



The impact of the economics of poverty and migration on sexual behaviour in the era of HIV and AIDS in Botswana

Brothers Wilright Malema*

Department of Economics, University of Botswana, Gaborone, Botswana

Abstract

This article investigates the role of socioeconomic variables in particular poverty and migration on sexual behavior. It uses data from the national survey by the Central Statistics Office and the National AIDS Coordinating Agency (NACA). Logistic regression analysis and the subsequent marginal effects are used for analysis. The regressions were run for females and males separately. Amongst females the never married were more likely to be unfaithful than the married, none professionals were more likely to be unfaithful than the unemployed, sex for money led to more unfaithfulness and migration (Away) was also positively related to unfaithfulness. Age at first sex and having had an HIV test promotes faithfulness amongst females. In the case of males the results show that males of all professions were more unfaithful than the unemployed males, sex for money and migration promotes multiplicity of partners, the never married and those living together are more unfaithful than the married males and age at first sex and the age of the respondent promoted faithfulness. There is no conclusive evidence that poverty promotes unfaithfulness as females of high rewarding occupations were not any different to those who were unemployed in terms number of partners whereas employed males were more unfaithful than the unemployed ones. However, migration was found to be instrumental in promoting unfaithfulness in Botswana as has been the case in some countries.

Keywords: HIV/AIDS; Poverty; Migration; Botswana

Published by ISDS LLC, Japan | Copyright © 2014 by the Author(s) | This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.



Cite this article as: Malema, B.W. (2014), "The impact of the economics of poverty and migration on sexual behaviour in the era of HIV and AIDS in Botswana", *International Journal of Development and Sustainability*, Vol. 3 No. 2, pp. 337-352.

1. Introduction

The severity of the African AIDS epidemic is attributed to poverty as men are forced to migrate and end up having multiple sex partners. Women also respond to the economic hardships by resorting to commercial sex work as a means of sustenance, thus exposing themselves to the risk of infection (Copson, 2003). HIV/AIDS is a development crisis, which deepens poverty and aggravates inequalities at all levels be they household, regional, sectoral or global (Barnett and Whiteside, 2002). While the scourge is present in all regions of the world, 95 percent of infections occur in developing countries due to poverty, lack of education, inadequate medical systems and limited resources for prevention (Ndiaye, 2004).

Even though at its stage of inception, HIV/AIDS was associated with the economically advantaged though often, socially stigmatized – white gay males – in the United States, the HIV infection rates are now rising disproportionately amongst the low-income black men and women. This has prompted researchers to seek ways of addressing the complex, economic, and cultural contexts of this epidemic for the economically disadvantaged groups and for racial and ethnic minorities (Anon, 2006).

Botswana has done quite well economically and politically. The country has experienced one of the fastest growing economies in the world following the discovery of diamonds in the 1970s. As much as the country has been the envy of other African countries because of its remarkable economic growth, it has at the same time experienced increasing poverty that is however, estimated to be declining of late. The country has also experienced one of the worst AIDS crises in the world. The impetus for this epidemic is not clear and while the literature is replete with evidence that migration and poverty are often instrumental in high infection rates of HIV, there has not been a study conducted in Botswana to establish the effect of the two factors. It could be possible that such a study will help unravel the factors that have contributed to such a scenario. The fact that Botswana was experiencing an economic boom may have led to an influx of immigrants which might have led to an increase in the country's epidemic or alternatively at their places of origin. It is also possible that the escalating poverty may have contributed to the scourge in the country. Surprisingly a study by Malema (2009b) found a positive relationship between HIV status and education. Assuming a positive correlation between education and incomes, this could most probably undermine the role of income in HIV prevention. However, given the gender dynamics of HIV as replete in the literature, it could be thought that men use their financial power to fuel the scourge. Whereas this article seeks to investigate the effect of poverty and migration or mobility on the risk of HIV infection in the country through multiplicity of partners, it does not in any way come close to furnishing us with an explication as to why, the country has been hard hit by HIV/AIDS. The results of this chapter can only inform us about people's sexual behaviour through faithfulness in order to minimize transmission of HIV/AIDS.

Botswana has not been spared the debilitating effects of HIV/AIDS. It is one of the worst affected regions in the world with the prevalence rates being in excess of 35 percent. As much as the government is doing everything in its power to fight the scourge, including the free provision of Anti-Retroviral drugs (Malema and Koch, 2008) the need to keep on investigating the factors fuelling the spread of HIV/AIDS is paramount for appropriate remedial measures. In this particular chapter we try to investigate the extent to which migration or mobility as approximated by partners staying apart and poverty as approximated by

unemployment have most likely contributed to the scenario as currently observed. This is necessitated by the observation that migration and poverty are instrumental in fuelling the spread of HIV/AIDS.

