8-2010

CONTEXTUALIZING THE HEALTH BELIEF MODEL AND THE SOCIAL EPIDEMIOLOGY THEORIES IN THE STUDY OF AIDS IN MALAWI

Kumbirai Madondo
Clemson University, kmadond@clemson.edu

CONTEXTUALIZING THE HEALTH BELIEF MODEL AND THE SOCIAL EPIDEMIOLOGY THEORIES IN THE STUDY OF AIDS IN MALAWI

A Thesis
Presented to
The Graduate School of
Clemson University

In Partial Fulfillment
Of the Requirements for the Degree
Master of Science In
Applied Sociology

By
Kumbirai Madondo
August 2010

Accepted by:
Dr. Brenda J. Vander Mey, Committee Chair
Dr. Ellen Granberg
Dr.Ye Luo

ABSTRACT

The association between HIV/AIDS knowledge, risk perception and risky sexual behavior remains a valuable area of study among scholars seeking to understand the AIDS epidemic in Africa. Past research has focused only on either the Health Belief Model or social epidemiology ideas to understand AIDS but never combined the two. The current study is unique and adds to the body of knowledge by making use of both the Health Belief Model and social epidemiology ideas to understand these relationships more clearly and, more importantly, to explore the role that keeping AIDS a secret has in the contexts of risk perception, knowledge and behavior. Data from the 2004 National Survey on Adolescents in Malawi were used to that end. The sample was comprised of 3,770 Malawian adolescents between the ages of 12 and 19. The hypotheses for this study were: (1) HIV knowledge has a direct effect on keeping AIDS a secret within the family; (2) there is relationship between keeping AIDS a secret and risk perception which is extra explained by HIV/AIDS knowledge; and, (3) keeping AIDS a secret within the family has an effect on sexual behavior which is mediated by risk perception and AIDS knowledge. The fourth hypothesis argued that these relationships differ by gender.

Logistic regression models were fitted in separately for males and females to examine the direction of the relationship between keeping AIDS a secret within the family, AIDS knowledge, risk perception and risky sexual behavior. The findings indicated a strong association between AIDS knowledge and adolescents' desire to keep AIDS a secret within the family. That is, the more factual a respondent's knowledge base

was, the greater the inclination was to keep AIDS a secret confined to the family. This most likely is due to the strong stigma surrounding AIDS in Africa. The current study was unable to find a strong correlation between risk perception and risky sexual behavior. This was largely due to the fact that the data were cross-sectional. However, the research still found gender differences among male and female risk perception with more males perceiving their risk to be high. Such findings suggested a strong need for policy makers in Malawi to address the effects of gender roles on sexual activities among youths. Equally important would be increasing outreach efforts that work to reduce if not eradicate the stigma surrounding HIV/AIDS in Malawi.

DEDICATION

This thesis is dedicated to my grandmother Kumbirai Madondo (my namesake) for loving me unconditionally throughout my life. To my nephew Takudzwa and my niece Anotida you are the love of my life. I hope this Master thesis I was awarded today inspires you to desire for Masters and PhDs each in your lives.

ACKNOWLEDGEMENTS

I would like to take this opportunity to thank the Sociology Department for accepting me into their program. A special thanks to Dr. Haller for urging me to apply to this program and for all his help when I arrived here in America. I am also grateful to all the professors who taught me classes in my two years at Clemson University. The knowledge I acquired will stay with me in my personal and professional life.

Most importantly I would like to thank Dr. Vander Mey (my chair). We worked together since my first semester in 2008 when I was her TA. Her guidance is beyond anything I can express in words. I would like to thank her for teaching me to strive for the best product and to never settle for anything less. Her door was always open to me and her encouragement and support during this process is something I will always appreciate in my life. I also want to thank Dr. Luo for always letting her door be open to me and for guiding me during the statistical process until I got the concept and believed in myself. She was one of the most generous and kindest professors in sharing her knowledge that I had the pleasure to encounter and work with. I learned to love SPSS because of her. I am also grateful to Dr. Granberg for sharing her knowledge and ideas with me during the writing process. I also want to thank Kelly Linker for her friendship, encouragement and motivational words during the long hours we spent writing our theses.

Lastly, thanks to my parents who bought my plane ticket and for telling me as a young child that I was destined for greatness, it made me believe in myself. To my family for their unconditional love even when I spent two months without calling home because

I was busy. To Juwon thank you for being my rock during this whole process. You were there for me when the road was getting tough and yet when I complained you always encouraged me and told me to believe in myself. I could not have done this without you.

TABLE OF CONTENTS

LIST OF TABLES

Page

In Text

In Appendices

LIST OF FIGURES

Page

CHAPTER ONE

INTRODUCTION

Not until cases of AIDS were validated in the US in 1981 that HIV and AIDS were considered global issues of high priority to researchers and medical specialists. Currently, AIDS has become one of the major causes of death in the world, particularly in sub-Saharan Africa. The ever increasing rates of AIDS related-death among 15-34 year olds in this region has led not only to health scares but also poverty. The AIDS death toll has been both a function of poverty and a catalyst for new or worse poverty (Greener 2000). Consequently, there has been a heavy and sustained focus on creating and implementing HIV/AIDS programs for youth. These programs usually try to educate youths about HIV/AIDS. Although different programs are developed for particular regions, most of the programs begin with an emphasis on adolescents' understanding of what HIV is, and how the disease is transmitted and can be prevented (Maman et al. 2001). This is followed by encouraging adolescents to go for HIV/AIDS testing and counseling (Rawitscher et al. 1995). The final stage revolves around educating adolescents about adopting preventive measures such as abstinence, being careful and using condoms (Olowu and Ogunmola 2004).

Many health care advocates argue that the most important step needed to decrease HIV/AIDS infection among adolescents is to make sure that adolescents are educated on the several ways that HIV/AIDS is transmitted (Prata et al. 2006), such as pre-ejaculate, ejaculate, vaginal fluids, blood, and breast milk which are the most common

contaminated fluids to pass between people (Kanki and Essex 2005). The common circumstances associated with fluid exchanges are unsafe homosexual or heterosexual sex, shared use of drug needles contaminated with HIV viruses, breast milk, and transmission from an infected mother to her baby at birth (Chin 2007). Before blood was screened for HIV, HIV also was transmitted by blood transfusion (McElrath 2002). Nevertheless, sexual activity is the most common path of HIV transmission. In Western countries homosexual sex (47%), heterosexual sex (10%), infected needles (25%) and other means such as blood transfusions and breastfeeding (15%) are the major sources of AIDS (Kim et al. 2003). However, in Southern Africa 80% of HIV/AIDS transmissions are through vaginal, heterosexual sex (Ahwireng-Obeng and Akussah 2003).

Presumably, knowledge about HIV/AIDS transmissions among young men and women in the world is not uncommon regardless of their economic status. For instance, Lindan et al. (1990) found that Rwandan women's knowledge about the disease was high, as indicated by 93-98% women correctly identifying some of the ways AIDS is transmitted. Specifically they knew that HIV/AIDS could be contracted through vaginal fluids, contaminated blood, and mother-to-child infection. However, 26-29% of the women also had some misconceptions about how the disease is transmitted. Some of the beliefs included the idea that AIDS can be spread through sharing food and sharing toilets (DiClemente 1991 et al.; Gregson et al. 1998; Maswanya 1999 et al.; Pallikavath, Jayachandran and Stones 2005)

Studies have shown that hospitals and the media play a pivotal role in educating young people about HIV and thus helping to prevent these misconceptions. Most studies have shown that educating young people about AIDS can help adolescents engage in less risky behaviors (Kirby 2002; AVERT 2010a). Therefore, it is not surprising that many developed countries are opting to introduce sex subjects into their school curriculums. For example, in Denmark, sex education which emphasizes on AIDS has been part of the curriculum since the early 1900s. This also is the case for Canada, Finland, France, Germany, The United Kingdom, the United States and many other countries that have included sex education in their curriculums since the 1970s (IPPF European Network 2006:12). Despite these successes, some scholars have acknowledged that even in developed nations such as Belgium, Greece and the United States of America sex often is not openly discussed, and the subject of AIDS even less so. In addition to cultural traditions, what is included in "sex education" varies widely. Factors such as religion, culture, family, and peers should not be overlooked because they strongly influence perceptions and practices (Cherian 2004).

These cultural factors are also influential in Asia and Africa. Malikaew (2005), for example, pointed out that although sex education has been integrated into most biology classes, still some teachers feel uncomfortable about discussing in-depth sex topics with their students. Trying to successfully implement sex education in schools in African countries is hindered by the role of culture in the society (Cherian 2004; Kelly and Ntlabati 2002; Phaladze et al. 2005). Additionally, a qualitative study of teachers in Nigeria found that 90% of the teachers were unwilling to teach sex education because it

was culturally unacceptable to do so and 100% of the teachers attributed religion to their reluctance to discuss sex with their students (Oshi et al. 2005). AVERT [Averting HIV and AIDS] (2010b) also notes that in some countries such as Malawi ethnicity has been the problem. There are eleven main ethnic groups and six main languages in Malawi. This creates problems for policy makers who want to introduce AIDS education programs which are culturally sensitive and appropriate for these different ethnic groups.

Because of the cultural practices in developing nations that hinder the success of AIDS education, some scholars assert that there is a need to analyze the HIV knowledge and risk perceptions of adolescents and their sexual behavior. This is because people's risk perceptions can affect their desire to change their risky behaviors (Becker, Rosenstock and Slack 1974; Uwalaka and Matsau 2002). Recent studies have begun to focus on assessing the linkages between levels of HIV knowledge, perceived risk, and reasons that individuals engage in risky sexual behavior (Weisman et al. 1989; Lindan et al. 1991; Ford 1995 et al.; Blanc and Way 1998; Rodgers et al. 2006).

Some studies of HIV/AIDS have found that comprehensive HIV knowledge and perceived HIV risk translated to a decrease in risky sexual behaviors. This was especially found relevant to cases where both male and female partners who know the dangers of HIV/AIDS decide to engage in safe behaviors (Weisman 1989; Lindan 1991; Gregson 1998 and Guiella and Madise, Zulu and Ciera 2007). A study based on a sample of 482 rural Senegalese men and women found that individuals were more likely to use condoms if they knew that if used properly it would decrease their probability of

contracting HIV (Lindan 1991). Generally, studies focused on the linkages between HIV knowledge, risk perceptions and sexual behavior among older adolescents and adults in Africa have produced inconclusive results (Gregson et al. 1998). One of the reasons given was that the use of cross-sectional data instead of longitudinal data effectively eliminated the possibility of tracing the adolescents' risky sexual activities over time. Moreover, some studies only use condoms as a measure of risky sexual activities when in reality there are many factors that can be included such as number of sexual partners, influence of alcohol and drugs among other measures (Gregson et al. 1998:210).

Some studies have found that despite adolescents' awareness of the positive outcomes of using condoms they are not always willing to change their risky sex activities (Maswanya et al. 1999). For example, in South Africa many schools are distributing condoms for free as a way to promote preventative behavior , but adolescents still shun condoms (Han and Bennish 2009). Akwara et al. (2003) attribute this lack of behavior change to adolescents' beliefs that AIDS is "not an immediate threat, but a disease that affects other people" (2007:401). Additionally, HIV knowledge does not necessarily imply in-depth awareness about the disease and prevention measures especially in instances where families strive to keep AIDS a secret from the society (Rankin et al. 2009).

The Current Study

The current study focused on Malawian adolescents who were aged between 12-19 years of age. Because this is the age at which adolescents want to experiment with sex, all factors such as culture, HIV knowledge and risk perception must be taken into consideration when deciding how best to prevent the spread of HIV among this age group (Bankole et al. 2007). Hence, the current research (1) examined whether adolescents who had higher levels of HIV/AIDS knowledge wanted to keep AIDS a secret within the family, (2) discerned whether adolescents who wanted to keep AIDS a secret within the family had risk perception because they had higher levels of knowledge, and (3) assessed whether adolescents who wanted to keep AIDS a secret within the family were more likely to be involved in less risky behavior because they had higher level of knowledge and had risk perception. The fourth hypothesis explored whether the above relationships varied by gender.

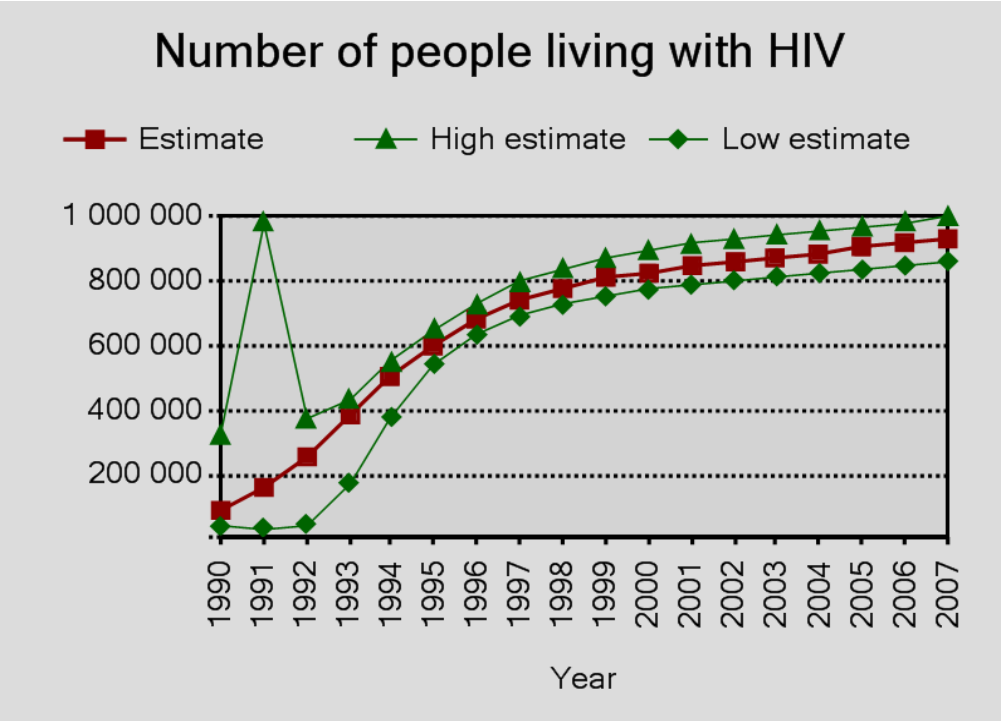
The current study relied on data from the 2004 National Survey of Adolescents in Malawi (Computer file. ICPSR22410-v1). Malawi has an estimated population of 13,187,632 (*Encyclopedia of the Nations* 2008). According to a 2008 UN report, in Malawi 12.7% of its population are infected with HIV/AIDS and adolescents comprise of 60% of all AIDS cases. In 2007, at least 930,000 Malawians aged 15-49 years were living with HIV (UNAIDS 2008). Compared to the 1990s, it appears that the number of people in Malawi who are living with HIV/AIDS is increasing (See figure 1). The report also noted that only 15.1% males and 12.9% females in the sexually active population

visited HIV/AIDS testing and counseling centers. Therefore, in reality there is a higher chance that there are more than 930,000 people living with HIV/AIDS in Malawi. The report also showed that there were 3.8% of Malawian men living with HIV/AIDS compared to 10.4% Malawian women. The uneven distribution of the HIV/AIDS between men and women indicates that it is important to go beyond just analyzing the relationships between HIV knowledge, risk perception and sexual behavior and also examine how these relationships vary by gender.

The current study contributed to the AIDS literature, as well as added valuable information relevant to the attainment of the 2015 Millennium Development Goals proposed by the United Nations. These goals include the eradication of poverty and hunger, promotion of gender equality and empowering women, reducing child mortality and maternal mortality rates, and combating HIV/AIDS. Since most of the economic and environmental problems in Africa listed by the United Nations are worsened by the death of people in the most productive young age groups in society due to HIV/AIDS, the current study could also be used by policy makers to address the issue of AIDS secrecy, stigma and its effect on adolescent's sexual activities. There are some national youth programs in Malawi which address the issue of AIDS testing and treatment such as the Voluntary Counseling and Testing (VCT), Malawi AIDS Counseling Resource Organization (MACRO). However, these programs do not address the issue of AIDS secrecy and stigma at a national level (AVERT 2010). In fact, Kelly (2002) notes that stigma and discrimination affects an estimated 29.4 million people living with AIDS in Africa, and although most governments have put in place programs to educate people

about stigma, there remains a wide gap in resolving this issue. Mark Heywood of the AIDS Law Project in South Africa is quoted as remarking that "the national AIDS plans of several African countries explicitly recognize the public health imperative underlying the promotion of human rights. Yet few governments actively assist in the redaction of AIDS stigma" (Kelly 2002:1). Therefore, findings from this study which show that AIDS knowledge is positively correlated with keeping AIDS a secret could be used to demystify the AIDS misconceptions and stigma that exist in society. Moreover, education programs about AIDS can include a focus on reducing the stigma attached to AIDS.

