1999; Calvares *et al.*, 2007):

- Females are physiologically more vulnerable to HIV infection than males after sex because after sex semen which has high concentrations of virus remains in the vaginal canal for a relatively longer time and pass through the extensive surface area of the mucous membrane of the vaginal canal and the cervix to cause infection.

- Marriage at a young age (12 - 15 years), when most females' body may not be fully ready for sexual activity.
- Polygamy due to failure of the first wife to have children, improved wealth economic status, poor marital relationships or conflicts.
- Wife sharing, e.g. among the 'Bahima' (Nkore) the father of a new bridegroom has a right to have the first sexual access to the new bride.
- Marital instability, where among the 'Baganda' and 'Bakiga', divorce, broken homes and marital separation are common.
- Widow inheritance, where upon the death of her husband a woman is inherited by one of the dead husband's relatives, usually a brother or an older son by another wife.
- Extramarital sexual affairs: social norms forbid married women from going outside marriage for sex while the same norm may not apply to men.
- Calvares *et al.* (2007) reported that women are usually reluctant to disclose a sero-positive status or suggest condom use which might imply suspicion on her part or on the husband's part. Thus unsafe sex continues.

These critical and interconnected factors place gender issues at the core of the HIV/AIDS pandemic in this region. Understanding and explicitly acting on these gender dynamics is essential if Africa

is to halt or reverse, the AIDS pandemic and address its long-term impact.

In Table 3 there were more HIV/AIDS widows (38.0%) than the married (35.5%), the single (20.0%) and the separated (6.5%). This finding is different from our earlier report in Nigeria where the singles were the highest in prevalence of HIV infection compared with others (Okogun, Agwu, Imomon, & Okam, 2005). HIV/AIDS prevalence was significantly ($p < 0.01$) dependent on marital status, suggesting that marital status may be a critical factor that determines the spread of HIV infection. Contrary to our expectations, the married ranked second in HIV infection prevalence (Table 3). This is in line with current Uganda studies (MOH-Uganda, 2006) which show that the highest infection rate is now amongst married females 15 - 49 years old (5.9%). The impact of HIV/AIDS on the married may be evident by the commonly seen African situations in which mothers sell sex for money, the boy children drop out of school and the girl child may face the danger of sex abuse and defilement just to sustain the family, incapacitated by death of HIV/AIDS-infected father.

Peasant farmers make up 71.7% of the population studied and HIV/AIDS prevalence was significantly ($p < 0.01$) dependent on occupation, suggesting that occupation may be a critical factor that determines the spread of HIV infection in this region. At the community level, reduction of HIV/AIDS through avoidance of risky sexual behaviour leading to HIV infection (Green *et al.*, 2006) may be costly and needs gainful employment which may be available in Kampala (Calvares *et al.*, 2007) compared with the remote areas like Mitoma, Kigarama, Nyihanga, Comboni, Ibanda and Katungu, villages which formed the bulk of the population surveyed.

HIV/AIDS prevalence was not significantly ($p > 0.01$) dependent on education (Table 4), suggesting that level of education was not a critical ($p > 0.01$) factor determining the spread of HIV infection in this region. This may explain why people with primary education had higher HIV prevalence than the uneducated. This study identified a decreasing trend of HIV prevalence with rising level of education (primary to tertiary). Higher HIV prevalence observed among the uneducated agrees with the report of Hargreaves, Bonell, Boler, Boccia, Birdthistle, Fletcher, *et al.* (2008) and is the same even in countries where the overall HIV prevalence rate is still escalating (Vandemoortele & Delamonica, 2000). Thus, higher level of education facilitates the understanding of HIV/AIDS specific information, and may therefore contribute to reduction of the risk of the disease (UNICEF, 2000).

Meanwhile, six known factors listed below with regard to education of the masses about HIV infection may have assisted Uganda to achieve its success in combating HIV/AIDS (USAID, 2002). The overall message was the strategy of 'ABC' approaches implying Abstinence until marriage, Be faithful to a single partner and always use Condom.