2. Poverty

The role poverty plays in HIV/AIDS proliferation is multifaceted. It includes increased rural-urban migration, limited access to education, health care, nutrition and information and leads to sexual exploitation and gender inequality (Casale and Whiteside, 2006). Food insecurity and malnutrition may increase HIV infection by increasing people's exposure to the virus and infection following exposure (Gillespie and Kadiyala, 2005). Poverty deprives Africa of effective systems of health information, education and care. There are many Africans, who suffer from untreated sexually transmitted infections and this has increased their vulnerability to HIV infection. This is exacerbated by the fact that some of them may be women who have been forced by poverty to become commercial sex workers, thereby increasing their susceptibility to infection. This coupled with limited capabilities for AIDS prevention; HIV counseling and testing has aggravated the epidemic (Copson, 2003).

The epidemic leads to resource, income and financial impoverishment as households become poor due to illness and death of members who are often income earning adults (Barnett and Whiteside, 2002). The economic impact is great amongst the poor and the very poor. Families and communities are greatly affected through losses in income from those infected and their caregivers. In addition, there are other losses related to health care, funeral expenses, savings, homes, and increased indebtedness and losses of future earnings. Investments are lost as children drop out of school to earn money or help caregivers and resources such as land are lost to cover health costs. For instance, in Cambodia, catastrophic illnesses including HIV/AIDS were found to have a profound impact on land losses among landless households. A recent death in a poor household was found to have been associated with lower school enrollment, indebtedness, unemployment and lower household wealth. In India the financial burden for poor households living with HIV were as high as 82 percent whereas the percentage was just above 20 among the richest quintile (Asian Development Bank, 2005).

The observation that young women are more infected than young men is attributable amongst others to the downward trend of many African economies, which has led to young girls developing relationships with older men due to opportunities for financial gain and social security accorded by older men (Copson, 2003). There are indications that cross generational relationships exist in Botswana as elsewhere and may be driven by materialistic gains (Malema, 2009a).

Studies in Sub – Saharan Africa in the 1980s observed a positive correlation between HIV contraction and some socioeconomic factors such as education, income and wealth (Chapoto and Jayne, 2005). This, the authors argue, may have changed in some parts of the sub region, as poverty is thought to have forced some households to adopt more risky behaviours that contribute to HIV infection and hence a more disproportionate effect of AIDS related mortality on poor households. However, they note that there is no conclusive hard evidence to that effect. In their study in Zambia, Chapoto A. and Jayne T. S. (Chapoto and

Jayne, 2005), made a couple of findings. Firstly, they found a positive correlation between prime age (PA) mortality – death for those aged between 15 to 59 – and HIV prevalence. Secondly, there are more women dying from AIDS than men. Thirdly, AIDS related deaths affected disproportionately well-educated rural men with no such relationship for rural women. It was discovered that high-income men with less than three years of schooling were twice likely to die than men with at-least eight years of education but with similar socio-economic status. Besides this income group there was no relationship between educational attainment and probability of PA death. Fourthly, men and women in the upper half of the income bracket are 44.4 percent and 23.3 percent respectively, more likely to die, than men and women in the lower half of the income bracket. Based on this finding, they question the view that poverty may be leading to risky behaviour through which the disease is spread, even though they acknowledge it as a possible pathway in the spread of the disease. Women, who were earning some salary or wage, were 5-10 percent less likely to die, than women who were not earning some salary or wage, although they had same socioeconomic characteristics. Their fifth finding was that low-income men who spent at least a month from home were more than twice likely to die than those who spent their time at home throughout the year. The sixth finding was that the marginal probability of dying from AIDS and its related causes rises steeply after age 15 and picks at ages 30 – 34 for women and 50 – 54 for men, thereby confirming earlier observations that women are most likely to die at young age than men. Their seventh and last finding was that prior death of an adult in the household was the most important single factor indicating that there will be prime age death in the household because of illness and AIDS. The probability that a PA death would occur in such a household was 6-7 times higher than households, which have not had PA death in the past eight years, irrespective of gender and income status. The PA death of at-least two members of the household had adverse consequences on the remaining members and this calls for programmes and strategies to support orphans, particularly in hard-hit areas such as eastern and southern Africa.