Figure 1. Percentages of People Living with HIV/AIDS in Malawi



Source: McCoy, David. 2003: 6 *"Health Sector Responses to HIV/AIDS and Treatment access in Southern Africa: Addressing Equity."*Regional Network for Equity in Health in Southern Africa (Equinet) in co-operation with Oxfam gb. Retrieved 30 April, 2010 from http://www.kubatana.net/docs/hivaid/equinet_art_treatment_access.pdf

CHAPTER TWO

BACKGROUND

Origins of HIV/AIDS

The origin of the HIV viruses that leads to invasive AIDS remains controversial. The scientific evidence has been highly circumstantial. Additionally, the disputes revolve around the possible consequences of a named, definitive origin. The origin of such a disease is politically charged, could imply massive legal ramifications, and might affect huge profits in antiretroviral treatment regimens.

Some conjecture that the origin of the HIV epidemic is in man-made circumstances (inadvertent or intended) and that the involved viruses have been, accidentally or by design, let loose on the human race (Hooper 2000). Other speculations on the origin of HIV viruses include an argument to the effect that they derive from African animal viruses (e.g., Simian Immunodeficiency Virus), although evidence remains patchy, inconsistent and clouded. Barnett and Blaikie (1992) argue that despite these inconsistencies, it is still important to trace the origins of AIDS because "*knowledge of the origin and spread of HIV is important for the understanding of its genetic make-up as this might contribute to a strategy for dealing with it"* (1992: 30).

Some scholars argue that the origins of HIV/AIDS can be traced back to the African monkeys (Becker and Collignon 1999; Sherman 2007). Evidence from a 10-year study using a complex model discovered a strain of Simian Immunodeficiency Virus

(SIV) which is similar to HIV found in a number of monkeys dating from the 19th century in southeastern Cameroon (Hooper 1999; Heeney, Dalgleish and Weiss 2006). This transfer of HIV from monkeys to humans is thought to have occurred through monkey bites during hunting. Yet, many scholars contend that there is not enough evidence to claim that HIV originated in Africa through monkey bites. Marx (2005) argues that hunting and gathering has existed in Africa for more than 500 years and that if it is the case that HIV transferred from monkeys to humans, then the first traces of AIDS should have been heard of 500 years ago. Sherman (2007) contradicts the above arguments by noting that 500 years ago Cameroon did not possess the medical know-how to diagnose HIV and therefore HIV could have just been treated like any other disease like malaria, cholera and other common disease at the time (Sherman 2007:180). According to Sherman, unnamed symptoms similar to those found among AIDS patients only became well known when the German, British and French colonialists who had invaded most of West Africa returned to their respective countries during the early 1900s. At least 300 Germans who had sexual experiences with the natives suffered from symptoms which appeared to be related to what is now known as AIDS (Sherman 2007: 182).

Some researchers speculate that the disease was manufactured in the United States laboratories (Feldman and Miller 1998; Graves 2001). It is argued that researchers in the United States, under sponsorship from the Defense Department, created the HIV virus and tested it on prisoners in Congo. In many African countries there is the widely held belief that HIV was created by these Western worlds as a biological weapon against blacks (Gmerk 1993).

Despite these controversies surrounding the origins of AIDS in Africa, the more recognized date for the discovery of HIV/AIDS is the clinically proven first cases of HIV in 1981 in the United States of America. Auerbach et al. (1994), Learner and Hombs (1998), and Chin (2007), note that the first human beings to exhibit symptoms of HIV were five gay men in San Diego, California, which initially led to the virus being referred to as Gay-Related Immune Deficiency (GRID). However, with the spread of the virus globally in the early 1980s, governments began to acknowledge that GRID was not a gay disease. Consequently, the virus was renamed, Human Immunodeficiency Virus (HIV).

Statistics on HIV and AIDS in sub-Saharan Africa

According to the 2008 United Nations AIDS report, Sub-Saharan Africa contains only 10% of the world's population, but 60% of all people living with HIV/AIDS reside in Sub-Saharan Africa (Rimal et al. 2009). In addition to this, worldwide 40% of all HIV infection cases were found among 15-24 year olds in Sub-Saharan Africa (Moore et al. 2007). An estimated 1.9 billion people were newly infected with HIV in Sub-Saharan Africa in 2008, which brought the total of 22.4 million living with HIV (UNAIDS, 2008). About 88.2% of adolescents fewer than 15 years of age with HIV/AIDS in the world live in sub-Saharan Africa. Young people aged 15-24 years account for 60% of all new HIV/AIDS in Africa, with more females than males infected at a ratio of 2:1 (AVERT 2010).

Numerous studies have documented that women are at risk of getting HIV/AIDS infected because of the patriarchal nature of most societies in Africa which give men

authority over women's sexuality. Barongo et al. (1992) were among the first researchers to document the disparity in HIV/AIDS among males and females. Utilizing a cross sectional survey from 20 rural centers and 20 urban centers in Tanzania, they found that HIV occurred more in women aged 15-34 years compared to men in the same age range. This was associated with being widowed, recently divorced or engaging in sex for financial rewards. Consistent with these findings, Moore et al. (2007) have suggested that gender inequality places women at a disadvantaged position to negotiate for safe sex. This is compounded by a culture in Africa which relegates women to the submissive role, women are stripped of their right to say no to sex, resulting in boys taking advantage of this situation. Women and girls in Africa are unable to negotiate for safer sex especially if money or gifts were given (Langen 2005).

Furthermore, HIV/AIDS has been thought to be concentrated in urban centers because of commercial sex workers and intravenous drug users. However, recent studies have shown that AIDS is just severe in the rural areas as it is in the urban centers. In the *AIDS Epidemic Update: December 1998,* published by the UNAIDS, it was discovered that 2.1% rural people compared to 0.7% people in the urban centers were living with AIDS in India as a result of poverty. Consistent with these findings, Madise et al. (2007) research on the linkage between poverty and risky sexual behavior in Burkina Faso, Ghana, Malawi and Uganda found that poverty in the rural areas placed adolescents more at risk of being affected with HIV/AIDS. These statistical findings illustrate the massive impact of HIV/AIDS in Africa.

The Impact of HIV/AIDS on sub-Saharan Africa

Prior theoretical research on the consequences of the HIV/AIDS epidemic reveals the negative impact of HIV/AIDS on the social, cultural and economic life of the sub-community. Perhaps one of the most negative impacts of HIV/AIDS is that it is leading to the death of millions of people each year, especially the younger productive members. In Malawi approximately 20% of the economically active members of the society are dying of AIDS each year (Arrehag 2010). As a result, the life expectancy rate in most of sub-Saharan Africa has lowered (Ahwireng-Obeng and Akussah 1999; McElrath 2002). A report released by the World Health Organization in 2000 ranked the countries in sub-Saharan Africa low. In terms of healthy life expectancy, life expectancy rates were as low as 32.3 years for Botswana, 32.7 years for Ghana, 30.3 for Zambia, and 32.9 years for Zimbabwe. In Malawi in 2002 the life expectancy was 39 years and should fall below 37 in 2010. Without the advent of AIDS it would have been 56 years. (Geneva Global Performance, 2010).

These low healthy life expectancy numbers are a testimony to the negative impact of HIV/AIDS. Some scholars also note that another impact of AIDS has been the number of children who are orphaned at an early age due to the AIDS epidemic in Africa (Cohen and Durham 1993). There are an estimated 14 million children who have lost one or both of their parents due to AIDS (AVERT, 2010a). In addition to suffering from the loss of their parents, AIDS orphans are also vulnerable to sexual abuse, poor socialization and poverty (Evans 2002), since their parents are dying young and leaving them with no one

to protect them (AVERT 2010a). The situation has been worse for Malawi where there are over 560,000 children orphaned as a result of AIDS (*The Geneva Global Performance Report*, 2009). In addition, 91,000 children aged one day to fourteen years are living with HIV/AIDS (UNAIDS 2008; AVERT 2010b). Even though extended kin systems are highly prized in Africa, orphans nonetheless are at a disadvantaged position when they live with relatives. Many studies have shown that orphans are not fed as well as the other children in extended households (Ahwireng-Obeng and Akussah 1999). This is probably because these relatives are among those already facing economic strains; orphans worsen that. Bollinger, Stover and Palamuleni (2000) also note that some studies in Malawi have shown that only 39% of orphaned children aged between 7-14 years are enrolled in school compared to 60% of the children with both parents alive.

HIV/AIDS has negatively affected the development of Africa. Many countries are forced to spend millions of dollars that would have been used on development on AIDS drugs, providing medical care, and implementing HIV/AIDS prevention programs (Bloom and Mahan 1995; Bollinger 1999; Bollinger et al. 2000; Dixon, Donald and Roberts; Arrehag et al. 2010). According to a 2005 published by Avert (2010a), countries such as Kenya are in need of over US$ 217.3 million to purchase antiretroviral treatment for AIDS patients. A 2003 study on government expenditures on health in six sub-Saharan countries found that most developing countries allocated most of their annual health care budgets to HIV treatment programs. Examples include Botswana which spends US$191 million, South Africa US$255 million, Zimbabwe $US43 million, Swaziland US$56 million (Human Sciences Research Council 2003). The situation is

even worse in Malawi where, in addition to malaria, HIV/AIDS is also one of the major causes of deaths. According to a 2004-2009 report by UNAIDS, WHO and UN, there were an estimated 4,300,000 reported cases of malaria and 12,950 malaria-related deaths in Malawi (Namadzunda 2010). The government needs at least US$7 billion annually to tackle both diseases (AVERT 2010b). As a result of this, the Malawian government is being forced to continue borrowing money from the World Bank and IMF, in turn creating for itself a vicious cycle of debt and poverty (Dixon, Donald and Roberts 2001). As of 2010 the Gross Domestic Product (GDP) in Malawi was $690 per person, per each year compared to the United States where it is $40,000 per person per year (WHO 2010). The United Nations estimates that the ever increasing rise of AIDS-related deaths would result in the per capita income of Malawi being 17% lower in 2015 than in 2000 (Arrehag et al. 2010).

In addition to this, HIV/AIDS has affected the agriculture industry, which is the largest sector in most sub-Saharan economies (Ahwireng-Obeng and Akussah 1999; Gillespie 2002; de Waal and Tumushabe 2003; Arrehag et al. 2010). Many African countries rely on large scale commercial farming for food security, while many rural families practice subsistence farming on a small scale. However, these agricultural practices have been put in jeopardy following the increasing number of deaths in the region due to HIV/AIDS. Consequently, families are being forced to devote many hours taking care of sick family members (Phaladze and Tlou 2006), leading to loss of labor supply and food shortages (UNAIDS 2002; Arrehag et al. 2010). This has slowed Africa's economic development. Some countries are experiencing negative GGP growth

e.g. Zimbabwe has negative GDP growth of -.4.4% and Malawi less than -2.5% (Chitiyo and Chitiyo 2009; AVERT 2010b)

The Study Setting

The research questions for this study were examined using data from both the rural and urban areas in Malawi, a country located in sub-Saharan Africa. The country became a British colony in 1891 and attained its independence in 1964. Malawi is ranked 162nd of 175 countries in terms of development. There are also approximately eleven ethnic groups in Malawi. These are: Chewa, Nyanja, Tumbuka, Yao, Lomwe, Sena, Tonga, Ngoni, Ngonde, Asian, and European. Most (79.9%) Malawians are Christians, some (12.8%) are Muslims and the rest of the populations are either atheists or believers of smaller religions (*CIA: The World Fact book 2010*).

As of July 2009, the estimated population of Malawians was 13,066, 320, with a population growth rate of 2.746% (CIA: The World Fact Book 2010). There are 6,365,771 (49 percent) males and 6,700,549 (51 percent) females (National Statistics of Malawi report 2008). Meanwhile, the birthrate is at 41.68 births/1, 000 population, and the death rate is 14.23 deaths /1,000 population (*CIA: The World Fact Book* 2010). The rural-urban population distribution in Malawi is not even, with 90% of the population living in the rural areas and the rest in the urban centers (*CIA: The World Fact Book* 2010).

The United Nations in 2008 noted that the major infectious diseases in Malawi include malaria, tuberculosis, typhoid fever, diarrhea and the deadliest - HIV/AIDS.

Since the first cases of AIDS were reported in Malawi in 1985 (Lwanda 2004), at least 930,000 people aged between 15-49 years were living with HIV in 2007. Thus 11.9% of the population is HIV positive (UNAIDS 2008). The situation has been worse for Malawi as they are over 550,000 children orphaned as a result of AIDS (*The Geneva Global Performance Report*, 2009). Because of AIDS-related deaths, the life expectancy of the population has fallen to below 40 years for both males and females. Perhaps the greatest impact AIDS has had on the Malawian society is that it has led to increased poverty in the country. In a country where 53% of the population live below the US$1 poverty line, AIDS has further drained the resources of many households and the government as well, which spends billions of dollars on HIV/AIDS drugs and programs (Cohen 2002). This has lowered the literacy rate of Malawians to 75% for men and only 47% for women. The low literacy rates for women are due to girls having to drop out of school in order to take care of relatives. With AIDS draining family resources, most parents in rural areas prefer to send boys to school instead of girls (Lindgren et al. 2005). Hence, it is clear that the data chosen for this study (NATIONAL SURVEY OF ADOLESCENTS, 2004[Computer file] ICPSR22410-v1). is instrumental in contributing to the research on HIV/AIDS in sub-Saharan Africa.

CHAPTER THREE

LITERATURE REVIEW

Theoretical Framework

The Health Belief Model

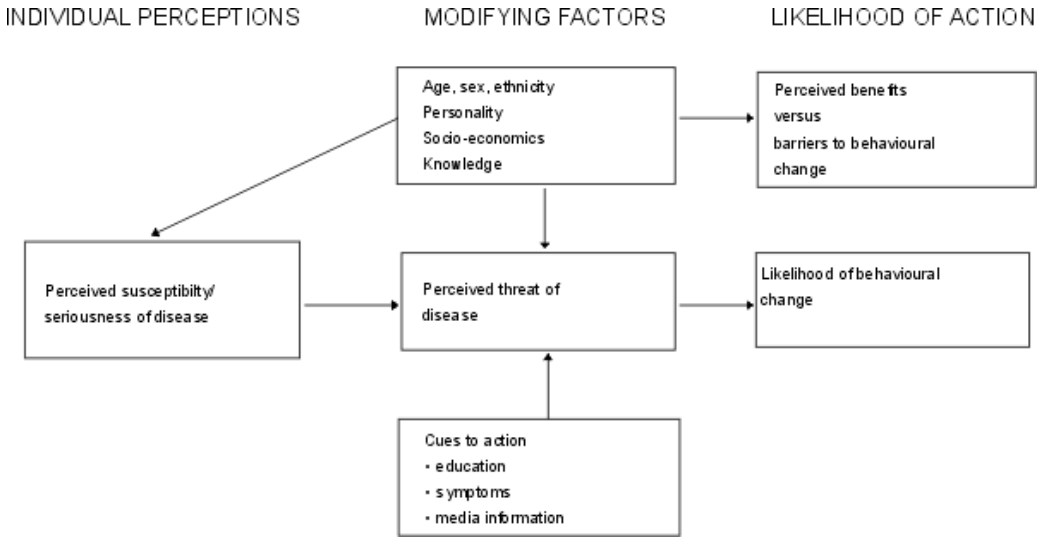
The Health Belief Model (HBM) can be traced back to Kurt Lewin's goal setting theory originally published in 1947 (Becker, Rosenstock and Slack 1974). Lewin proposed that behavior change is determined by how people value a particular outcome and the assumption that certain actions will facilitate that outcome (1974: 9). It is from Lewin's hypotheses that HBM was popularized in the 1950s' in the U.S. by social psychologists in the Public Health Service who were examining the passive attitudes of individuals towards health screening and prevention programs (Kirscht 1989; Rosenstock and Becker 1994; Dennison 1996). In short, the HBM is based on the assumption that individuals, who perceive themselves to be at risk of becoming infected with a disease, perceive the disease as severe, and think that changing their behavior will better their situation will more likely adopt preventive behaviors (Kirscht 1974; Carmel 1990; Eisen, Zellman and McAlister 1992; Walter 1992; Lux and Petosa 1994).

