

**CORRELATES OF HIV PERCEIVED RISKS AND
PROTECTIVE STRATEGIES AMONG
ADOLESCENTS IN RURAL MALAWI.**

BY

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Abstract

The study examined correlates of HIV perceived risks and protective strategies among adolescents in rural Malawi i.e. whether there was an association between socio demographic characteristics of adolescents and subsequent HIV perceived risks and protective strategies. Age at sexual debut is a variable of interest in this study. The objectives were to investigate whether age at first sexual intercourse does influence adolescents' individual's risk perceptions of HIV and protective strategies, i.e. does age at first sex set a precedence in the thinking of adolescents with regards HIV risks and protective strategies such as condom use.

Data: This study uses cross sectional data from Wave 3 of a wider study, the Malawi Diffusion and Ideational Change Project (MDICP). The MDICP is a joint collaboration between researchers from the Population Studies Centre at the University of Pennsylvania and the University of Malawi's College of Medicine and Chancellor College. In this study, a multiple regression analysis on the cross sectional data from the 2004 wave 3 of the Malawi Diffusion and Ideational Change Project was done. The focus of this study is on the relationship between age at first sexual intercourse and the individual's perception of risk of HIV/AIDS and protective strategies, it examines if there is an association between the two factors.

Descriptive analysis: Descriptive statistics to obtain the frequencies of the main variables of interest such as the background characteristics of respondents (gender, marital status, mean age at sexual debut, education, economic status of household) were computed in order to better understand the population under study.

Multivariate Analysis: Three separate models were employed; two multinomial regression analysis measuring worry and likelihood of infection against socio demographic variables and a binary logistic regression measuring condom use and the socio demographic variables. Relative Risk Ratios were used to interpret the multinomial logistic regression output while odds ratios were used to interpret the logistic output.

Results: Consistent with existing literature, results indicate that early age at first sex is a predictor of HIV risk perceptions and protective strategies. Age at first sex does set a precedence in the future thinking of adolescents with regards to how they perceive HIV risks, as well as how they perceive protective strategies against HIV-particularly condom use. This

study confirms that age at first sex alongside with other socio demographic variables are significantly associated with HIV risk perceptions HIV and condom use, while other factors may matter, such as gender, region, HIV knowledge, religion or educational level.

Limitations: The information on age at first sexual encounter was based exclusively on respondent's self-reports. This data collection method often has limitations that are attributed to the tendency for people to under-report socially unacceptable behaviours (e.g. having multiple sex partners) and to over-report socially acceptable behavior. The other limitation is that the study lacks longitudinal data to allow a more in-depth analysis oftrends in HIV/AIDS-related indicators.

(Words 475)

Declaration

This dissertation represents my original work and has not been submitted in any other form to another university. Work of others where use and referenced in the text has been duly acknowledged. The research for this dissertation was performed in the School of Development Studies in the Faculty of Humanities at the University of KwaZulu-Natal, Durban. Research was undertaken under the supervision of Professor Pranitha Maharaj and Nompumelo Nzimande during the period from July 2009 to July 2011.

Signed,

Student Signature

Date

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List of Acronyms

AIDS	Acquired Immune Deficiency Syndrome
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information Systems
MDG	Millennium Development Goals
MDICP	Malawi Diffusion and Ideational Change Project
MICS	Multiple Indicator Cluster Survey
MDHS	Malawi Demographic and Health Survey
MICS	Multiple Indicator Cluster Survey
STI	Sexually Transmitted Disease
UNICEF	United Nations Children's Fund
UNFPA	United Nations Population Fund
UNGASS	United Nations General Assembly Special Session on HIV/AIDS
WHO	World Health Organization

List of Figures

Figure 1: Theoretical Framework.....	17
Figure 2: Showing the map of Malawi and the Study Area.....	52
Figure 3: Reported Age at First Sex, Men and Women.....	81