The economic conditions in Africa at the time the AIDS epidemic began reveal a compromised health environment. There was a decrease in food production, calorie supply and protein supply per capita in sub Saharan Africa between 1970 and 1997 and of the nineteen famines that took place world wide from 1975 to 1998, eighteen of them were in Africa and 30 percent of Africa's population was malnourished. In low and middle income countries a strong correlation has been observed between HIV prevalence on the one hand and falling protein and calorie consumption, unequal income distribution and to a lesser extent labour migration. Poverty thus creates biological conditions conducive for infectious diseases and also limits options for treating diseases. In South Asia, Latin America and Africa, the poor may have access to health care but clinics may not have antibiotics to treat bacterial STDs which are co-factors for AIDS. Such bacterial STDs are relatively uncommon in rich countries because of antibiotics (Stillwaggon, 2001). The spread of the virus in the developing world is fuelled by poverty, poor health systems and limited resources for prevention (UNESCO AND UNAIDS, 2000).

3. Migration

Since the advent of HIV/AIDS research, migration and HIV/AIDS have been associated phenomena, since population movements favour occasional and unprotected sexual relations, making the migrant both potential host and vector for HIV (Caballero et al., 2002). It is not necessarily the population mobility per se that contributes to HIV/AIDS vulnerability, but rather the social contexts and interactions that occur during migration which are the major contributing factors. Women are more likely to continue with their journey to the place of destination because they have something to offer - copulation - in exchange for safe passage. Copulation is therefore an important resource that women use to negotiate their integration, survival and safety on their way to places of destination or origin if migration authorities deport them. Survival sexual intercourse becomes a mechanism for them to obtain resources, food or shelter (Caballero et al., 2002).

In countries of Central America, migration provides an escape route from poverty, lack of social services such as education and health care and unemployment. Initially this served to mitigate social tensions but now provides a source of revenue for countries of origin through income sent back by migrants to their families (Caballero et al., 2002). This migration is in response to economic crises which have hit the area in the last two decades prompting women to migrate in pursuit of better paying jobs.. The ever-increasing number of women who are heads of households further necessitates this.

The rate of HIV infection in Tijuana, Mexico is increasing and at higher rates than has been previously estimated. Tijuana is located south of San Diego, California in the border between Mexico and the United States. The high rates are attributable to high mobility between Tijuana and San Diego County (Kain, 2006.). There are other factors associated to this rise amongst which is the proximity to the United States, which accords economic opportunities that attracts migrants from Mexico. Such migration is linked to lower socio-economic status, lower awareness of HIV/AIDS, social and political alienation and the need to turn to substance abuse and sex work of which all contribute to susceptibility to HIV infection. Injection drug use and sex trade are considered the major factors in the rise in HIV infection rates in the area.

Men who migrate are likely to have multiple partners which expose them to infection. Once infected, they are likely to be agents of HIV infection on their wives on their return home and this is further aggravated by taxi and truck drivers who are likely to fuel the spread of HIV (Copson, 2003). In Mozambique the migration of husbands left their wives with no one to discipline them and they became unfaithful (Epstein, 2002). Migration is considered a significant influence in poor health including HIV/AIDS. This is attributable to sociocultural patterns of migrant situation in relation to health and economic transitions and the inability of the host country to cope with the traditions and practices of immigrants. Migrants often live in a legal vacuum in which they do not have stay or work permit and they are therefore in constant fear of deportation. They are forced by their circumstances to accept employment below their qualifications and are often subjected to various forms of exploitation including that, which is sexual (UNESCO AND UNAIDS, 2000).

The populations of Asia's mobility and migration play an important role in the region (Asian Development Bank, 2005). Increasing population movements for political and economic purposes, for travel and for demographic, economic and social transitions contribute to the transmission of HIV globally. Some of Europe's migrants and ethnic minorities are largely vulnerable to HIV infection due to cultural, socio-economic and language barriers as well as inequity and social exclusion (Del Amo et al., 2004).

In a study conducted amongst 10 border areas and 2 major dam construction sites in Lesotho Highlands water project, it was found out that there is an exceptionally high HIV vulnerability. Bus, taxi drivers, truckers, traders, soldiers, migrant labourers and transient sex workers were found to move between towns and to engage in unprotected sex, thereby exposing their partners to risk. Young women including school girls were commonly engaging in commercial sex with truckers, taxi drivers and older men as a means, to earn income (Family Health International, 2001). The study further notes that miners and taxi drivers in Lesotho traveled regularly to other countries and were highly likely to be infected and to bring the disease back to their partners. They were thus to be targeted for condom distribution.