According to Becker and Rosenstock and Slack (1974), the underlying key variables of HBM are assumptions that in order for individuals to partake in any behavior change (1) s/he has to feel that they are at threat of getting an illness (perceived susceptibility); (2) s/he acknowledges that if they do not treat the illness, it will have

negative repercussions on their health (perceived severity); (3) s/he believes that there are positive benefits to changing their behaviors (perceived benefits); (4) s/he believes that the actions needed in order for them to change their risky behaviors might be financially costly to them or physically harmful but necessary (perceived barriers); (5) s/he physically notices the symptoms of the disease on their bodies which in turn motivates them to take action (cues to action) (Yep 1993; Dennison 1996; Hankins 1998). The model also acknowledges that demographic variables such as age, sex, ethnicity as well as personality may indirectly influence how people perceive their risk to diseases (Becker ,Rosenstock and Slack 1974; Janz and Becker 1984, 1985; Champion 1984; Eisen, Zellman and McAlister 1992; Walter et al. 1992; Glanz, Lewis and Rimer).

The diagram below depicts the Health Belief Model:

Figure 2. Conceptualizing the Health Belief Model



Source: Glanz, Karen, Barbara K. Rimer and Marcus F. Lewis. 2002. *Health Behavior and Health Education: Theory, Research and Practice.* San Francisco: Wiley and Sons.

The Health Belief Model has been used to study diverse health issues such as tuberculosis, cancer, diabetes, multiple sclerosis and most recently sexually transmitted diseases (Dennison 1996). One of the earliest works to test the model was Hochbaum's 1956 study on perceived fear of tuberculosis and chest X-ray tests (Hazen 1976). Based on a sample of 1,200 individuals from Detroit, Boston and Cleveland, Hochbaum found that knowledge was an important component in the Health Belief Model as results showed that when individuals did not have enough knowledge about tuberculosis, they were less likely to seek X-ray tests (Hochbaum 1958; Hazen 1976).

The Health Belief Model also was successfully utilized in 1962 by Heinzelmann's study of 284 college students from 11 colleges across the U.S. These students had medical records of suffering from rheumatic fever. Utilizing elements of the Health Belief Model such as perceived susceptibility, perceived benefits of taking action to cure the disease, and knowledge about the ailment, Heinzelmann found that the use of penicillin antibiotics by the students was closely associated with each of these components of the model individually. However, he concluded that when perceived susceptibility, perceived benefits and knowledge were combined, they exhibited more influence in students taking penicillin (Heinzelmann 1962).

Since the 1960's, the model has been successfully applied by many researchers to study critical medical conditions such as heart diseases, diabetes, mental illnesses and cancer (Champion 1984; Fulton et al. 1991; Lipkus et al. 1996; Pasick and Burke 2008). These studies are an indication of the usefulness of the Health Belief Model in predicting

health behaviors in developed countries. Consequently, the model has become popular among scholars in many countries wishing to understand the relationship between HIV knowledge, risk perceptions towards the disease and sexual behaviors (Fajans, Ford and Wirawan 1995; Blanc and Way 1998; Maswanya et al. 1999; Akwara, Madise and Hinde 2003; Stringer et al 2004). Gregson et al. (1998) used two components of the Health Belief Model (perceived susceptibility and cues to action) on their study of 1294 women aged between 13-49 years on behavior changes in rural Zimbabwe. They found that sexual behavior changes were facilitated by greater knowledge, experience and personal risk perception, indicating the link between perceived risk and behavior changes.

Similarly, an empirical study conducted by Volk and Koopman (2001) among 232 African American individuals at six private and governmental clinics discovered that the Health Belief Model was important in predicting sexual behavior and in this case, condom use. For instance, the lack of condom use was low because individuals perceived them as being expensive. Furthermore, several studies have also shown that individuals who perceive their risk of getting HIV/AIDS as low are unlikely to use condoms (Stringer et al 2004).

Despite the Health Belief Model's ability to predict behavior changes, the model has been criticized for its Western ethnocentric perspective and failure to take into account other social and cultural factors in developing countries that may influence individuals' risky sexual behaviors (Macintyre et al. 2001; Rankin et al. 2009).

Eiser and Cole (2002) argue that without including culture in the Health Belief Models the results will likely show a weak association between perceived risk perception and sexual behavior. One example is a study conducted by Lin et al. (2005) on Taiwanese males. It was found that although the Health Belief Model concepts of self-efficacy were relevant in other studies on sexual behavior, in the case of the Taiwanese study, self-efficacy was not culturally important to the Taiwanese males. Therefore when included in the model, self-efficacy proved to be insignificant. It is unreasonable to argue that cultural elements such as ethnicity, gender, culturally based beliefs about health should be included when utilizing the Health Belief Model to understand sexual behavior (Rosenstock 1974; Ashing-Giwa 1999; Lin 2005, Simon and Zemon 2005; Eiser and Cole et al. 2002).

Although prior studies have focused on some of the central components of the Health Belief Model such as perceived susceptibility, benefits and cues to action and the influence of gender, education and ethnicity (Winfield and Whaley 2002; Rankin et al. 2009), this study added a new variable that has never been tested before by previous studies testing the model which is: "Keeping AIDS a Secret within the Family." This variable is important as previous studies on AIDS have shown that many families strive to keep AIDS a secret (Herek and Capitanio 1999; Antle et al. 2001; Anderson et al 2008). Results have shown that some family members are reluctant to reveal their family members HIV status because of the fear of stigmatization and discrimination (Alonzo and Reynolds 1995; Brown, Trujillo and Macintyre 2003). Thus since keeping AIDS a secret is part of the culture of many families, it was included in the Health Belief Model to

further show the influence of culture on sexual behavior. Given this, the study hypothesized that adolescents who wanted to keep AIDS a secret within the family were less likely to be involved in risky behavior because they had higher levels of knowledge and perception of risk. Therefore, adding the variable "keeping AIDS a secret within the family" added more strength to the Health Belief Model which was used as a guideline for this study.

Social Epidemiology Theories

The Culture of Keeping AIDS a Secret

The term "social epidemiology" was first coined in 1950 by Alfred Yankeur in his article titled *"The relationship of fetal and infant mortality to residential segregation: an inquiry into social epidemiology"* (see Krieger 2001). In the article, social epidemiology was defined as the "study of the role of social factors in the etiology of disease" (Krieger 2001: 669). Simply, social epidemiology seeks to bring to light some social characters that affect the distribution of health in different societies (Kaori 2004). In terms of HIV/AIDS social epidemiological theories have been used by scholars to assess the influence of demographic characteristics such as gender, ethnicity, culture and socioeconomic status on people's sexual behaviors (Larson 1990; Perry 1998; Rothenberg 2007).

In the case of HIV/AIDS, many scholars have found that many families tend to keep AIDS a secret within the family (McGrath and Ankrah 1993; Burkholder, Harlow and Washkwich 1999; Kelly 2002; Kalichman and Simbayi 2003; Hamra et al 2006;

AVERT 2010b). Stigma has been cited as the major reason why people hide their illness. According to Goffman (1963) stigma refers to "an attribute that is deeply discrediting and that reduces the bearer from a whole and usual person to a tainted, discounted one" (Goffman 1963: 1). This causes the discriminated person to experience shame and in some cases to feel "dirty" (Kelly 2002). Stigmatized persons and groups also suffer status loss and often are discriminated against (Link and Phelan 2001). Just such treatment has been directed towards HIV positive individuals (Kalichman and Simbayi 2003).

The origin of the stigma is important to understanding how the stigma emerged, its consequences, and the steps that might be taken to reduce if not erase stigma (Link and Phelan 2001). AIDS stigma dates back to the 1980s when AIDS was first diagnosed among the gay community in the U.S. (Herek and Capitanio 1999; Parker and Aggleton 2002). Thus many families related to HIV positive gay people chose to keep the disease a secret because of the homophobic attitudes of some members of the community (Cain 1991). The situation was even worse in Africa where there were reported cases of HIV gay individuals been murdered after revealing their HIV/AIDS status (Morgan 2003). Although AIDS has since spread among the heterosexual communities, AIDS stigma is still very prevalent in most societies. UN Secretary-General Ban Ki Moon has been quoted as noting that "stigma is the main reason why AIDS is the silent killer, because people fear the social disgrace of speaking about it and thus stigma is the chief reason why the AIDS epidemic continues to devastate societies around the world" (AVERT 2010c).

Other reasons related to stigma and why people keep AIDS a secret have included the fear of losing jobs (AVERT 2010c), the fear of being shunned by neighbors (Macklin 1988) and the fear of being avoided by those who think that the disease is contagious (Macklin 1988; Serovich et al. 1991). Moreover, since there is the widespread belief that most HIV/AIDS positive people are infected through sexual activities, most of these individuals who have AIDS hide the disease because of the fear that they may be viewed as promiscuous since AIDS carries a moral baggage (AVERT 2010b). Worsening the situation are some religious beliefs which place the blame of AIDS on the moral fault of the individuals infected (AVERT 2010b; Kalichman and Simbayi 2003, 2004).

Meanwhile, it has also been found that many family members support the decision of their HIV-infected relatives to keep the illness a secret within the family (Chesney and Smith 1993; Parker and Aggleton 2003). This is because some family members dread being avoided by members of the community and facing rejection from workmates who fear that they might have contracted the disease from their HIV relatives (Landau 2004). Some families also fear that if other community members know about the disease, this piece of information might ruin their family reputation in the community (Baguma 1992; Herek and Capitanio 1999; Thi et al. 2008; Muyinda et al. 1997).

In addition to this, other cultural reasons that have been noted for keeping AIDS a secret has been the traditional beliefs that AIDS is associated with supernatural and forces and spirits. Kalichman and Simbayi (2004) in their study on AIDS-related stigmas among 487 men in Cape Town, South Africa found that at least 11% of respondents

believed that HIV/AIDS infected individuals were possessed by evil spirits while 21% believed that AIDS was related to supernatural forces. Interestingly, Kalichman and Simbayi (2004:573) noted that the respondents who reported that they were HIV positive cited these witchcraft beliefs as the major reason why they kept their status a secret from society. This signified that those individuals who were aware of AIDS-related stigmas were more than determined to hide their illnesses.

Similarly, a research conducted by Oxford University researchers found that many lung cancer patients in the United Kingdom were unwilling to disclose their illness to the general public. This was attributed to the fact that respondents were aware that the disease is strongly associated with smoking. Most patients felt that society would blame them for their cancer illness and hence their desire to hide their smoking and illness history (West 2004). Likewise, Stuber, Galea and Link (2009) in their study on smokers in the United States found that some smokers went to great lengths to hide their smoking habits because of the shame associated with smoking and lung cancer. A sample of 4,000 smokers, 17% reported experiencing discrimination based on their smoking habits and hence felt the pressure to smoke in secret.

Additionally, Serovich, Green and Parrott (1992) in their study on AIDS privacy in the United States found that some professional individuals in white collar jobs blamed AIDS stigma as the main reason for their unwillingness to disclose their HIV/AIDS status. Most of them were aware that their co-workers might discriminate against them if they found out that they were HIV positive or that they might lose their jobs, more than

three quarters of the respondents went to great lengths take their AIDS drugs in secret. The authors concluded that these societal AIDS related-stigmas highlighted why HIV positive individuals and their families have been adamant about keeping AIDS a secret within their family households (Serovich, Green and Parrott 1992).

However, contrary to the above findings, some scholars argue that high levels of HIV/AIDS knowledge lead to less inclinations to AIDS a secret because of the individuals' desire to eradicate stigma in society (Parker et al 1992). Stein (2003) notes that those studies that have found a positive correlation between high levels of AIDS knowledge and a decrease in AIDS secrecy and stigma have attributed these results to an increased awareness in society that HIV/AIDS is not only transmitted through promiscuous ways. Therefore, given these findings, the current study sought to investigate the association between AIDS knowledge, keeping AIDS a secret within the family, risk perception and risky sexual behavior. The main hypothesis theorized that adolescents with higher levels of knowledge were more likely to keep AIDS a secret within the family.

Gender and Power Theories

Randall Collins (1989) noted that both males and females have access to the economic, social and structural systems in society, but not equally. According to him, women are concentrated in the preservation of culture while men are predominately occupied in the material and power realm. Thus women are relegated to the role of bearing children and being house wives. For this reason, even when employed the

majority of women are in the service sector and low-skill jobs (Standing 1989; Wright et al. 1995; Susser 2009). Although the situation has significantly changed since Collin's article was written, with more women now occupying jobs in the formal sector which were previously thought to be exclusively for men such as Supreme Court and judicial judges, college presidents, physicians, country presidents, electricians, plumbers and many others. Women now occupy about 40% of the world's paid population in the world except in North Africa and Asia (Giddens et al. 2009). Nonetheless, Asenbrey and Bruckner (2008) note that while women may occupy these important waged positions in society, three quarters still earn less than their male counterparts in the same positions, illustrating the economic power dimensions between men and women.

Lenski (1966) contended that the source of stratification in society lies in the *"size of the economic surplus in a society and the basis and distribution of power in it"* (1984:74). Beginning with the hunting and gathering societies men with large surplus agrarian wealth occupied the powerful positions in the community compared to their poor counterparts. Lenski concluded that one's social class determined one's power in society. However, Lenski's work focused primarily – nearly exclusively, on stratification among males (Chafetz 2004). Joan Acker's (1980) statement that "stratification theory has been a theory of white males" (33) is very telling. Women often were either not discussed or were discussed in relation to men, especially as wives or prostitutes. Or, women as part of stratification systems were handily dismissed as rather inconsequential to the analyses and theories (see Acker 1973). Stratification systems are typically quite complex. There is stratification among and between women and men, though women's status typically

has parameters placed on it by men with the power to heavily influence if not dictate social arrangements and ideology (Blumberg 1984).

Gender inequality has been particularly prominent in many African patriarchal societies (Hartmann 1976; Kane and Sanchez 1999; Smith-Lovin and Ridgeway 1999). Kambarami (2006) notes that patriarchal practices are closely associated with the African culture such that they infiltrate into other sectors of the society such as religion, politics, education and the economy. Patriarchy is a system of authority that places men, because they are men, in positions of greater access to and control over valuable resources. Maleness is socially significant and deemed more important than females. This sex-based stratification can range from absolute to remnant. In systems of absolute patriarchy, men *because they are men* absolutely have sole access to and control over all resources, including the very fates of women and children. At the other end of the continuum, men still are seen as somewhat better or important than women, but now it no longer is acceptable or allowable for men to have extremely disproportionate access to and control over resources – and women (see Bidwell and Vander Mey 2000).

In strongly patriarchal societies women are subjected to men's authority in general, and to husbands' and fathers' authority in particular. The situation is worsened by the cultural practice of dowry payment (Phaladze and Tlou 2006). This is whereby husbands pay bride wealth in the form of money and cows to their wives' families. Consequently, men feel entitled to their wives' sexuality (Hartmann 1976; Acker 1990; Dodoo 1998; Wood and Eagly 2002; Langen 2005; Pietrzyk 2005). This makes it hard

for women to refuse their husbands sex (Wingwood 2000 and Njeru et al. 2004) or to negotiate for safer sex (Machel 2001; Njeru et al. 2004; Langen 2005; Robert et al. 2009).

It has been noted that strategies for the economic survival of the family, combined with male entitlement, might be contributing to the disproportionate number of women who are HIV positive. For instance, in many developing countries, men often leave the home place to secure paid employment elsewhere. While away working, they have unprotected sex with other women, especially sex workers. When they return home, they engage in unprotected sex with their wives (Momsen 2004). Male sexual entitlement, and perception of "real men" as those who do not use condoms, can contribute to women's disproportionate vulnerability to HIV/AIDS.

Other studies have also shown that women's inability to negotiate for safe sex in developing countries is facilitated by other cultural practices such as dry sex, widow inheritance, son preferences, child marriages and polygamy (Kat-Reynen 2001). Perhaps for women poverty places them more at risk of HIV infection (Silin 1995; Glick 2000). Hence in cases where families are powerful, research has shown that there is a preference to send boys to school than girls (Glick 2000; Machel 2001; Njeru et al. 2004). This deprives women access to knowledge about condoms and AIDS information sources (DiClemente 1991). A 2008 study by the National Demographic Health Survey found that most basic knowledge on HIV/AID in the Philippines is taught in schools. But, because the majority of rural girls do not attend school, only three percent of non-

educated women had comprehensive knowledge about the AIDS virus compared to educated women (Pazzibugan 2010).

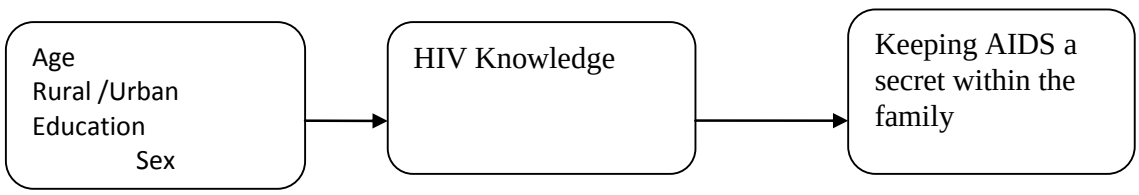
Given that women may be exposed to the risks of AIDS differently from men because of the influence of social, political and economic factors, the current study sought to assess whether HIV knowledge, risk perception and sexual behaviors among adolescents differed for males and females due to gender differences. Previous studies analyzing behavior changes have tended to lump both women and men together (Lagarde, Prison and Enel 1998; Maswanya et al. 1999 and Stringer et al. 2004), and little has been done utilizing the Health Belief Model to show that HIV knowledge, risk perception and sex activities differ according to gender. This study bridged this gap in the literature by utilizing the Health Belief Model to show that gender differences play a significant role when studying the relationship between keeping AIDS a secret, AIDS knowledge risk perception and risky sexual behavior among adolescents. The effects are weaker for females.