- The message about HIV and AIDS was effectively communicated to a diverse population by Government and by word of mouth, especially at the grass-root level.
- Formation of community-based organisations where Ugandans were recruited to help themselves in the fight against HIV/AIDS.

- Fear of death lead to avoidance of risky behaviour, especially when the people know someone who died of HIV/AIDS.
- The simple message of 'zero grazing' which instructed people to avoid casual sex.
- Political openness, associated risks, knowledge of how risks may be avoided and honesty regarding the epidemic.
- Distribution of antiretroviral therapy from the inception of the pandemic was thorough.

Our study (Table 5) shows that the burden of HIV infection is highest (57.1%) in the age groups above 60 years and 45.5% in teenagers aged 11 - 20 years. HIV/AIDS prevalence within an age group was not significantly ($p > 0.01$) dependent on district of residence but was significantly ($p < 0.01$) dependent on how old an age-group was, suggesting that age may be a critical factor determining the spread of HIV infection. This distribution is consistent with findings from other studies showing a shift in the burden of HIV infection from young adults aged 20 - 25 years old, as previously described in the late 1980s and early 1990s (Whitworth, Mahe, Mbulaiteye, Nakiyingi, Ruberantwari, Ojwiya, *et al.*, 2002, UNAIDS, 2002) to older adults (Uganda MOH, 2006) or teenagers (Okogun, *et al.*, 2005). This shift in burden has been attributed to HIV risk reduction (Okware *et al.* 2001). The relatively low HIV prevalence among young adults compared with older adults seems to suggest that most of the prevalent HIV infections in these communities may have occurred in the remote past, suggesting a possible cohort effect.

In Uganda, Ssegendo and Sekatawa (1999) had earlier reported a characteristic increasing HIV/AIDS prevalence with age among males. Mbarara and Masaka Districts ranking first in HIV prevalence in age groups 31 - 60 years and 11 - 30 years could be explained by high sexual activities common along cities and trading centres located on the highway running from Kampala through Masaka and Mbarara to Kasese. Mbarara, being the centre of commerce in the western districts of Uganda attracts all calibres of people from surrounding towns, districts and even from Rwanda and Democratic Republic of Congo (DRC), who may not be ready to avoid risk associated with HIV transmission. The presence of sexually active university students at Mbarara who may be too excited to avoid risky life associated with HIV transmission could explain why Mbarara predominated in HIV/AIDS prevalence compared with other districts surveyed. Relatively low HIV/AIDS prevalence in the age group 21 - 30 years may be explained by either unwillingness of this age group to seek medical assistance due to stigma, unknown HIV status, or most people infected in this group still have the virus at the incubation stage. This observed trend may also be pointing towards rapid progression from HIV infection to AIDS.

Conclusions

Social and economic factors underlie HIV/AIDS infection in this region. The observed gender dynamics (Table 2) may be due to reported social and cultural factors associated with HIV/AIDS infection such as physiologically high vulnerability of girls to HIV infection than males, early marriage, polygamy, wife sharing, marriage instability, widow inheritance, extramarital affairs and unwillingness to seek medical advice due to culturally inherent male machismo in South-Western Uganda. The duration of HIV/

AIDS carriage had inverse ($r=-0.94$) relationship with population of HIV/AIDS patients surveyed. HIV/AIDS prevalence generally decreased with increasing level of education. Observed prevalence of HIV/AIDS between the districts was remarkable and warrants constant update on regional surveillance on disease epidemiology. HIV/AIDS prevalence was significantly ($p<0.05$) dependent on socio-demographic characteristics of surveyed population.

The observed significant ($p<0.05$) association of HIV/AIDS prevalence and demographic characteristic of the surveyed tribes may depict the demographic dynamics of HIV/AIDS in South-Western Uganda. Although HIV/AIDS infection did not depend on level of education ($p>0.01$; Table 4), ironically education of the masses as an intervention strategy was reported to have contributed to Uganda success story of HIV/AIDS reduction (Green, 2006; Calvares *et al.*, 2007). Efforts to debunk the negative effects of generally misconstrued roles of social, economic and demographic factors in the spread of HIV/AIDS are recommended.

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