4. Responding to the scourge

The International AIDS policy has been derived from an erroneous preconception that the high transmission of HIV in Africa is a product of sexual behaviour and that the problem can be ameliorated through behaviour modification. Whereas such a policy have been successful in the United States and other rich countries, it has however, been undermined by some biological factors instrumental in HIV transmission in Africa and the impoverished populations in general. The failure to recognize such biological factors and to accordingly incorporate them into a model of transmission for poor countries, have led to failed prevention strategies and the perpetuation of racial stereotypes (Stillwaggon, 2001). Instead of using mainstream methods of scientific inquiry to investigate how AIDS is different in Africa, Stillwaggon (2001), points out that an extreme behaviouralist explanation hijacked the debate and rather thought to investigate how different Africans are. Furthermore, the behaviouralist explanation was not based on empirical studies but rather on hypothetical arguments based on racial metaphor that portrays Africans as a special case.

Indeed sexual behaviour is an important factor in the transmission of sexually transmitted diseases, but it cannot be the sole explanatory factor in the high incidence of HIV transmission amounting to more than 25 percent in some African countries and less than 1 percent in the United States. There are significant levels of multipartnered sex in the United States and Europe as evidenced by high levels of sexually transmitted diseases such as Chlamydia and herpes -2. However, this has not transcended to heterosexual epidemic of AIDS in rich countries, primarily due to a healthy and well nourished population in which HIV transmission is rare, amounting to 1 in 1000 contacts between an HIV-positive woman and an HIV negative man and 1 in 300 contacts of an HIV positive man and an HIV negative woman (Stillwaggon, 2001). The author argues that both rich and poor countries are characterized by high rates of unprotected multipartnered sexual activity. The only distinction between the two worlds is that the poor countries unlike the rich are characterized by malnutrition, parasite infestation and lack of access to medical care and antibiotics for bacterial STDs. The tenet that there is a positive relationship between rates of sexual behavior and prevalence of HIV has been refuted by a study in 1999 (Stillwaggon, 2001).

However, that prevention campaigns against HIV/AIDS, require relevant information about the characteristics of those likely to be infected by the disease cannot be undermined (Chapoto and Jayne, 2005). In their study in Zambia in which they found out that women who were not earning a salary or wage were likely to die of AIDS than those earning salaries, *ceteris paribus*, the authors suggest the provision of income

earning opportunities for women, a step they consider could have a modest impact on the reduction of PA mortality.

The response to the epidemic by donor governments, non – governmental organizations (NGO) working in Africa and African Governments have been aimed at reducing the number of new infections, ameliorate the damage to families, society and the economy and at treating AIDS sufferers with long – term survival medicines, the latter option being impeded by its associated high cost. The demands for large-scale treatment are however mounting both in Africa and outside the continent among AIDS activists and those concerned about the continent’s future (Copson, 2003).

The fight against the epidemic is carried out through the provision of information on how HIV is spread and how it can be avoided through media, posters and lectures amongst other things. There are also donor – sponsored voluntary counseling and testing services, which enable African men and women to know their HIV status and advice them accordingly depending on their results (Copson, 2003).

Stillwaggon (2001) has raised important points that indicate that sexual behaviour should not be looked solely as the dominant factor behind the African AIDS epidemic. Poverty is one instrumental factor which largely accounts for differences in HIV prevalence between the rich and poor countries, particularly in light of the fact that unprotected multipartnered sexual activity is observable in the two worlds. Reducing HIV transmission therefore requires health education, access to condoms and a serious assault on malnutrition, parasitic diseases and diarrheal diseases. A preventive strategy that relies exclusively on the provision of condoms even with health education without considering women’s lack of power in sexual relations and the irrelevance of condoms after a couple of beers can not produce desirable results. The development of immune systems will help protect people from some consequences of unsafe sex and some infectious diseases (Stillwaggon, 2001).

Many African leaders are now taking major roles in the fight against AIDS, with President Yoweri Museveni of Uganda hailed as leading a successful prevention campaign in his country (Copson, 2003). Cuba’s exceptionally low HIV prevalence, possibly one of the lowest in the world, is attributed to a comprehensive health care system and the political will of the Cuban government (World Health Organization, 2004).

5. Methodology

The data used in the study was collected by Central Statistics office in Botswana. It was a nationally representative sample which covered 416 entities and it was designed to assess the HIV/AIDS impact on the economy of Botswana. Logistic regression and the subsequent marginal effects have been used as an analytical tool. The data used here is based on questions which sought to find out if couples/partners were staying together within a given locality, if respondents were working and to find out other socio economic characteristics of the individuals.