Research Question

The main research questions in this thesis sought to explore whether keeping AIDS a secret within the family was associated with adolescents' HIV knowledge, risk perception and sexual behavior and whether these relationships differed by gender. Four hypotheses listed below were tested:

Hypothesis I: HIV/AIDS knowledge has a positive direct effect on keeping AIDS a secret within the family.

Figure 3. Conceptualizing the association between AIDS Knowledge and keeping AIDS a secret



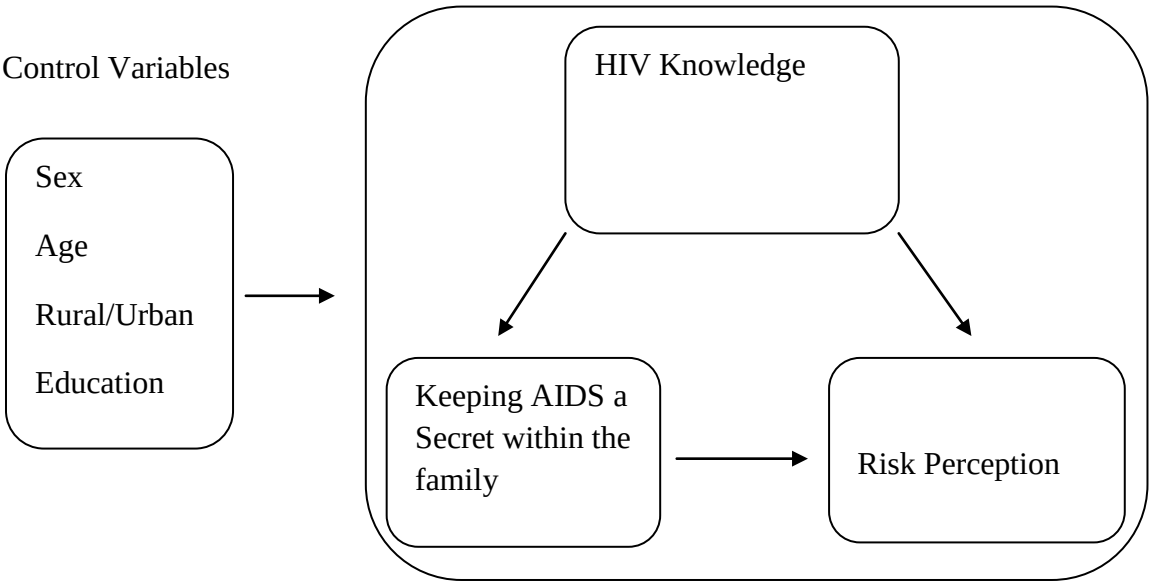
The hypothesis posits that adolescents who have higher HIV knowledge are more likely to keep HIV/AIDS a secret within the family. "Common sense" might lead to an alternative hypothesis to the effect that those adolescents with higher levels of [factual] AIDS knowledge will likely not keep AIDS a secret within the family. However, prior studies have documented that the reason that people choose to keep AIDS a secret within

the family is because of fear of stigma (Krieger 2001; Landau and York 2004; Mill 2010). For example, a study conducted by Oxford University researchers found that many lung cancer patients in the United Kingdom were not always willing to disclose their illness to the general public. This was attributed to the fact that the disease is strongly associated with smoking. The research also found that most patients felt that society blamed them for their cancer illness and hence the desire to hide their smoking and illness history (West 2004). Additionally Stuber, Galea and Link (2009) in their study on smokers in the United States found that some smokers went to great lengths to hide their smoking habits because of the shame associated with smoking and lung cancer. A sample of 4,000 smokers, 17% reported experiencing being discriminated against because of their smoking habits and hence the pressure to smoke in secrecy.

Besides stigma against lung cancer sufferers and smokers, people suffering from AIDS have also suffered from stigma. Serovich, Green and Parrott (1992), in their study on AIDS privacy in the United States, found that some professional individuals were not always willing to disclose their HIV/AIDS status because of fear of discrimination at work. They chose to keep their AIDS status strictly within their family households. This was a strong indication that even among the educated professionals, there was a strong desire to keep AIDS a secret. Based on the above findings this hypothesis set to test the association between AIDS knowledge and keeping AIDS a secret within the family.

Hypothesis II: The relationship between keeping AIDS a Secret and risk perception is explained by HIV/AIDS knowledge.

Figure 4. Conceptual Model for the Association between Keeping AIDS a secret, Risk Perception and AIDS Knowledge

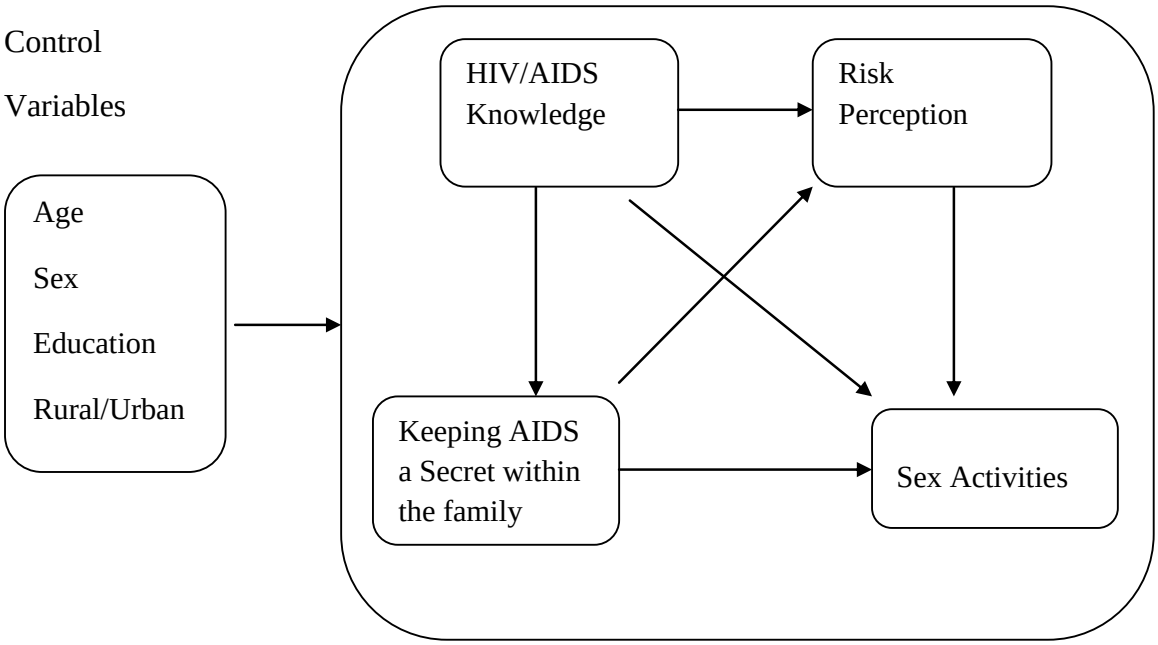


The hypothesis reflects the assumption that adolescents who want to keep AIDS a secret within the family had risk perception and this was explained by the fact that they have higher levels of HIV/AIDS knowledge. Many scholars have found a positive association between AIDS knowledge and risk perception. In fact Akwara, Madise and Hinde (2003) noted that before any discussion on sexual behavior can be made, perception of risk should be given utter most importance. Studies have also found that

adolescents with comprehensive knowledge about HIV/AIDS are more likely to perceive their risk of getting infected by HIV/AIDS as high especially if they engage in risky activities (Gregson et al. 1998; Akwara, Madise and Hinde 2003).

Hypothesis III: Keeping AIDS a secret within the family has a positive effect on sexual behavior which is mediated by risk perception.

Figure 5. Conceptual Model for the Association between Keeping AIDS a secret, Risky Sexual Behavior, Risk Perception and AIDS Knowledge



The hypothesis posits that adolescents who wanted to keep AIDS secret within the family were less likely to be involved in risky behavior because they had perception of risk due to high levels of HIV/AIDS knowledge. However, previous studies that have examined the relationship between risk perception and risky sexual activities have remained inconclusive (Akwara, Madise and Hinde 2003)

Some studies have found a positive association between perceived risk perception and risky sexual activities(Weisman, Madise and Hinde 1989; Lindan 1991; Gregson et al. 1998; Madise, Zulu and Ciera 2007). This is to say that individuals who have higher risk perception are less likely to engage in risky sexual activities. This association is further strengthened by having comprehensive knowledge about the disease in question (Kirby 2002). On the other hand, some studies have shown that having comprehensive knowledge about AIDS does not necessarily translate to individuals engaging in less risky activities (Akwara, Madise and Hinde 2003). This is partially due to the fact that the meaning and culture of sex differs across different communities. Thus not using a condom may be acceptable in one society whereas in another this might be viewed as engaging in risky sexual activities (Akwara, Madise and Hinde 2003). Furthermore, most studies on risky sexual behavior utilize cross-sectional data which makes it challenging to determine adolescents' sexual history and in turn makes it hard to have conclusive results on the association between perceived risk perception and risky sexual behavior (Gregson et al 1998).

Hypothesis IV:

This hypothesis stated that the relationships between "Keeping AIDS a Secret within the family," HIV knowledge, risk perception and sex activities varied by gender. This is to say these effects were weaker for women than for men. To support the above hypothesis, previous studies have documented that women are more at risk of being infected by HIV/AIDS compared to men (Barongo et al. 1992). The situation is worse in Africa societies are patriarchal. Women are usually viewed as inferior to men (Travers and Bennet 1996). Power differences facilitate men's ability to exert control over women's bodies (Moore et al. 2007).

In addition to this, some studies have shown that in some countries such as Malawi there is a tendency to accept boys who engage in premarital sex whereas girls who behave in the same manner are treated as prostitutes (Munthali et al. 2006). These societal preferences can be traced back to the socialization theories which argue that society's tendency to teach boys and girls from a young age to embrace their different roles is what contributes to men being given more power over women. Thus boys are socialized from a young age to be breadwinners while women are taught to take care of their husbands (Firestone, Harrison and Lambert 2004). These misgivings have largely contributed to gender inequality in the health care, education and cultural systems in society.

CHAPTER FOUR

METHODS

This thesis relied on an analysis of data from the National Survey of Adolescents from Malawi (Munthali, Biddelecom and Zulu 2006).

Description of the Data Set

The data collected here were part of the multi-year project entitled: *Protecting the Next Generation: Understanding HIV Risk among Youth Study* conducted in Burkina Faso, Ghana, Malawi and Uganda by the Guttmacher Institute. In Malawi, the Center for Social Research and Malawian National Statistics Office played a central role in all areas related to the research. Funding for this project was provided by the Rockefeller Foundation, the National Institute of Child Health and Human Development, and the Bill and Melinda Gates Foundation (Kibombo, Neema and Ahmed et al. 2007).

The survey was designed to examine adolescents' risk- taking and health seeking behaviors associated with HIV, STDs, marriage and unintended pregnancy. The main goal of the 2004 National Survey of Adolescents was to produce national data aimed at assessing the knowledge, attitudes and practices of adolescents' which expose them to HIV/AIDS risk and unwanted pregnancy. Respondents were asked several demographic questions which included age, sex, household composition, socio-economic status, educational attainment, marital status, rural/urban residence and ethnicity. Because of the sensitivity of some of the questions in the survey, informed consent forms were obtained

from both parents/guardians and whenever possible interviewers and respondents were paired up by gender. In addition to this, questionnaires were translated to local languages and re-translated back to English (Munthali, Biddelecom and Zulu 2006).

The survey in Malawi was administered between March and June 2004 and then again in August 2004 in both the rural and urban areas in the country. Utilizing a two-stage stratified sample design that selected households from rural and urban clusters, 7,750 households were listed for initial screening. However, during the initial data collection period this process only yielded 3,448 individual in-person interviews with adolescents. Thus in August 2004, researchers extended the surveys to additional clusters. This resulted in an additional 1,431 interviews which brought the total to 4,879 adolescent respondents (Munthali, Biddelecom and Zulu 2006).

It should be noted that in the current study all missing cases were excluded from the analyses by computing a misflag1 variable which deleted all missing cases. Only respondents who had heard of AIDS and gave valid answers to all questions asked where included in the descriptive analyses and regression models. A total of 261 cases were excluded leaving, the final sample size used for all analyses as 3770.

Measures

Dependent Variables

Keeping AIDS secret

Keeping AIDS a secret was measured by a question which asked respondents: "If a member of your family became infected with the AIDS virus, would you want it to remain a secret?" Possible responses were, "yes", "no" and "don't know." In this case 206 respondents who answered "don't know" were recoded into "no" such that the measure became dichotomous and those who answered "yes" to the question were coded as 1 and all others as 0.

Risk perception

Risk perception was measured by using the question in the 2004 National Survey of Adolescents which asked respondents, "Do you think your chances of getting HIV/AIDS are great, moderate, small or no chances at all?" A dichotomous variable was constructed such that all those who answered great/moderate chances were coded as 1 and all other responses as 0.

Risky Sexual Activities

Risky sexual behavior was computed using the following questions:

Have you ever had sexual intercourse? [Yes/No/Don't Know]

Now I would like to ask you some questions about the first time you had sexual intercourse. What was the person's relationship to you at the time [Husband/Wife, Live-in Partner, Boyfriend/Girlfriend not living with respondent, casual acquaintance, Commercial Sex]? Casual acquaintance and commercial sex were recoded as 1 and all other responses as 0.

The first time you had sexual intercourse was a male condom used [Yes/No/Don't Know]. No was recoded as 1 and all other responses as 0

Hence those who had engaged in either sexual intercourse with a casual acquaintance/commercial sex without a condom or had sex without a condom were coded as 1 (risky sexual behavior) and all others as 0.

Independent Variables

AIDS Knowledge

AIDS knowledge was measured by 17 questions related to HIV/AIDS transmission and prevention methods. Because of a skip pattern in the 2004 National survey questionnaire, questions were restricted to adolescents who answered yes to the first question which asked that "Have you ever heard of an illness called AIDS?"

Indices of HIV/AIDS Knowledge variable were computed by adding up the number of correct answers respondents got to questions about HIV transmission and prevention methods. A score of one point was given for each correct answer and zero for each incorrect answer or "I don't know" (See Appendix A for the list of HIV/AIDS knowledge

questions). The scores ranged from zero to 17. The reliability for this HIV/Knowledge scale, using Cronbach's alpha, was .845.

Gender

Gender was measured by a question which asked respondents to circle their sex. Male=0 Female=1.

Control Variables

The control variables included were residence (rural/urban), age (in years), and education (high school/primary). Respondents were asked to state their age by years. A dummy variable was created such that adolescents who were 16-19 years were coded as zero and adolescents aged between 12-15 years were coded as 1.

Education was derived from the question, "What is the highest level of education you have received?" Possible responses were "primary," "secondary" and "higher." Only one respondent indicated they had attainment of higher education and "higher" was recoded into "secondary." A dummy variable was created such that those who had attained secondary education were coded as zero and those who had attained primary education were coded as 1.

Residence was measured by a question to state whether they lived in the rural or urban center. A dummy variable was created such that urban was coded as zero and rural residence was coded as 1.

Statistical procedures

All the data were processed using PASW (SPSS) and all results in the tables were weighted in order for the findings to be generalized to the larger population. The 2004 National Survey on Adolescents data file contained missing cases because some of the interviews were incomplete or inconsistent. To eliminate the possibility of duplicating interviews, in cases where adolescents were mistakenly interviewed more than once, a qweight value of zero was assigned. The analysis also followed the recommendation made by the 2004 National Survey of Adolescents questionnaire that the sample weight be divided by 1,000,000. Therefore qweight was computed as gross weight. All regression tables show weighted cases and cases were only selected for analysis where gross weight>0.

Frequencies for demographic characteristics were run. These characteristics of the sample comprised of adolescents' age, adolescents' education, adolescents' residence and adolescents' gender. Frequencies were also run for HIV/AIDS knowledge; adolescents' willingness to keep AIDS a secret in the family, adolescents' risk perception, adolescents' risky behavior activities in order to gain a better understanding of the 2004 National Survey of Adolescents. All the variables except AIDS knowledge (which was used as a continuous variable) were recoded 0 and 1 so as to create dichotomous variables necessary for logistic regression tests. For exploratory purposes, correlations were performed between the dependent, independent and controls before running the regression models so as to determine the bivariate associations between these variables.