5.1. The model

The regression model given below is run independently for both males and females. This is based on the understanding that factors, which influence the sexual behaviours of males and females, are different.

$$\Omega = \alpha_0 + \alpha_1 Edu + \alpha_2 Maristatus + \alpha_3 HIVtest + \alpha_4 Age + \alpha_5 Occupation + \alpha_6 Sexmon + \alpha_7 Migration + \alpha_8 FirstSexage + \alpha_9 Religion$$

6. Results

6.1. Regression results for females

Table 1 gives the regression result for females. The marginal effects are also presented and interpreted following the interpretation of the regression results.

Table 1. Logit regression for females

Dependent Variable: Unfaithfulness of Females		
Explanatory Variables	Coefficients	P – Value
Edu	.0318428	0.031**
Married Omitted		
Living together	.2067077	0.337
Divorced	-.218088	0.834
Widowed	.180086	0.812
Separated	-.2116048	0.840
Never married	.7872089	0.000***
HIVtest	-.2477461	0.065*
Age	.0070756	0.132
Unemployed omitted		
Professionals and Legislators	.3514709	0.192
Associate Professionals and Technicians	.0417672	0.891
Others	.3774012	0.006***
Sex for money	1.167236	0.001***
Away	.4684693	0.001***
Age at first sex	-.0606798	0.001***
Religion	-.4089876	0.004***
Constant	-2.271422	0.000***
Number of Observations = 3452		
LR chi2 (18) = 96.75		
Prob > chi2 = 0.0000		
Pseudo R2 = 0.0493		

*** Significant at 1 percent, ** Significant at 5 percent and * significant at 10 percent

The results in Table 1 show a positive relationship between education, sex for money and migration as predictor variables and the dependent variable, unfaithfulness. The degree of significance is 5 percent for education and 1 percent for both migration and having sex for money. It is also observable at 1 percent level of significance that those who never married are likely to have multiple partners than those who are married. We also note that those who were in occupations classified as others were more likely to be promiscuous than the unemployed.

On the other hand, females who had gone for HIV testing were more likely to be faithful at 10 percent level of significance. For those who held longer to their virginity and for Christians, there is also a negative relationship with unfaithfulness at 1 percent level of significance.

Table 2. Marginal Effects

Dependent Variable : Unfaithfulness of Females		
Explanatory Variables	Discrete Change of dummy from 0 to 1 ($d\chi_f/dx$)	P - Value
Edu	.0021182	0.030**
Married Omitted		
Living together	.0142656	0.353
Divorced	-.013236	0.818
Widowed	0.129252	0.825
Separated	-.0128788	0.824
Never married	.0548915	0.000***
HIVtest	-.0161728	0.059*
Age	.0004707	0.131
Unemployed omitted		
Professionals and Legislators	.0265961	0.247
Associate Professionals and Technicians	.0028222	0.893
Others	.0257526	0.007***
Sex for money	.1255984	0.023**
Away	.0350252	0.002***
Age at first sex	-.0040365	0.001***
Religion	-.0303716	0.010***

*** Significant at 1 percent, ** Significant at 5 percent and * significant at 10 percent

An additional year of education increases unfaithfulness by 0.21 percent and the separation of partners due to migration increases women's unfaithfulness by 3.50 percent. A relative higher percentage is noted for those who engage in copulation for money as the percentage stood at 12.56 percent. Those who never married were 5.49 percent more likely to be unfaithful in comparison to those who were married, while those in occupations classified as others were 2.58 percent more likely to be promiscuous than those who are married.

Females who have ever gone for an HIV test were 1.62 percent more likely to be faithful than those who never went for the test. Delayed sexual intercourse increases faithfulness by 0.40 percent, whereas being Christian increases faithfulness by 3.04 percent.

6.2. Regression results for males

The regression results for males are presented in Table 3 and discussed thereafter. The corresponding marginal effects are then presented and discussed.

Table 3. Logit regression for males

Dependent Variable: Unfaithfulness of Males		
Explanatory Variables	Coefficients	P – Value
Edu	.0311161	0.188
Married Omitted		
Living together	.6329897	0.013**
Divorced	.3155435	0.765
Widowed		
Separated		
Never married	1.183549	0.000***
HIVtest	-.2058192	0.160
Age	-.0093324	0.090*
Unemployed omitted		
Professionals and Legislators	.5205848	0.097*
Associate Professionals and Technicians	.7080307	0.015**
Others	.467168	0.002***
Sex for money	1.928486	0.000***
Away	.2612065	0.094*
Age at first sex	-.0873337	0.000***
Religion	-.7438698	0.000***
Constant	-1.486171	0.003***
Number of Observations = 2836		
LR chi2 (18) = 120.07		
Prob > chi2 = 0.0000		
Pseudo R2 = 0.0732		

*** Significant at 1 percent, ** Significant at 5 percent and * significant at 10 percent

There is a positive relationship between unfaithfulness and the independent variables migration and having sex for money at 1 percent and 10 percent levels of significance respectively. Males who are living with their partners and those who have never married are more likely to have multiple partners than those who are married at 5 percent and 1 percent level of significance respectively. For all the three occupations,

namely professionals and legislators, associate professionals and technicians and others, we observe a higher likelihood of unfaithfulness at 10 percent, 5 percent and 1 percent respectively.