Binary logistic regression was performed to examine the association between the independent variable (AIDS knowledge) and their capability to explain variance in the dependent variable (Keeping AIDS a secret within the family). Before performing separate tests for males and females the following models were run for all adolescents in order to test for interaction between AIDS knowledge*female:

Model 1: Keeping AIDS a secret within the family= controls+ AIDS knowledge

Model 2: Keeping AIDS a secret within the family= controls+ AIDS knowledge + AIDS knowledge*female

Next, binary logistic regression was employed to test hypothesis 2, that is, adolescents who want to keep AIDS a secret within the family have risk perception and this is explained by the fact that they have higher levels of HIV/AIDS knowledge. Before running the regression models separately for males and females the following models were run in order to test for the interaction between AIDS knowledge and female and between keeping AIDS a secret within the family and female:

Model 1: risk perception= controls+ keeping AIDS a secret within the family

Model 2: risk perception = controls + keeping AIDS a secret within the family+ AIDS knowledge

Model 3: risk perception = controls + keeping AIDS a secret within the family + AIDS knowledge +AIDS knowledge*female+ keeping AIDS a secret within the family*female

For the third hypothesis, adolescents who want to keep AIDS secret within the family are less likely to be involved in risky behavior because they have higher level of knowledge and higher perception of risk, binary logistic regression was used. Before testing the models separately for males and females the following models were run for all adolescents:

Model 1: risky sexual behavior=controls+ keeping AIDS a secret within the family

Model 2: risky sexual behaviors= controls +keeping AIDS a secret within the family+ AIDS knowledge

Model 3: risky sexual behaviors= controls +keeping AIDS a secret within the family+ AIDS knowledge+ risk perception

Model 4: risky sexual behaviors= controls +keeping AIDS a secret + AIDS knowledge +risk perception+ AIDS knowledge*female+ keeping AIDS a secret within the family*female + risk perceptions*female

CHAPTER 5

RESULTS

The current study focused on the relationship between keeping AIDS a secret within the family, AIDS knowledge, risk perception and risky sexual behaviors. The effect of gender was taken into account. This chapter provides the results of the statistical analyses utilized to examine the hypotheses related to these associations. Descriptive statistics which were weighted and unweighted are analyzed first. This is followed by a correlation matrix which was reviewed before binary logistic regression tests were utilized.

Descriptive Statistics

Frequencies for all variables used in this study were run separately for males and females (Table 2). Forty nine percent of all respondents were females (n=1846) while 51% of the respondents were males (n=1924).

Females: More than one half (58.7%) of the females were aged between 12-15 years (n=1084) and 41.3 % (n=762) were aged between 16-19 years. More than three thirds of (77.3%; n=1427) of females lived in the rural areas while only 22.7 % (n=419) were urban residents. About 86.1% (n=1538) of the females had primary education (which is equivalent to 8^{th} -10^{th} American grades) while 13.9% (n=308) had received secondary education (which is the equivalent to 11th-12^{th} American grades). Less than half of the females (44.3%; n=818) indicated that they would prefer to keep AIDS a secret within the family compared to 55.4% (n=1023) who would prefer not to keep the disease a

secret or said they did not know what they would do. Overall, 44.6% (n=1023) of the females reported being at risk of contracting HIV/AIDS compared to 55.7% (n=44.6) of those females who answered that they had no risk at all of contracting AIDS. Only 4.3% (n=80) of the females admitted that they had engaged in risky sexual behavior compared to 97.5% (n=1766) who said they had not engaged in risky sexual activities.

Males: Frequencies run for all demographic and social characteristics for male adolescents indicated that 58.5% (n=1126) males were aged between 12-15 years while 41.5% (n=798) were aged between 16-19 years. Similar to female respondents, the majority of the males resided in the rural areas (76.8%; n=1478) compared to

23.2 % (n=446) who had urban residence. More than three quarters of the males had received primary education (86.7%; n=1668) in comparison to only 13.3% (n=256) of the males who had attained secondary education. Unlike the female respondents, 53.4% (n=1027) of the males wanted AIDS to be kept a secret within the family while 46.6% (897) did not mind other people knowing that their relative was HIV/AIDS infected. In terms of perception of risk, 47% (n=916) perceived they had chances of contracting HIV/AIDS compared to 52.4% (n=1008) who perceived their chances as nonexistent. Only 10.3% (n=1725) of the males had engaged in risky sexual behavior while 89.7% (n=1725) had not.

Table 1. Frequencies for Nominal Variables

Variables	Females Frequencies (N=1846)	Percentages	Males Frequencies (N=1924)	Percentages
Age				
12-15 years	1084	58.7	1126	58.5
16-19 years	762	41.3	798	41.5
Residence				
Rural	1427	77.3	1478	76.8
Urban	419	22.7	446	23.2
Education				
Primary	1538	86.1	1668	86.7
Secondary	308	13.9	256	13.3
Chance of getting AIDS	823	44.6	916	47.6
Yes	1023	55.4	1008	52.4
No				
Keeping AIDS a secret	818	44.3	1027	53.4
Yes	1028	55.7	897	46.6
No				
Risky sexual behavior	80	4.3	199	10.3
Yes	1766	95.7	1727	89.7
No				

Total N= 3770

AIDS Knowledge Index

The knowledge variable for females had a mean score of 13.28 and a standard deviation of 2.929. The range of scores was from 0-17. The males had a mean score of 13.68 and a standard deviation of 2.738. The range of scores was from 0-17.

An independent samples t-test was performed to compare the knowledge of females and males. There was not a significant difference in the scores for females *(x*=13.28, SD=2.929) and males (*x*=13.68, SD=2738) conditions; $p \leq .05$

Correlations among Study Variables

In order to test for interrelationships among the independent variables and control variables, correlation coefficients were generated (Table 2). The correlations were useful in assessing whether the variables were positively or negatively associated with each other. The dependent variables were keeping AIDS a secret, risk perception and risky sexual behavior. The independent variables were AIDS knowledge and female while the control variables used were age, residence and education. Female was not significantly related to any of the control variables and to AIDS knowledge and AIDS knowledge and risk perception.

Slightly higher correlations were found among the control variables: age and primary (r=.37), rural and primary (r=.29) and also AIDS knowledge and risk perception (r=.23). Of the dependent variables female was only correlated with keeping AIDS a secret within the family and risky sexual behavior. Contrary to the findings in the regression models,

female, keeping AIDS a secret within the family, AIDS knowledge and risk perception were positively correlated with risky sexual behavior indicating a strong association between these variables. However, an explanation for these strong associations can be attributed to the fact that these associations were bivariate. Therefore without adding control variables, it is possible to get positive associations (Akwara Madise and Hinde 2003). None of the Pearson Correlation Coefficients were above .40, indicating very little multicollinearity among the variables. Despite these weak correlations between variables they were still useful in predicting the associations between keeping AIDS a secret, AIDS knowledge, risk perception and risky sexual behavior.

Table 2. Correlation Coefficients for Variables in the Study (N=3770)

	1	2	3	4	5	6	7	8
1.Age	1							
2.Rural	.043**	1						
3.Female	.002	.006	1					
4.Primary	.366**	.287**	-.009	1				
5.Keeping AIDS a secret	-.032	.108**	-.091**	.086**	1			
6.AIDS knowledge	-.224	.154**	-.070	-.261	.224**	1		
7.Risk Perception	-.094**	.006	-.031	-.027	.046**	.224**	1	
8.Risky sexual behavior	-.080**	.012	-.178**	.-.022	.067**	.050**	.038*	1

*p<.05, **p<.001 and ***p<.001

Logistic Regression Analyses

Hypothesis I*: Adolescents with higher AIDS knowledge were more likely to keep AIDS a secret within the family*

Table 3 (next page) present results of the logistic regression analyses that were used to examine the effects of the independent variables on the dependent variables while controlling for the socio-demographic variables. Results in Table B1 in Appendix B shows that the interaction term between AIDS knowledge and females was not significant meaning that the relationship between AIDS knowledge and keeping AIDS a secret within the family did not differ by gender. Table 3 provides the results of logistic regression models for females and males which were fitted to examine the relationship between AIDS knowledge and Keeping AIDS a secret within the family.

Females: Results from Model 1 in Table 3 show that those females aged 12-15 years were 27 % more likely to keep AIDS a secret within the family than older females. Rural residence was significant ($p \leq .008$). The odds ratio showed that female adolescents who resided in the rural areas were about 27% less likely to want to keep AIDS a secret within the family. Primary education also was significant ($p \leq .006$), and the odds ratio value ($Exp\beta = .653$) indicated that those females who had primary education were about 35% less likely to keep AIDS a secret within the family. As expected AIDS knowledge was significantly associated with female adolescents who wanted to keep AIDS a secret within the family. Thus one unit increase in AIDS knowledge increased the likelihood of females who want to keep AIDS a secret within the family by 17%.

Males: Results from Table 3 show that age was not a significant predictor of keeping AIDS a secret within the family. Rural residence was significant ($p \leq .001$), and the odds ratio value ($Exp\beta = .672$) confirmed that those male residents who resided in the rural areas were 33% less likely to keep AIDS a secret within the family compared to those males who resided in the urban areas. Unlike females, primary education was not a significant predictor for males wanting to keep AIDS a secret within the family. However, AIDS knowledge was significantly associated with wanting to keep AIDS a secret within the family ($p \leq .000$). Thus, one unit increase in AIDS knowledge increased the likelihood of males who wanted to keep AIDS a secret within the family by 18%. These results were consistent with what was expected in the first hypothesis.

Table 3. Odds Ratios for Predictors on Keeping AIDS a secret

	Females	**Males**
	(N=1846)	**(N=1924)**
Characteristics	**Model 1**	**Model 1**
12-15 year olds	1.279*	1.021
Rural residence	.731**	.672**
Primary	.653**	1.182
AIDS knowledge	1.168***	1 .180***

Total N= 3770, *p<.05, **p<0.01 and***p<.001

Reference categories: age=16-19 years old, residence=urban, education=secondary and AIDS secrecy= not keeping AIDS a secret.

Hypothesis II: *Adolescents who want to keep AIDS a secret within the family have higher risk perception and this is because they have higher levels of knowledge.*

Table 4 shows the results of the female and male logistic regression models utilized to examine the association between Keeping AIDS a secret within the family and risk perception, while controlling for all other social and demographic characteristics. All interaction effects were statistically significant at conventional levels (Table B2, Appendix B).

Females: The results in Model 1, Table 4 showed that rural residence was significant at (p=.000) and the odds ratio value for the variable (Expβ=.643) suggested that the odds of female adolescents who were aged 12-15 years were about 36% less likely to perceive themselves at risk of contracting HIV/AIDS infection compared to those aged 16 years and older. Rural residence, primary education and keeping AIDS a secret within the family were not statistically significant.

In Model 2, age remained statistically significant while rural residence and primary education and keeping AIDS a secret within the family remained not significant. The introduction of keeping AIDS a secret within the family did not change the direction of the association between keeping AIDS a secret within the family and perceived risk perception among females. The results from the interaction between keeping AIDS a secret within the family and risk perception showed that the effects of keeping AIDS a secret within the family and AIDS knowledge on risk perception are significantly different for males and females. Hence hypothesis IV is supported.

Males: The association between keeping AIDS a secret within the family and risk perception among males (Table 5) was highly significant, and stronger for males than for female. In Model 5 the age category was significant ($p \leq .002$). Furthermore, the odds ratio value ($Exp\beta = .730$) indicated that those male adolescents who were aged 15 years and younger were 27% less likely to perceive themselves at risk compared to adolescents aged 16 years and older. According to the odds ratio value for keeping AIDS a secret within the family variable ($Exp\beta = 1.424$), those males who would keep AIDS a secret within the family were 42% more likely to perceive themselves at risk compared those males who did not want to keep AIDS a secret. Residence and education were not significant predictors of risk perception.

Model 2 added in AIDS knowledge to explain the relationship between keeping AIDS a secret and risk perception. The inclusion of AIDS knowledge did not alter the results from Model 1 as age and keeping AIDS a secret within the family remained statistically significant while residence and education remained insignificant at the 5% level. The results also showed that AIDS knowledge was significantly associated with risk perception ($p = .000$). The odds ratio value ($Exp\beta = 1.120$) indicated that for one unit increase in AIDS knowledge there was a 12% likelihood of those males who had high levels of HIV/AIDS knowledge perceived themselves at risk of contracting AIDS compared to those with lower levels of HIV/AIDS knowledge. Thus the results from these models for males supported the hypothesis that adolescents who keep AIDS a secret within the family were more likely to have risk perception even after controlling for

AIDS knowledge. The results also showed that this hypothesis was significant for male adolescents but not female adolescents.

Table 4. Odds Ratios for Predictors on Perceived Risk Perception

	Female		**Male**	
Characteristics	**Model 1**	**Model 2**	**Model 1**	**Model 2**
12-15 year olds	.643***	.661***	.730**	.807*
Rural residence	.983	.955	1.115	1.189
Primary education	1.247	1.304	.854	.971
Keeping AIDS a secret	.980	.950[a]	1.424***	1.276**
AIDS knowledge	-	1.031[b]	-	1.120***

Females (n= 1846), Males (n=1924), *p<.05, **p<.01 and ***p<.001

[a] =coefficient between females and males at p-value .05

[b] =coefficient between females and males at p-value .05

Reference categories: age=16-19 years old, residence=urban, education=secondary and AIDS secrecy= not keeping AIDS a secret

Hypothesis III: *Adolescents who want to keep AIDS secret within the family are less likely to be involved in risky behavior because they have higher level of knowledge and higher perception of risk*

This hypothesis was tested by regressing risky sexual behavior on keeping AIDS a secret within the family and then adding the variables AIDS knowledge and risk perception while controlling for the demographic variables. No interaction terms were significant (see Table B3 in Appendix B) meaning that the relationship between keeping AIDS a secret within the family and risky sexual behavior mediated by risk perception and AIDS knowledge did not differ by gender. Results for females and males are shown in table 5.

Females: Results from Model 1 (Table 5) showed that age and keeping AIDS a secret were not significant predictors of risky sexual behavior. However, when compared to urban residents, females who resided in the rural areas were significantly ($p=.027$) 88% more likely to engage in risky sexual behavior. The odds ratio value for education also (significantly; ($p\leq.003$) indicated that females who had primary education were more than twice more likely to engage in risky sexual behavior ($Exp\beta=2.389$) compared to those females who were in secondary school.

Model 2 added AIDS knowledge. Knowledge was not significantly associated with risky sexual behavior. Thus the inclusion of AIDS knowledge did not change the direction of the association between keeping AIDS a secret and risky sexual behavior. Neither age nor educations were significant. The introduction of risk perception in Model

3 also did not change the association between keeping AIDS a secret within the family and risky sexual behavior. However, the inclusion of risk perception strengthened the association between rural residence and risky sexual behavior. Thus females who resided in the rural centers were more than twice likely to engage in risky sexual behavior compared to those in the urban areas. Finally, the odds ratio value for risk perception (Expβ=.582) indicated that those females who perceived themselves at risk of HIV were 42% less likely to engage in risky sexual behavior compared to those females with no risk perception.

Males: The results in Model 1 (Table 5) indicated that age was significantly associated with risky sexual behavior ($p \leq .010$). The odds value for the variable (Expβ=1.777) suggested that those males aged between 12-15 years were about 78% more likely to engaged in risky sexual behavior compared to the younger males. Additionally, education ($p \leq .009$) was significantly associated with risky sexual behavior. The odds value for this variable (Expβ=1.831) suggested that those males with primary education were about 15% less likely to engage in risky sexual behavior compared to those males with secondary education. Unlike females, residence was not significantly associated with risky sexual behavior.

Keeping AIDS a secret within the family also at ($p \leq .257$) was not significant. Model 2 added in AIDS knowledge which did not change the direction between keeping AIDS a secret and risky sexual behavior. Residence remained insignificant. The inclusion of risk perception in Model 3 also did not attenuate the association between keeping

AIDS a secret and risky sexual behavior. Risk perception was not significant at the 5% level. Thus Models 2 and 3 were almost identical. This model showed no support for the third hypothesis.

Table 5. Odds Rations for Predictors on risky sexual behavior

	Female			**Male**		
Characteristics	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
12-15 year olds	1.323	1.267	1.282	1.787*	1.777*	1.777*
Rural residence	1.875*	1.891*	2.076**	.939	.937	.939
Primary education	2.389**	2.267**	2.356**	1.854**	1.831*	1.830*
Keeping AIDS a secret	1.092	1.101	1.120	.807	.812	.813
AIDS knowledge	-	.948	.943	-	.991	.992
Risk perception	-		.582*	-	-	.969

Females (n= 1846), Males (n=1924), *p<.05, **p<.01 and ***p<.001

Reference categories: age=16-19 years old, residence=urban, education=secondary, AIDS secrecy= not keeping AIDS a secret

Hypothesis IV: *The relationships between keeping AIDS a secret within the family, AIDS knowledge, risk perception and risky sexual behavior differ by gender*

In the first hypothesis the interaction between AIDS knowledge and female was not significant, meaning that the relationship between AIDS knowledge and keeping AIDS a secret within the family did not differ by gender. However, the interactions

between AIDS knowledge and female (p=.01) and keeping AIDS a secret and (p=.01) were significant in Hypothesis II. This showed that the effects of AIDS knowledge and keeping a secret within the family were significantly different for males and females. The effects were stronger for males than females. These findings provided support for Hypothesis II (adolescents who would keep AIDS a secret within the family perceive risk because they have higher levels of HIV/AIDS knowledge). The interaction terms in Hypothesis III were not significant which indicated that the effects of keeping AIDS a secret within the family, AIDS knowledge and risk perception were not significantly different for males and females. Thus Hypothesis IV was only partially supported by the results from Hypothesis II.

CHAPTER 6

SUMMARY AND CONCLUSIONS

Discussion

The purpose of this study was to examine the relationship between keeping AIDS a secret within the family, AIDS knowledge, risk perception and risky sexual behavior among female and male adolescents in Malawi. The study also incorporated some of the ideas of the Health Belief Model. These ideas stressed that in order for individuals to partake in behavior change have high levels of knowledge about the disease and they must perceive themselves at risk of contracting the disease (Becker and Rosenstock 1974). In addition to the ideas of Health Belief Model, social epidemiology theories which focus on some demographic and cultural characteristics were added to the model to better explain the behavior of Malawian adolescents in the face of the AIDS epidemic.

Compared to other previous research, the current study was the first to test the relation between keeping AIDS a secret within the family, AIDS knowledge, risk perception and risky sexual behavior. As expected the results from the present study showed a positive association between AIDS knowledge and keeping AIDS a secret for both males and females. This was consistent with other studies which have argued that higher levels of knowledge about a disease lead to individuals keeping their illness a secret because of fear of stigma (Serovich Green and Parrott 1992; West 2004). Given that most of the adolescents in the survey had attended school it is not surprising that they had higher levels of knowledge about HIV/AIDS which could have attributed to their

desires to keep AIDS a secret within the family because they were aware of societal AIDS related stigmas.

Furthermore, the current study found support for the Health Belief Model's assumption that increased knowledge about a disease leads to increased risk perception (Champion 1983; Fulton et al. 1991; Maswanya et al 199). Thus results showed that males who kept AIDS a secret within the family were more likely to have risk perception compared to females. These results are consistent with other studies on AIDS in Africa which have found that males perceive themselves more at risk of HIV/AIDS infection because of their exposures to AIDS information and condoms (Akwara et a.l 2003). In many rural African communities including Malawi, parents prefer to send boys to school than girls and thus exposing these boys to access to knowledge about HIV/AIDS which increases their risk perception (Maswanya et al. 1999).

Additionally some studies have also found that besides AIDS knowledge, there are other factors that increase risk perception such as exposure to media, personal experience with someone who has died of AIDS and contact with medical services (Gregson et al. 1998; Maswanya 1999). Because most of the female adolescents lived in the rural areas, it is more likely the case that they had little access to media exposure such as televisions and newspapers which could have increased their AIDS knowledge and risk perception. Regardless of male adolescents' exposure to media about AIDS, THEY are expected to initiate sex and society tolerates male premarital sex. Therefore is not

surprising that they were more likely to perceive themselves at risk of HIV infection compared to females.

The results also showed no support for the association between adolescents would keep AIDS a secret within the family and risky sexual behaviors. Adding knowledge and risk perception to the models did not change the direction of the relationship. These results were similar to what other researchers have found before - that a clear definitive association between risk perception and risky sexual behavior cannot be made. For example, on one hand, Kibombo, Neema, and Ahmed (2007) found a positive association between AIDS knowledge, risk perception and risky sexual behavior. They attributed this positive association to the fact that they utilized a longitudinal data set which made it easier to measure the history of adolescents' sexual behavior. Contrary to these findings, Akwara, Madise and Hinde (2003), as with this current study, found no positive association between these variables. They noted that because their research was based on cross-sectional data it was difficult to ascertain whether risky sexual behavior was based on previous or current sexual activities. Similarly, the use of cross-sectional data in the current study might also have contributed to the lack of support for Hypothesis III which theorized a positive association between adolescents who kept AIDS a secret within the family, AIDS knowledge, risk perception and risky sexual behavior.

Limitations of the Current Study

As with any study, there are some limitations with this study. One such limitation is that the 2004 National Survey on adolescents in Malawi was based on cross-sectional data instead of time-series data. The survey focused on the adolescents' sexual activity only in the last 12 months during the study. Compounding the situation was that the measure of risky sexual behavior only included condom use and sex with casual acquaintance. A more robust study of risky sexual behaviors would entail risky behaviors measured over a long period of time, including consistent or inconsistent use of condoms, drugs or alcohol usage during sexual encounters, prostitution and other risky sexual activities (Kibombo, Neema and Hinde 2007). Additionally, the majority of the adolescents 58.6 % (n= 2363) were aged between 12-15 years. It is assumed that at this age most of the adolescents might not have engaged in sex at the time of the study. However, the strength of this study was the inclusion of this age group as most scholars exclude this age group when researching about AIDS.

An important dimension in studying AIDS knowledge and risky sexual behavior among adolescents is to make comparisons between adolescents who have heard of AIDS versus those that have not heard of AIDS. However, in this study a skip pattern caused a number of questions to be skipped, thus limiting the study to only those adolescents who had heard of AIDS. Additionally, all the questions on sexual activities were restricted to adolescents who had answered "yes" to having engaged in sex. This eliminated the

possibility of making comparisons between adolescents who had hear of AIDS and those who had never heard of AIDS.

This study had a large number of missing cases in some sections due in large part to respondents' refusal to answer questions or preferring the "don't know" option in the questionnaire. Most of the questions on AIDS knowledge had large missing cases as high as 940, accounting for 15% of the population sample. However, this did not affect the results as all the missing cases were deleted during the analysis. Therefore despite these limitations, this study is still useful in predicting adolescents' knowledge about HIV/AIDS, their risk perception and sexual behaviors.

Conclusions

Similar to other research that have used the Health Belief Model to explain AIDS in Africa, this current study offers further support to the idea that increased knowledge about a disease leads to increased risk perception. The inclusion of cultural and social characteristics in the Health Belief Model helped to highlight the association between keeping AIDS a secret within the family, AIDS knowledge, risk perception and risky sexual behavior. Both males and females exhibited a strong association between keeping AIDS a secret and AIDS knowledge. This implied that adolescents who had high levels of knowledge were more likely to keep AIDS a secret within the family.

In addition, this current study also showed a strong relationship between keeping AIDS a secret, AIDS knowledge and risk perception for males. These results showed support for the Health Belief Models' assumption that increased knowledge about a

disease leads to increased risk perception (Champion 1983; Fulton et al. 1991; Maswanya et al 1998). Thus Hypothesis II was supported while there was no positive association between keeping AIDS a secret within the family, AIDS knowledge risk perception and risky sexual behavior.

Based on the hypotheses outlined in this study and the results found, it would be beneficial for future research to use longitudinal data rather than cross-sectional data. This would allow for researchers to track the sexual history of adolescents over time and thus creating a more reliable measure of risky sexual behavior. Another suggestion would be to look into the reverse causality between risk perception and risky sexual behavior. For example, it might be the case that risky sexual behavior leads to perception of risk instead of perception of risk leading to risky sexual behavior. That is, it would be useful to have studies that can investigate any recursivity issues associated with risky sexual behavior and perception of risk. Future research can also look into other demographic characteristics such as religion, ethnicity, social status and region among other demographic characteristics which may have an effect on individuals' risky sexual behaviors.

In conclusion, by introducing the variable keeping AIDS a secret within the family, the study highlighted two areas that policy makers can explore. These are AIDS stigma and gender. It is very important for education programs to explicitly address the stigma of AIDS and ways to reduce it. While Malawi has two main AIDS youth programs - Voluntary Counseling Center (VCT) and the Malawi AIDS Community

Resource Organization (MACRO) - that are working to educate the youth about AIDS prevention measures (AVERT 2010b). However, these programs have not included anti-stigma messages in their campaigns at a national level. There is need for AIDS prevention modules issued in schools to include a section on ways to reduce AIDS stigma in the community at a national level. Such models have successfully been used in other African countries such as South Africa to educate people about AIDS (Brown, Trujillo and Macintyre 2001). They have addressed issues ranging from AIDS stigma, community support for AIDS patients, engaging business and church leaders in helping eradicate AIDS stigma in the society (Brown et al 2001: 12). These are the kind of modules that Malawi needs in order to eradicate the AIDS epidemic.

Appendix A

HIV/AIDS Knowledge Survey Questions

Questions
Can people get the AIDS virus from having sex with persons who are infected with the AIDS virus?
Can the virus that causes AIDS be transmitted from a mother to child during pregnancy?
Can the virus that causes AIDS be transmitted from a mother to child during delivery?
Can the virus that causes AIDS be transmitted from a mother to child during breast-feeding?
Can people get the AIDS virus from sharing razors or other objects used for skin piercing or cutting?
Can people get the AIDS virus from sharing injections with a needle that was already used by someone else?
Can people get the AIDS virus from a blood transfusion?
Can people get the AIDS virus from sharing food with a person with AIDS
Can people get the AIDS virus from mosquito bites?
Can people get the AIDS virus because of witchcraft or other supernatural means?
Can people reduce their chances of getting AIDS by not having sex at all?
Can people reduce their chances of getting AIDS by having sex with just one sex partner who is not infected and who has no other partners?
Can people reduce their chances of getting AIDS by using a condom correctly every time they have sex?
Can people reduce their chances of getting AIDS by avoiding sharing injections/needles?
Can a man infected with the AIDS virus be cured if he has sex with someone who has a disability?
Can people reduce their chances of getting AIDS by avoiding sharing toothbrushes?
Is it possible for a healthy looking person to have the AIDS virus?

APPENDIX B

Regression Models Including all Adolescents

Table 1: Keeping AIDS a Secret Regressed on HIV/AIDS Knowledge

Keeping AIDS a secret within the family (DV)	**Model 1**	**Model 2**
AIDS Knowledge	1.175***	1.175***
Female	.739***	.749***
12-15 year olds	1 .143	1.143
Rural	.698***	.698***
Primary	.877	.877
Female	.739***	.749***
AIDS Knowledge	1.175***	1.175***
AIDS Knowledge*female	-	.999

N= 3770, *p< 0.5, **p<0.01 and ***p<0.001

Table 2. Risk Perception Regressed on Keeping AIDS a Secret within the Family, AIDS Knowledge and Controls

	Model 1	**Model 2**	**Model 3**
12- 15 years olds	.682***	.725 ***	.730***
Rural	1.047	1.083	1.091
Primary	1.048	1.145	1.124
Female	.908	.925	3.218**
AIDS knowledge	_____	1.071***	1.118***
Keeping AIDS a secret	1.179*	1.100	1.270*
Keeping AIDS a secret within the family*female	_____	._____	.745**
AIDS knowledge*female	_____	_____	.922**

N=3770*p<.05, **p<.01 and ***p<.001

Table 3: Risky Sexual Behavior Regressed on Keeping AIDS a Secret AIDS Knowledge, Risk Perception and Controls

Risky Behaviors (DV)	**Model 1**	**Model 2**	**Model 3**	**Model 4**
12-15 year olds	1.592*	1.591*	1.589*	1.603*
rural	.879	1.272	1.291	1.301
primary	2 .001***	2.003***	2.012***	2.063***
Female	.677*	.676*	.667**	1.911
AIDS knowledge	.975	.977	.979	1.006
Keeping AIDS a secret		.932	.941	.827
Risk perception	_____	____	-.144	.961
Keeping AIDS a secret*female	_____	____	____	1.356
AIDS knowledge*female	____	____	____	.933
Risk perception*female	____	_____	____	.670

N=3770 *p<.05, **p<.01 and ***p<.001

REFERENCES

Acker, Joan.1973. "Women and social stratification: A case of intellectual sexism." *The American Journal of Sociology* 78(4):936-45.

Acker, Joan.1980. "Women and Stratification: A review of recent literature." *Contemporary Sociology* 9:25-39.

Acker, Joan. 1990. "Hierarchies, jobs, and bodies: A theory of gendered organization."*Gender and Society* 4(2):139-158.

Ahwireng-Obeng, Fred and George Akussah. 2003. *The Impact of HIV-AIDS on African Economies.* South Africa: Africa Institute of South Africa.

Aisenbery, Silke and Hannah Bruckner. 2008. "Occupational aspirations and the gender gap in wages." *European Sociological Review* 24(5): 633-49.

Akwara, Priscilla A., Nyovani J. Madise and Andrew Hinde. 2003. "Perception of risk to HIV/AIDS and sexual behavior in Kenya." *Journal of Biosocial Sciences* 35:385-411

Alonzo Angelo A. and Nancy R. Reynolds. 1995. "Stigma, HIV and AIDS: An exploration and elaboration of a stigma trajectory." *Social Science and Medicine* 41(3):303-15.

Anderson, Moji, Gilliam Elam, Sarah Gerver, Ijeoma Solarin, Kevin Fenton and Philippa Easterbrook. 2008. "HIV/AIDS-related stigma and discrimination: Accounts of HIV-positive Caribbean people in the United Kingdom." *Social Science and Medicine* 67(5):790-8.

Antle, Beverly J., Lillian M. Wells, Robin S. Goldie, Dale DeMatteo and Susan M. King. 2001. "Challenges to parenting for families living with HIV/AIDS." *Journal of Social Work* 46(2):159-69.

Arrehag, Lisa, Stefan de Vylder, Daniele Durevall and Mirja Sjoblom. 2010. "Malawi: Impact of HIV/AIDS on livelihoods, poverty and the economy." *Africa Files.* Retrieved July 19, 2010 from http://www.africafiles.org/article.asp?ID=23498

Ashing-Giwa, Kimilin. 1999. "Health behavior change models and their socio-cultural relevance for breast cancer screening in African American women." *Women and Health* 28(4): 53-71.

Auerbach, Judith G. 1994. "Understanding HIV transmission." Pp. 47-71 in *AIDS and Behavior: An Integrated Approach,* edited by Auerbach, Judith G., Christina Wypijewska and Keith H. Brodie, Washington, DC: National Academy of Press.

AVERT. 2010a. "HIV & AIDS in Africa." Retrieved April 9, 2010 from http://www.AVERT.org/hiv-aids-africa.htm

AVERT. 2010b. "HIV & AIDS in Malawi." Retrieved June 23, 2010 from http://www.AVERT.org/hiv-aids-malawi.htm

AVERT. 2010c. "HIV & AIDS stigma and discrimination." Retrieved June 24, 2010 from http://www.AVERT.org/hiv-aids-stigma.htm

Baguma, Peter K. 1992. "AIDS-related stigma, personal risks and career objectives among Makerere medical students." *Journal of Community and Applied Social Psychology* 2(2): 105-112.

Bankole, Ankinriola, Fatima H. Ahmed, Stella Neema, Christine Ouedraogo and Sidon Konyani. 2007. "Knowledge of correct condom use and consistency of use among adolescents in four countries in sub-Saharan Africa." *Journal of Reproductive Health* 11(3):199-219.

Bankole, Ankinriola, Ann Biddelecom, Georges Guiella and Eliya Zulu. 2007. "Sexual behavior, knowledge and information sources of very young adolescents in four sub-Saharan African countries." *African Journal of Reproductive Health* 11(3): 27-43

Barongo, Longin R., Martien W. Borgdorff, Frank F. Mosha, Nicoll Angus, Heiner Grosskurth, Kesheni P. Senkoro, James N. Newell, John Changalucha, Arnoud H. Klokke, Japhet Z. Killewo, Johan P. Velema, Richard J. Hayes, David T. Dunn and Joas B. Rugemalila. 1992. "The epidemiology of HIV-1 infection in urban areas, roadside settlements and rural villages in Mwanza region, Tanzania."*AIDS* 6(12):1521-8.

Barnett, Tony and Piers Blaikie. 1992. *AIDS in Africa: Its Present and Future Impact*. New York: The Guilford Press.

Becker, Charles and Rene Collignon. 1999. "A history of sexually transmitted diseases in Senegal in the Twentieth Century." Pp. 65-97 in *Difficulties in Accounting for Social logistics in Health Policy,* edited by Setel, Philip W., Milton Lewis and Maryinez Lyons. Westport, CT: Greenwood Press.

Becker, Marshall H., Irwin Rosenstock and Charles B. Slack. 1974. *The Health Belief Model and Personal Health.* New Jersey: Plenum Press.