The degree of unfaithfulness decreases with increases in age of males at 10 percent level of significance. A negative correlation between the dependent variable and age at first sex and religion at 1 percent level of significance is observed.

Table 4. Marginal Effects

Dependent Variable : Unfaithfulness of males		
Explanatory Variables	Discrete Change of dummy from 0 to 1 ($d\chi_m/dx$)	P - Value
Edu	.0019872	0.187
Married Omitted		
Living together	.04547	0.024**
Divorced	.0230604	0.792
Widowed		
Separated		
Never married	.0811229	0.000***
HIVtest	-.0129694	0.154
Age	-.000596	0.088*
Unemployed omitted		
Professionals and Legislators	.040383	0.163
Associate Professionals and Technicians	.0590402	0.054*
Others	.0308138	0.003***
Sex for money	.2640216	0.002***
Away	.0177763	0.115
Age at first sex	-.0055774	0.000***
Religion	-.0587987	0.000***

*** Significant at 1 percent, ** Significant at 5 percent and * significant at 10 percent

The percentage change in unfaithfulness increases by 26.40 percent for those who engage in sex for money and by 3.50 percent for those for which one of the partners has migrated. Men who were living together with their partners (cohabiting) were 4.55 percent more likely to have multiple partners than those who were married. For those who never married the degree of unfaithfulness was likely to increase by 8.11 percent relative to married males. A one year increase in the age of males reduces unfaithfulness by 0.06 percent, while an increase in the age at which males had first sexual intercourse decreases by 0.40 percent. Being a Christian would increase faithfulness by 3.04 percent.

6.3. Regression diagnostics

The original model was modified due to the problem of specification error. In the process of improving the model the variables knowledge about HIV/AIDS (knowhiv) and migration were replaced with the variables HIV test, which sought to find if the respondent has ever tested for HIV and Away which was intended to find out if the respondent has ever been away from home for at-least a month. The changes improved the model immensely and the results of the goodness of the model are discussed in the subsequent paragraph.

The model for females has LR chi2 (15) of 96.75 and a p-value of 0.0000 and that for males has LR chi2 (13) of 118.04 and a p-value of 0.0000. The models are free of specification errors and pass the goodness-of-fit tests. The models were also correctly classified at 91.50 percent for males and 91.77 percent for females.

7. Discussion

The regression results for females show that educated women were more likely to have multiple partners than the less educated whereas there is no relationship between males' education and unfaithfulness. These results do not augur well for the proponents of the empowerment of women through education as a mitigation measure against the high rate of HIV infection amongst women. This is more so, if education is positively correlated to earnings, because females are often believed to be pushed into unfaithfulness by economic hardships. With the advent of graduate unemployment that has gained prominence of late in the country, the results are quite plausible. However, it should be borne in mind that education in itself is not income generating, but will most probably lead to higher earnings in the event of one attaining employment. In the absence of income earning opportunities, the educated may be in dire need of income as would be the less educated. They may thus be precipitated into unfaithfulness as a way of survival. This is likely to be true in high unemployment areas such as Botswana in which the official unemployment rate is above 17percent and most probably significantly higher when broadly defined. This may explain the current observable scenario. The lack of any established relationship between males' education and unfaithfulness tend to verify the thinking that men engage in promiscuity as a demonstration of males' sexual prowess.

Since education on its own is not sufficient to explain unfaithfulness particularly of women, occupations were also considered relative to unfaithfulness. The results show that women who were within the occupations classified as others (or non professionals) - which were likely of less income -were more unfaithful than the unemployed. There was no significant relationship with other occupations such as professionals and associate professionals, even though we have positive coefficients. These results indicate that women in low paying jobs were more unfaithful than the unemployed, whereas those in high paying jobs were not significantly different from the unemployed. This informs us that those who were earning less income would by extension be more unfaithful than those earning higher income. The almost comparable degree of faithfulness for professional, legislators, associate professionals and technician females and the unemployed may mean that marginal income is worse than no income at all and obviously worse than more income in the promotion of unfaithfulness.