Bidwell, Lee, D. Miller and Brenda J. Vander Mey. 2000. *Sociology of the Family: Investigating Family Issues*. Needham Heights, MA: Allyn and Bacon.

Blanc, Ann K. and Ann A. Way. 1998. "Sexual behavior and contraceptive knowledge and use among adolescents in developing countries." *Studies in Family Planning* 29:106-116.

Bloom, David E. and Ajay S. Mahal. 1997. "Does the AIDS epidemic threaten economic growth?" *Journal of Econometrics* 77 (1): 105-124.

Blumberg, Rae Lesser. 1984. "A General theory of gender stratification." Pp. 23-101 in *Sociological Theory,* edited by Collins Randall. San Francisco, LA: Jossey-Bass Publishers.

Bollinger, Lori, John Stover and Martin E. Palamuleni. 2000. "The Economic Impact of AIDS in Malawi." The Policy Project. Retrieved February 10, 2010 from http://www.policyproject.com/pubs/SEImpact/malawi.pdf

Bross, Irwin D.J. 1966. "Spurious effects from an extraneous variable." *Journal of Chronic Diseases 19*(6):637-647.

Brown, Lisanne, Lea Trujillo and Kate Macintyre. 2003. "Interventions to reduce HIV/AIDS stigma: What have we learned?" *AIDS Education and Prevention* 15(1):49-69. Retrieved July 16, 2010 from http://www.popcouncil.org/pdfs/horizons/litrvwstigdisc.pdf

Burkholder, Gary J., Lisa L. Harlow and Jacque-Lynne Washkwich. 1999. "Social stigma, HIV/AIDS knowledge and sexual risk." *Journal of Applied Behavioral Research* 4(1):27-44.

Cain, Roy. 1991. "Disclosure and secrecy among gay men in the United States and Canada: A shift in views." *Journal of the History of Sexuality* 2(1):25-45.

Carmel, Sara. 1990. "The Health Belief Model in the research of AIDS-related preventive behavior." *Public Health Review* 91:73-85.

Champion, Victoria L. 1984. "Instrument development for Health Belief Model constructs." *Advances in Nursing Science* 6:73-85.

Chafetz, Janet S. "Gendered power and privilege: Taking Lenski one step further." *Sociological Theory* 22(2):269-77.

Cherian, Leela. 2004. "Influence of culture and religion in HIV/AIDS education in South Africa." *International Conference* of *AIDS* 2004 Jul 11-16; 15. Retrieved May 18, from http://gateway.nlm.nih.gov/MeetingAbstracts/ma?f=102280015.html

Chesney, Margaret and Ashley Smith. 1999. "Interventions to reduce HIV/AIDS stigma: What have we learned?" *AIDS Education and Prevention* 15:49-69.

Chin, James. 2007. *The AIDS Pandemic: The Collision of Epidemiology with Political Correctness.* Birmingham, UK: Radcliffe Publishing Ltd

Chitiyo, George and Morgan Chitiyo.2009. "The impact of the AIDS and economic crises on orphans and other vulnerable children in Zimbabwe." *Journal of Childhood Education* 85(6):347-51.

CIA: The World Fact book: Malawi. Central Intelligence Agency.2010. Retrieved May 1, 2010 from https://www.cia.gov/library/publications/the-world-factbook/geos/mi.html

Cohen, Felissa L. and Jerry D. Durham. 1993. *Women, Children and HIV/AIDS.* New York: Springer Publishing Company.

Cohen Jon. 2002. "Malawi: A suitable case for treatment." *Online Science Magazine* 297:929. Retrieved July 16, 2010 http://www.sciencemag.org/cgi/reprint/297/5583/927.pdf

Collins, Randall. 1988. "Women and men in the class structure." *Journal of Family Issues* 9:27-50.

Dennison, Julie. 1996. "Behavior Change- A Summary of Four Major Theories." *Family Health International.* Retrieved March 13, 2010 from http://www.fhi.org/nr/rdonlyres/ei26vbslpsidmahhxc332vwo3g233xsqw22er3vofqvrfjvubwyzclvqjcbdgexyzl3msu4mn6xv5j/bccsummaryfourmajortheories.pdf

de Waal Alex and Joseph Tumushabe. 2003. *HIV/AIDS and Food Security in Africa.* A Report sent to the UK Department for International Development. Retrieved April 16, 2010. http://www.sarpn.org.za/documents/d0000235/P227_AIDS_Food_Security.pdf

Dixon, Simon, Scott McDonald and Jennifer Roberts. 2001. "HIV/AIDS and development in Africa." *Journal of International Development* 13:381-391.

DiClemente, Ralph J., Mark M. Lanier, Patricia F. Horan and Mark Lodico. 1991. "Comparison of AIDS knowledge, attitudes, and behaviors among incarcerated adolescents and a public school sample in San Francisco." *Journal of Public Health* 81(5): 628-630.

Dodoo, N. Francis. 1998. "Men matter: Additive and interactive gendered preferences and reproductive behavior in Kenya."*Demography* 35(2):229-242

Encyclopedia of the Nations. 2010. Retrieved 4 March, 2010 from http://www.nationsencyclopedia.com/economies/Africa/Malawi.html

Eisen Marvin, Gail L. Zellman and Alfred L. McAlister. 1992. "A Health Belief Model – social learning theory approach to adolescents' fertility control: Findings from a controlled field trial." *Journal of Health Education and Behavior* 19(2):249-62.

Eiser, Richard J. and Nicola Cole. 2002. "Participation in cervical screening as a function of perceived risk, barriers and need for cognitive closure." *Journal of Health Psychology* 7(1):99-105.

Evans, Ruth. 2002. "Poverty, HIV and barriers to education: Street children's experiences in Tanzania." *Gender and Development* 10(3):51-62.

Fajans, Peter, Kathleen Ford and Dewa N. Wirawan.1995. "AIDS knowledge and risk behaviors among domestic clients of female sex workers in Bali, Indonesia." *Social Science and Medicine* 41(3):409-417.

Feldman, Douglas A. and Julia W. Miller. 1998. *The AIDS Crisis: A Documentary History.* Westport, CT: Greenwood Press.

Firestone, Juanita M., Richard J. Harris and Linda C. Lambert. 2004. "Gender role ideology and gender based differences in earnings." *Journal of Family and Economic Issues* 20(2):191-215.

Ford, Kathleen, Dewa Nyoman, Peter Fajans and Lorna Thorpe. 1995. "AIDS knowledge, risk behaviors, and factors related to condom use among male commercial sex workers and male tourist clients in Bali, Indonesia." *AIDS* 9:751-759.

Fulton, John P., Jay S. Buechner, Heather D. Scott, Barbara A. DeBuono, Judith P. Feldman, Robert A. Smith and Dan Kovenock. 1991. "A study guided by the Health Belief Model of the predictors of breast cancer screening of women ages 40 and older." *Journal of Public Health Reports* 106(4):410-20

Giddens, Anthony, Mitchell Dunner, Richard P. Applebaum and Deborah Carr. 2009. *Introduction to Sociology. 7th edition*. New York: W. W. Norton & Company.

Gillespie, Stuart. 2002. "Potential impact of AIDS on farming systems: A case of Rwanda." *Land Use Policy* 6 (4) 301-312.

Glanz, Karen, Marcus F. Lewis and Barbara K. Rimer. 1997. *Health Behavior and Health Education: Theory, Research and Practice.* San Francisco, CA: Wiley & Sons.

Glick, Peter and David E. Sahn. 2000. "Schooling of girls and boys in a West African country: The effects of parental education, income and household structure." *Economics of Education Review* 19(1):63-87.

Goffman, Erving. 1963. *Stigma: Notes on the Management of Spoiled Identity.* New York: Simon & Schuster Inc.

Graves, Boyd E. 2001. *State Origin: The Evidence of the Laboratory Birth of AIDS.* Abilene, KS: National Organization for the Advancement of Humanity and Zygote Media.

Greener, Robert. 2000. "The impact of HIV/AIDS on poverty and inequality in Botswana." The International Conference on AIDS in Botswana July 9-14.

Gregson, Simon, Tom Zhuwau, Roy M. Anderson, and Stephen K. Chandiwana. 1998. "Is there evidence for behavior change in response to AIDS in rural Zimbabwe?" *Social Science and Medicine* 46 (3):321-330.

Geneva Global Performance Philanthropy. 2010. Malawi: HIV/AIDS Fund. Retrieved July 21, 2010 from http://www.genevaglobal.com/stories-fund-customization.php

Gmerk, Mirko.1993. *History of AIDS: Emergence and Origin of Modern Pandemic.* Princeton, New Jersey: Princeton University Press.

Guiella, George and Nyovani Madise. 2007. "HIV/AIDS and sexual risk taking behavior among adolescents: Factors influencing the use of condoms in Burkina Faso." *African Journal of Reproductive Health* 11(3):182-93.

Hamra, Mary, Michael W. Ross, Mark Orrs and Angelo D'Agostino. 2006. "Relationship between expressed HIV/AIDS-related stigma and HIV beliefs/knowledge and behavior in families of HIV infected children in Kenya." *Tropical Medicine and International Health* 11(4):513-27.

Han, Juliana and Michael L. Bennish. 2009. *"Condom access in South African schools: Law, policy and practice."* Available: PLoS Medicine 6(1) e1000006. Retrieved June 23, 2010 from http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1000006.

Hankins, Catherine. 1998. "Changes in patterns of risk." *AIDS Care,* 10(2): 147-53.

Hartmann, Heidi. 1976. "Capitalism, patriarchy, and job segregation by sex." *Signs: Journal of Women and Culture in Society* 1(3):137-169.

Hazen, Mary. 1976. "The Health Belief Model Applied to Two Preventive Health Behaviors among Women from a rural Pennsylvania county." PhD. dissertation, Department of Agricultural Economics and Rural Sociology, Pennsylvania State University: University City, PA. Retrieved July 19, 2010 from http://www.eric.ed.gov/PDFS/ED116855.pdf

Heeney, Jonathan, Angus G. Dalgleish and Robin A. Weiss. 2006. "Origins of HIV and the evolution of resistance to AIDS." *Science Magazine* 33 (5786):462-66. Retrieved July 16, 2010 from http://www.sciencemag.org/cgi/reprint/313/5786/462.pdf

Heinzelmann, Fred. 1962. "Factors associated in prophylaxis behavior in treating rheumatic fever: An explanatory study." *Journal of Health and Social Behavior* 3:73-81.

Herek, Gregory M. and John P. Capitanio. 1999. "AIDS stigma and sexual prejudice." *American Behavioral Scientist* 42:1126-1143.

Hochbaum, Godfrey M. 1958. *Public Participation in Medical Screening Programs- A Socio-psychology Study.* Washington D.C.: Government Printing Office, Public Health Service Publication 572.

Hooper, Edward. 1999. *The River: A Journey to the Source of HIV and AIDS*. New York: Little Brown and Company.

Hooper, Edward. 2000. "Genesis of AIDS: Mother Nature, or hand of man?" *Science as Culture* 9(1):73-101.

Human Sciences Research Council. 2003. "Gender and poverty in South Africa in the era of AIDS." Retrieved May 3, 2010 from http://www.hsrc.ac.za/SAHA.phtml

Iliffe, John. 2006. *The African AIDS Epidemic: A History.* Athens, Ohio: Ohio University with James Currey Ltd

International Planned Parenthood Federation (IPPF) European Network. 2006. "Need for sex education highlighted." Retrieved April 12, 2010 from http://www.ippf.org/en/News/Intl+news/Need+for+sex+education+highlighted.htm

International Planned Parenthood Federation (IPPF) European Network. 2006. "Sexuality education in Europe. A reference guide to policies and practices." Brussels: IPPFEN. Retrieved June 23 from http://www.ysafe.net/SAFE/documents/Design_FS%20Sex%20Ed%20final_Oct07.pdf

Janz, Nancy K. and Marshall H. Becker. 1984. "The Health Belief Model: a decade later." *Health Education & Behavior* 11(1):1-47.

Janz, Nancy K. and Marshall H. Becker. 1985. "The Health Belief Model applied to understanding diabetes regimen compliance." *The Diabetes Educator* 11:41-47.

Kabiru, Carolina W. and Alex Ezeh.2007. "Factors associated with sexual abstinence among adolescents in four sub-Saharan African countries." *African Journal of Reproductive Health* 11(3):111-131.

Kalichman, Seth C. and Leickness D. Simbayi. 2003. "HIV testing attitudes, AIDS stigma, and voluntary HIV counseling and testing in a black township in Cape Town, South Africa." *Journal of Sexual Transmission Infections* 79(6):442-7.

Kalichman, Seth C. and Leickness D. Simbayi. 2004. "Traditional beliefs about the AIDS and AIDS-related stigma in South Africa." *AIDS Care* 16(5):572-80.

Kambarami, Maureen. 2006. "Femininity, sexuality and culture: Patriarchy and female subordination in Zimbabwe." African Regional Sexuality Resource Center. Retrieved July 17, 2010 from http://www.arsrc.org/downloads/uhsss/kmabarami.pdf

Kane, Emily W. and Laura Sanchez. 1994. "Family status and criticism of gender inequality at home." *Social Forces* 72 (4): 1079-1102.

Kanki, Phyllis J. and Myron E. Essex. 2005. "Virology." Pp. 13-36 in *The AIDS Pandemic: Impact on Science and Society*, edited by Mayer, Kenneth H. and Hank F.Pizer. San Diego, CA: Elsevier Academic Press

Kaori, Honjo. 2004. "Social epidemiology: Definition, history, and research examples." *Journal of Environmental Health and Preventive Medicine* 9(5): 193-5.

Kat-Reynen, Catharina. 2001. "HIV/AIDS: Grasping the reality of its gender dimension." Conference on Gender and HIV/AIDS in Norway. Retrieved May 12, 2010 from http://www.aprodev.net/gender/Files/Gender-GOOD-GRG/HIV-AIDS.pdf

Kelly, Kevin and Pumla Ntlabati. 2002. "Early adolescent sex in South Africa: HIV intervention challenges." *Social Dynamics* 28 (1): 42-63.

Kelly, Margo. 2002. "Fighting AIDS-related stigma in Africa." Population Reference Bureau. Retrieved June 23, 2010 from (http:// www.prb.org/Articles /2002/Fighting AIDS RelatedStigmainAfrica.aspx)

Kibombo, Richard, Stella Neema and Fatima H. Ahmed. 2007. "Perceptions of risk to HIV infection among adolescents in Uganda: Are they related to sexual behavior?*" African Journal of Reproductive Health* 11(3): 168-181.

Kim, Jun M., Cho J. Goon, Hong K. Sung, Chang H. Kyung, Chung S. Joo, Choi H. Young, Song G. Young, Huh Aejung, Yeom S. Joon, Lee S. Kkot and Choi Y. Jun. 2003. "Epidemiology and clinical features of HIV/AIDS infection in South Korea." *Yonsei Medical Journal* 44 (3): 363-370.

Kirby, David. 2002. "The impact of schools and school programs upon adolescent sexual behavior." *Journal of Sex Research* 39 (1):27-33.

Kirscht, John P. 1974. "The Health Belief Model and illness behavior." *Health Education Monographs* 2(4):387-407.

Krieger, Nancy. 2001. "A Glossary for Social Epidemiology." *Journal of Epidemiology & Community Health* 55:693-700.

Ku, Leighton, Freya L. Sonenstein and Joseph H. Pleck.1992. "The association of AIDS education with sexual behavior and condom use among teenage men." *Family Planning Perspectives* 24(3): 100-106. .

Lagarde, Emmanuel, Gilles Prison and Catherine Enel. 1998. "Risk behaviors and AIDS knowledge in a rural community of Senegal: Relationship with sources of AIDS information." *International Journal of Epidemiology* 27:890-896.

Landau, Gila and Alan S. York.2004. "Keeping and disclosing a secret among people with HIV in Israel." *Health and Social Work* 29 (2):116-26.

Langen, Tabitha T. 2005. "Gender and power imbalance on women's capacity to negotiate self-protection against HIV/AIDS in Botswana and South Africa." *African Health Sciences* 5(3):188-97.

Larson, Ann. 1990. "The social epidemiology of Africa's AIDS epidemic." *African Affairs* 89 (354):5-25.

Lerner, Eric K. and Mary E. Hombs. 1998. *AIDS Crisis in the United States of America*. 2nd edition. Santa Barbara, CA: ABC-CLIO.

Lenski, Gerhard E. 1966. *Power and Privilege: A Theory of Social Stratification.* Chapel Hill, NC: The University of North Carolina Press.

Lin, Peter, Jane M. Simoni Jane and Vance Zemon. 2005. "The Health Belief Model, sexual behaviors and HIV risk among Taiwanese immigrants." *AIDS Education and Prevention* 17(5): 469-483.