Men of all occupations were more unfaithful than the unemployed males, which may mean that they had something unemployed males did not have and which most probably females might have been looking for. This analysis is based on the premise that employment is the only source of income and this is a matter of data dictates rather than choice. If indeed females were having multiple partners due to economic hardships, then indeed the employed males will be their best bet in a heterosexually predominant society as that of Botswana.

The respondents who were never married were more unfaithful for both males and females relative to the married and men who were living with their partners were more unfaithful than married men. That the results were highly significant for the never married in both cases may serve to indicate that in situations where the partners were enjoying some high degree of freedom, than would normally be found in a married setting, they were utilizing their freedom destructively without constraint. As was discovered in Mozambique, where women tended to be more unfaithful because of indiscipline resulting from the absence of their husbands who would have migrated, we also note that the migration of one of the partners increased the unfaithfulness of females. Males were also unfaithful in cases where they or their partners had migrated. This is consistent with the literature in which males were considered to be likely to have multiple partners in situations where they had migrated.

It is very clear that sex for money leads to unfaithfulness for both males and females. This is not in doubt, but the key question is whether sex trade is prompted by poverty or by an attempt to compliment the income of the respondents. The unavailability of data in this regard renders the question unanswerable. Interestingly we observe that males also engage in sex for reward. This has for sometime been considered a female phenomenon.

Testing for HIV reduces unfaithfulness amongst females and has no effect on the faithfulness of males. It could be that in the case of females, the negative results lead them to protect themselves from infection whereas being positive encourage a healthy leaving so as to avoid further infections and to live longer. Being a Christian leads to lower levels of unfaithfulness for both sexes.

7.1. Marginal effects

The highest rate of increase in unfaithfulness was noted for both sexes amongst those who traded sex for money or gifts. The rate of increase in unfaithfulness in this case was 12.56 percent and 26.40 percent for females and males respectively. That the rate for males is more than double that of females is quite a revelation given that females were the ones often thought to be recipients of rewards for sex. It is possible that when males have received money from selling sexual intercourse, they are better able to appeal to the opposite sex and thus acquire more partners on the basis of their acquired financial strength. The rate of increase in unfaithfulness was also high for the never married at 8.11 percent for males and 5.49 percent for females.

By becoming a Christian unfaithfulness reduces by 5.88 percent for males and 3.04 percent for females. It needs to be noted that the clustering of none Christian religions together could possibly be inappropriate since those religions are quite diverse. In interpreting the results this ought to be cautiously taken on board.

8. Conclusion

It would be necessary to understand why people engage in sexual activity in the absence of economic considerations for women in particular and in the absence of sexual prowess for men as espoused in the literature. Only when such an answer is availed can we be able to make headway in the fight against HIV/AIDS. If sexual intercourse is undertaken for pleasure, then the unfulfillment of such an objective may in most cases lead to unfaithfulness. Harley, Jr. (1994) argues that one of the reasons for ex marital affairs is lack of fulfilled expectations as men's sexual needs are not met and women's affectionate needs are not fulfilled.

One other thing worthy of intensive investigation is the poverty concept. As we investigate poverty in its relation to HIV transmission, we need to understand that in real life, people may not be driven by their needs but by their wants, which often would not be captured within the basic basket of commodities. Even though such people's income may put them above the poverty datum line, they may still seek some other avenues through which they could complement their income and thus realize their desired lifestyles. In a country like Botswana, where the opportunity to have more than one job is remote, sex trade may be a handy option. This is likely to be the case as at-least 65 percent of respondents who had sex for money have at least done secondary education and 23.29 percent of the respondents whose employment status were known were employed.

There is no conclusive evidence that poverty leads women to unfaithfulness or commercial sex, yet there is evidence that people who engage in sex for money or gifts have multiple partners. This scenario is consistent with economic tenet that people's wants are unlimited whereas the resources needed to meet those needs are limited. The picture could be one of people who are doing what they can to leave beyond their means.

In conclusion, there is no conclusive evidence that poverty have been instrumental in HIV transmission particularly along the lines advanced within the literature. The staying apart of partners or migration is instrumental in the promotion of promiscuity across the sex divide. This is consistent with the literature and where possible measures should be taken to reduce the staying away from each other of partners. There is need for further research, on how poverty and migration affect the likelihood of HIV transmission. Marriage leads to faithfulness even though there are some degrees of unfaithfulness amongst both sexes. There is need for the continued call for people to know their HIV status as this has been shown to be inversely related to unfaithfulness, as per our regression results.