Lindan, Christina, Susan Allen, Michel Carael, Francois Nsengumuremyi, Phillipe Van de Perre, Jeffrey T. Serufilira, Dennis Black, Thomas Coates and Stephen Hulley. 1991. "Knowledge, attitudes, and perceived risk of AIDS among urban Rwandan women: Relationship to HIV infection and behavior change." *AIDS* 5:993-1002.

Lindgren, Teri, Sally H. Rankin and William W. Rankin 2005. "Malawi women and HIV: Socio-cultural factors and barriers to prevention." *Women and Health* 4(1): 69-86

Link, Bruce G. and Jo C. Phelan. 2001. "Conceptualizing stigma." *Annual Review of Sociology* 27:363-85.

Lipkus Isaac M., Barbara K. Rimer, Pauline R. Lyna, Archana A. Pradhana, Mark Conaway and C.T. Woods Powell. 1996. "Colorectal screening patterns and perceptions of risk among African American users of a community health center." *Journal of Community Health* 21(6):409-427.

Lux, Kathleen M. and Rick Petosa. 1994. "Using the Health Belief Model to predict safer sex intentions of incarcerated youth." *Health Education Quarterly Journal* 21(4): 487-497.

Lwanda, John L. 2004. "Politics, culture, and medicine: An unholy trinity? Historical continuities and ruptures in the HIV/AIDS Story in Malawi." Pp 29-46 in *HIV & AIDS in Africa: Beyond Epidemiology,* edited by Kalipeni, Ezekiel, Susan Craddock, Joseph R. Oppong and Jayati Ghosh. Baltimore, Maryland: Blackwell Publishing.

Machel Josina Z. 2001. "Unsafe sexual behavior among schoolgirls in Mozambique: A matter of gender and class." *Reproductive Health Matters* 9(17):82-90.

Macklin, Eleanor D. 1988. "AIDS: Implications for Families." *Family Relations* 37(2):141-9

Macintyre, Kate, Lisanne Brown and Solser Stephen. 2001. "It's not what you know, but who you knew: Examining the relationship between behavior change and AIDS mortality in Africa." *AIDS Education and Prevention* 8:237-250.

Madise, Nyovani, Eliya Zulu and James Ciera. 2007. "Is poverty a driver for risky sexual behavior? Evidence from national surveys of adolescents in four African countries."*African Journal of Reproductive Health* 11(3): 83-98.

Malikaew, Sutthida. 2005. "Sex education can be creative, say experts." *IPS News*. Retrieved February 6, 2010 from http://ipsnews.net/news.asp?idnews=31105

Maman, Suzanne, Jessie Mwambo, Margaret Hogan, Gad Kilonzo, Michael Sweat and Ellen Weiss. 2001. "HIV and partner violence: Implications for HIV voluntary counseling and testing programs in Dares Salam, Tanzania." Retrieved June 23, 2010 from http://pdf.usaid.gov/pdf_docs/PNACL410.pdf

Marx, Preston. 2005. "Unsolved questions over the origins of HIV and AIDS." *ASM/News.* 17 (1): 15-20. Retrieved February 13, 2010 from http://microvet.arizona.edu/Courses/MIC438/Origin%20of%20HIV.pdf

Maswanya, Edward S., Kazihiko Moji, Kaori Horiguchi, Kinya Nagata, Kazumasa Aoyagi, Shi-chi Honda and Tsunematsu Takemoto. 1999. "Knowledge, risk perception of AIDS and reported sexual behavior among students in secondary schools and colleges in Tanzania." *Health Education Research* 14(2):85-196.

Mbugua, Njeri. 2007. "HV/AIDS, gender, agency and empowerment issues in Africa." *Social Sciences and Medicine* 64 (5): 1079-1089.

McElrath, Karen. 2002. *HIV and AIDS: A Global View*. Westport, Connecticut: Greenwood Press.

McGrath, Jane W. and Maxine E. Ankrah. 1993. "AIDS in the urban family: Its impact in Kampala, Uganda." *AIDS Care* 5(1):55-59.

Mill, Judy E. 2003. "Shrouded in secrecy: Breaking the news of HIV infection to Ghanaian women." *Journal of Transcultural Nursing* 14(1): 6-16.

Morgan, Jane. 2003. *The Disease That Has No Cure.* Cape Town, South Africa: Cape Town University Press.

Moore, Ann, M., Ann E. Biddelecom and Eliya M. Zulu. 2007. "Prevalence and meanings of exchange of money or gifts for sex in unmarried adolescent sexual relationships in sub-Saharan Africa." *African Journal of Reproductive Health* 11(3): 44-61.

Momsen, Janet H. 2004. *Gender & Development.* London &New York: Routledge.

Moore, Anne M., Kofi Asare-Awusaba, K., K. Nyovani Madise, Johannes John-Langba and Akwasi Kumi-Kyereme. 2007. "Coerced first sex among adolescent girls in sub-Saharan Africa: Prevalence and context." *African Journal of Reproductive Health* 11(3):61-82

Munthali, Alister C., Eliya M. Zulu., Nyovani Madise, Anne M. Moore, Sidon Konyani, James Kaphuka, and Dixie Maluwa-Banda. (2006). *Adolescent Sexual and Reproductive Health in Malawi: Results from the 2004 National Survey of Adolescents. Occasional Report. 24*. New York: Guttmacher Institute.

Munthali, Alister, Anne E. Biddelecom and Eliya Zulu. 2006. *National Survey of Adolescents, 2004: Malawi*. [Computer file]. ICPSR22410-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2008-07-24. doi: 10.3886/ICPSR22410

Mutangadura, Gladys B. 2005. "Gender HIV/AIDS and rural livelihoods in Southern Africa: Addressing the challenges." *Jenda: A Journal of Culture and African Women Studies* Issue 7 2005. Retrieved June 23, 2010 from http://www.jendajournal.com/issue7/mutangadura.html

Muyinda Herbert, Janet Seeley, Helen Pickering and Thomas Barton.1997. "Social aspects of AIDS-related stigma in rural Uganda." *Health and Place* 3:143-7.

Naidoo, Joanne R., Leana R. Uys , Minrie Greeff, William L. Holzemer , Lucy Makoae, Priscilla Dlamini, Rene D.Phetlhu , Maureen Chirwa and Thecla Kohi. 2007. "Urban and rural differences in HIV/AIDS stigma in five African countries." *African Journal of AIDS Research* 6(1): 17-23.

Namadzunda, Chancy. 2010. "Malawi going for DDT to fight malaria." *Digital Journal Reports*. Retrieved July19, 2010 from http://www.digitaljournal.com/article/293649

National Statistics Office of Malawi. 2008. "Population and housing census final report." Retrieved June 23, 2010 from http://www.nso.malawi.net/

Njeru, Enos H.N. and Mary Ndunge. 2004. *Gender Aspects in HIV/AIDS: Infection and Prevention in Kenya.* Institute of Policy Analysis and Research: Regal Press Kenya Ltd.

Olowu, Oluwele and Olufisayo Ogunmola. 2004. "Youth programs in the HIV/AIDS response in Nigeria." *International Conference of AIDS* July 15:11-16, Bangkok, Thailand.

Oshi, Daniel C. and Sarah Nakalema. 2005. "The role of teachers in sex education and the prevention and control of HIV/AIDS in Nigeria." *Sex Education* 5(1): 93-104.

Oshi, Daniel C., Sarah Nakalemaand Luke L. Oshi. 2004. "Cultural and social aspects of HIV/AIDS sex education in secondary schools in Nigeria." *Journal of Biosocial Sciences* 37:175-183.

Pallikadavath, Saseendran, A. A. Jayachandran and William R. Stones. 2005. "Women's reproductive health, sociocultural context and AIDS knowledge in Northern India." *Journal of Health Management* 7 (1):109-128.

Parker, Richard and Peter Aggleton. 2002. HIV and AIDS-related stigma and discrimination a conceptual framework and implications for action." *Social Science and Medicine* 57(1):13-24.

Pasick, Rena J and Nancy J. Burke. 2008. "A critical review of theory in breast cancer screening promotion across cultures." *Annual Review of Public Health* 29:351-368.

Pazzibugan, Dona. 2010. "Survey reveals AIDS misconceptions persist among women." *News Information Inquirer*. Retrieved March 26, 2010 from http://newsinfo.inquirer.net/breakingnews/nation/view/20100202-250948/Survey-reveals-AIDS-misconceptions-persist-among-women

Perry, Melissa J. 1998. "Gender, race and economic perspectives on the social epidemiology of HIV infection: Implications for prevention." *Journal of Primary Prevention* 19 (2):103.

Phaladze Nthabiseng A. , Sarie Human, Sibusiso B. Dlamini, Elsie B. Hulela, Innocent Mahlubi Hadebe, Nonhlanhla A. Sukati, Lucy Nthabiseng Makoae, Naomi Mmapelo Seboni, Mary Moleko and William L. Holzemer. 2005. "Quality of life and the concept of "living well" with HIV/AIDS in Sub-Saharan Africa." *Journal of Nursing Scholarship* 37 (2):120-126.

Pietrzyk Susan. 2005. "AIDS and feminism." *Jenda: A Journal of Culture and African Women Studies*. Retrieved June 23, 2010 from http://www.jendajournal.com/issue7/pietrzyk.html

Prata, Ndola, Leo Morris, Elizio Mazive, Farnaz Vahidnia and Mark Stehr. 2006. "Relationship between HIV risk perception and condom use: Evidence from a population-based survey in Mozambique." *International Family Planning Perspectives Journal* 32 (4):11-20.

Rankin, Sally H., Teri Lindgren, Susan M. Kools and Ellen Schell. 2009. "The condom divide: Disenfranchisement of Malawi women by church and state." *Gynecology Neonatal Nursing* 37(5):596-606.

Rawitscher, Lee A., Richard Saitz and Lawrence S. Friedman. 1995. "Adolescents' preferences regarding Human Immunodeficiency Virus (HIV)-related physician counseling and HIV testing." *Pediatrics* 96(1):52-58.

Rimal, Rajiv N., Kirsten Bose, Jane Brown, Glory Mkandiwire and Lisa Folda. 2009. "Extending the purview of the risk perception attitude framework: Findings from HIV/AIDS prevention research in Malawi." *Health Communication* 24:210-218.

Roberts, Dorothy, Douglas D. Reddock and Sandra Reid. 2009. *Sex Power and Taboo: Gender and HIV in the Caribbean and Beyond*. Miami, Florida: Ian Randle Publishers.

Rodgers, Alexandra, Ananda Meundi, Meundi Amma and Aruna Rai. 2006. "HIV-related knowledge, knowledge, attitudes, perceived benefits, and risks of HIV testing among pregnant women in rural Southern India." *AIDS Patient Care and STDs* 20(11):803-811.

Rosenstock, Irwin and Marshall H. Becker. 1994. "The Health Belief Model and HIV risk behavior change" Pp. 5-25, in *Preventing AIDS: Theories and Methods of Behavioral Interventions*, edited by DiClemente Ralph J. and John L. Peterson. New York: Plenum Press

Rothenberg, Richard. 2007. "The relevance of social epidemiology and drug abuse." *Journal of Preventive Medicine* 32 (6): 147-153.

Serovich, Juliana M., Kathryn Green and Roxanne Parrott. 1992. "Boundaries and AIDS testing: Privacy and the family system." *Family Relations* 41(1):104-109.

Silin, Jonathan G. 1995. *Sex, Death and the Education of Children: Our Passion for Ignorance in the Age of AIDS.* New York: Teachers College Press.

Sherman, Irwin W. 2007. *Twelve Diseases that Changed our World*. Washington, DC: ASM Press.

Smith-Lovin, Lynn and Cecilia L. Ridgeway. 1999. "The gender system and interaction." *Annual Review of Sociology* 25: 191-216

Standing, Guy. 1989. "Global feminization through flexible labor." *World Development* 17 (7):1077-95. Retrieved July 12, 2010 from http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6VC6-

Stein, Jo. 2003. "HIV/AIDS stigma: The latest dirty secret." The Center for Social Science Research. Retrieved July 12, 2010 from http://www.heart-intl.net/HEART/010105/HIVAIDSStigmaTh.pdf

Stringer, Elizabeth M., Moses Sinkala, Rosemary Kumwenda, Victoria Chapman, Alexandrina Mwale, Stein H. Vermund, Robert L. Goldenberg and Jeffrey S.A Stringer. 2004. "Personal risk perception, HIV knowledge and risk avoidance behavior, and their relationships to actual HIV Serostatus in an urban African obstetric population." *Journal of Acquired Immune Deficiency Syndrome* 35 (1): 60-66.

Stuber, Jennifer, Sandro Galea and Bruce G. Link. 2009. "Stigma and smoking: The consequences of our good intentions. *Social Service Review* 83(4): 585-610.

Susser, Ida. 2009. *AIDS, Sex and Culture: Global Politics and Survival in Southern Africa.* Malden, MA: Wiley-Blackwell.

Tenkorang, Emmanuel Y., Fernando Rajulton, and Elanor Maticka-Tyndale. 2009. "Perceived risks of HIV/AIDS and first sexual intercourse among youth in Cape Town, South Africa." *AIDS Behavior* 13:234-245.

Thi Mai D.A., Deborah B. Brickley, Dang T.N. Vinh, Donn J. Cobly, Annette H. Sohn, Nguyen Q. Trung, Le T. Giang and Jeffrey S. Mandel. 2008. "A qualitative study of stigma and discrimination against people living with HIV in Ho Chi Minh City, Vietnam." *AIDS and Behavior* 12(1):63-70.

Travers, Michele and Lydia Bennett. 1996. "AIDS, women and power." Pp 64-77 in *AIDS as a Gender Issue: Psychosocial Perspectives,* edited by Lorraine Sherr, Catherine Hankins and Bennet Lydia. London, Great Britain: Taylor and Francis Publishers.

UNAIDS. 2008. "AIDS epidemic update: December 2008." Joint United Nations Program on HIV/AIDS, Geneva, retrieved from http://www.unaids.org/en/KnowledgeCentre/HIVData/GlobalReport/2008/2008_Global_report.asp

United Nations. 2010. *The Millennium Development Goals Report 2010*. Lois Jensen, editor. Retrieved July 20, 2010 from http://www.un.org/millenniumgoals/

Uwalaka, Emmanuel and Hisako Matsuo. 2002. "Impact of knowledge, attitudes, and beliefs about AIDS on sexual behavioral change among college students in Nigeria: The case of the University of Nigeria NSUKKA." *Journal of International Development* 13 (4) 427-449.

Volk, Jonathan E. and Cheryl Koopman. 2001. "Factors associated with condom use in Kenya: A test of the Health Belief Model." *AIDS Education Prevalence* 13 (6): 495-508.

Walter Heather J., Roger D. Vaughan, Madeline M. Gladis, Deborah F. Ragin, Stephen Kasen and Alywn T. Cohall. 1992. "Factors associated with AIDS risk behaviors among high school students in an AIDS Epicenter." *Journal of Public Health* 82 (4): 528-532.

Weisman, Carol S., Constance A. Margret Nathanson and Stacey Plichta. 1989. "AIDS knowledge, perceived risk and prevention among adolescent clients of a family planning clinic." *Family Planning Perspectives* 21(5):213-217.

Wildavsky, Aaron and Karl Dake. 1990. "Theories of risk perceptions: Who fears what and why?" *American Academy of Arts and Sciences* 119(4):41-60.

Winfield, Evelyn B. and Arthur L. Whaley. 2002. "A Comprehensive test of the Health Belief Model in the prediction of condom use among African American college students." *Environmental Health and Preventive Medicine* 9 (5): 193-200.

West, Robert. 2004. "Lung cancer carries severe stigma." BBC News. Retrieved June 18, 2010 from http://news.bbc.co.uk/2/hi/health/3794179.stm.

Wingwood, Gina M, and Ralph J .DiClemente. 2000. "Application of the theory of gender and power to examine HIV-related exposures, risk factors, and effective interventions for women." *Health Education and Behavior* 27 (5):539-565

Wood, Wendy and Alice H. Eagly. 2002. "A cross cultural analysis of the behavior of women and men: Implications for the origins of sex differences." *Psychological Bulletin* 128(5): 699-727.

World Health Organization (WHO). 2000. "People living with HIV and HIV Care." Retrieved February 20, 2010 from http://www.who.int/hiv/topics/plhiv/en/index.html

World Health Organization (WHO). 2000. "WHO Issues New Healthy Life Expectancy Rankings." Retrieved from July 21, 2010 from http://www.who.int/inf-pr-2000/en/pr2000-life.html

Wright Erik O., Janeen Baxter and Gunn E. Birkelund. 1995. "The gender gap in workplace authority: A cross-national study." *American Sociological Review* 60:407-35.

Yep, Gust A. 1993. “HIV prevention among Asian-United States of United States of American college students: Does the Health Belief Model work?” *College Health* 41: 199-205.