References

Anon (2006), "New perspectives on the social and economic contexts of HIV/AIDS infection", Institute for Research and Poverty. University of Wisconsin-Madison, USA. Focus, 2006, Vol. 24. No3, available at: <http://www.irsp.wisc.edu/publications/focus/pdfs/foc243f.pdf> (accessed 23 September 2010).

- Asian Development Bank (2005), "Development, Poverty and HIV/AIDS: ADB'S strategic response to a growing epidemic", available at http://www.adb.org/Documents/Others/in_90-05.pdf (accessed 21 August 2010).
- Barnett, T. & Whiteside, A. (2002), "Poverty and HIV and AIDS: impact, coping and mitigation policy", in Cornia, G.A. (Ed.), AIDS, public policy and child well-being, Florence, Italy, UNICEF, Innocenti Research Centre.
- Caballero, M., Dreser, A., Leyva, R., Rueda, C. and Bronfman, M. (2002), "Migration, Gender and HIV/AIDS in Central America and Mexico", XIV International AIDS Conference; 2002.
- Casale, M. and Whiteside, A. (2006), "The Impact of HIV/AIDS on Poverty, Inequality and Economic Growth", Health Economics and HIV/AIDS Research Division (HEARD), University of Kwazulu Natal, South Africa; 2006.
- Chapoto, A. and Jayne, T.S. (2005), "Socio-economic Characteristics of Individuals Afflicted by AIDS-related Prime-age Mortality in Zambia", Food Security Research Project – Zambia Policy Synthesis 10, Lusaka, Zambia, available at https://www.msu.edu/~chapotoa/cv_chapoto.pdf (accessed 23 August 2010).
- Copson, R.W. (2003), "AIDS in Africa", Congressional Research Service. Library of Congress, available at: <http://www.law.umaryland.edu/marshall/crsreports/crsdocuments/IB1005008282003.pdf> (accessed 10 September 2010).
- Del Amo, J., Bröring, G., Hamers, F.F., Infuso, A. and Fenton, K. (2004), "Monitoring HIV/AIDS in Europe's migrant communities and ethnic minorities", *AIDS*, Vol. 18 No. 14, pp.1867-73
- Epstein, H. (2002), "The Hidden Costs of AIDS", *The New York Review of Books*, available at: <http://www.nybooks.com/articles/15371> (accessed 6 July 2010).
- Family Health International (2001), "Lesotho and Swaziland: HIV/AIDS Risk Assessments at Cross-Border and Migrant Sites in Southern Africa", Virginia, USA, available at: <http://www.fhi.org> (accessed 5 October 2010).
- Gillespie, S. and Kadiyala, S. (2005), "HIV/AIDS and Food and Nutrition Security. From Evidence to Action", IFPRI Food Policy Review 7. Washington DC. IFPRI, 2005.
- Harley, Jr. W.F. (1994), "His Needs Her Needs. Building An Affair proof Marriage", Fleming H. Revell. USA, 1994.
- Kain, D. (2006), "HIV/AIDS rates in Tijuana, Mexico Increasing at Alarming Rate", University of California, San Diego. Press Release, 2006.
- Malema, B.W. and Koch, S.F. (2008), "The Free Provision of ARV Therapy in Botswana: Is it a golden opportunity on a Silver Platter for Organizations?", *The Botswana Journal of Economics*, Vol.5, No. 9, pp. 84-92.
- Malema, B.W. (2009a), "Cross Generational Relationships and HIV/AIDS in Botswana: Is there Evidence of Resource Power? An Econometric Analysis", *Indian Journal of Social Development*, Vol. 9, No. 2, pp.187-196.

Malema B.W. (2009b), "Predictors of HIV Status in Botswana: A logistic Econometric Analysis", *Journal of Social and Economic Policy*, Vol. 6, No. 2, pp. 65-73.

Ndiaye, N. (2004), "Women and HIV/AIDS. International Women's day", New York, available at: <http://www.un.org/womenwatch/feature/iwd/2004/NdioroNdiaye-stmt.pdf> (accessed 3 August 2010).

Stillwaggon, E. (2001), "AIDS and Poverty in Africa", available at <http://www.thenation.com/doc/20010521/stillwagn> (accessed 17 August 2010).

UNESCO AND UNAIDS (2000), *Migrant Populations and HIV/AIDS. The development and implementation of Programmes: theory, methodology and practice*, Geneva, Switzerland, 2000.

World Health Organization (2004), *Approaches to the management of HIV/AIDS in Cuba, Case Study*, Geneva, Switzerland, 2004.