List of Tables

Table 4.1: Distribution of Selected Social and Demographic Characteristics.....	78
Table 4.2: Percentage of Ownership of Household Assets.	78
Table 4.3: Showing Contraceptive Use by Gender.....	79
Table 4.4: Indicating Selected Sexual Characteristics of the Respondents.	80
Table 4.5: Risk Perceptions and Worry Levels among Males and Females.....	84
Table 4.6: Showing HIV/AIDS Knowledge and Perceptions.....	87
Table 4.7: HIV Preventive Strategies among Males and Females.....	91
Table 4.8 Outcome Variable: Categories and Codes.....	94
Table 4.9: Predictors: Categories and Codes.....	95
Table 4.10: Relative Risk Ratios Showing the Association between Socio Demographic Characteristics and Perceived Likelihood of Infection.....	96
Table 4.11: Relative Risk Ratios Showing the Association between Worry about HIV/AIDS Infection and its Correlates.....	103
Table 4.2: Odds Ratios Showing the Association between Condom Use at Last Sex and its Associated Correlates.....	108

Table of Contents

Acknowledgements.....	4
List of Acronyms	5
List of Figures.....	6
List of Tables	6
CHAPTER 1	10
1 INTRODUCTION AND BACKGROUND.....	10
1.1 HIV/AIDS in Sub Saharan Africa.....	10
1.2 Definitions of Adolescents.....	11
1.3 HIV Risk Perceptions	11
1.4 Protective Strategies-Condom Use	12
1.5 Age at First Sex.....	12
1.6 The Importance and Motivation for the Study.....	13
1.7 Aims of the Study	15
1.8 Research Questions.....	16
1.9 Theoretical Framework.....	16
1.9.1 The Social Cognitive Model	16
1.10 Organization of the Dissertation	18
2 CHAPTER 2	20
LITERATURE REVIEW	20
2.1 Introduction.....	20
2.2 HIV Risk Perceptions: Worry and Likelihood of Infection.....	23
2.3 Misconceptions about HIV	26
2.4 HIV Protective Strategies.....	28
2.4.1 Condom Use.....	28
2.4.2 Abstinence and Delaying Sex	29
2.4.3 Marriage.....	30
2.5 Correlates of Risk Perceptions and Condom Use	31
2.5.1 Respondent's Age	31
2.5.2 Education	32
2.5.3 Religion.....	33
2.5.4 Geographical Area/Residence.....	33
2.5.5 Household Wealth.....	34
2.5.6 Marital Status	34

2.5.7	Gender Roles.....	35
2.5.8	HIV Counseling and Testing.....	36
2.5.9	Age at First Sex.....	37
2.5.10	Summary	38
2.6	Factors Associated with Early Sexual Debut.....	39
2.6.1	Coercion.....	40
2.6.2	Socio-economic status.....	41
2.6.3	Peer Pressure	43
2.6.4	Family Structure.....	44
2.6.5	Cultural Practices	45
2.6.6	Gender Disparities.....	47
2.6.7	Decline of Age at Menarche	48
2.7	Psychological Factors: Personal ties to people with HIV/AIDS.....	49
3	CHAPTER 3	51
	METHODOLOGY	51
3.1	Study Area	51
3.2	Data Source and Sample	53
3.2.1	Sample Size Calculation.	53
3.2.2	Fieldwork and Data.....	54
3.2.3	Methods of analysis	55
3.3	Research Questions	56
3.4	Definition of Variables.....	56
3.4.1	Outcome Variables.....	57
3.4.2	Covariate Factors	58
3.5	Methods of Analysis	63
3.5.1	Descriptive analysis	64
3.5.2	Multivariate Analysis.....	64
3.5.3	Multinomial logistic regression	64
3.5.4	Limitations	68
4	CHAPTER 4	70
	ANALYSIS AND FINDINGS.....	70
4.1	Introduction.....	70
4.1.1	Socio-Demographic Characteristics.....	70
4.1.2	Relative Household Wealth	74

4.1.3	Family Planning	75
4.2	Sexual Characteristics	75
4.2.1	Perceived Risk for HIV	78
4.2.2	HIV Related Knowledge and HIV Testing	81
4.2.3	HIV Prevention and Condom Use	84
4.3	Multivariate Analysis.....	87
4.3.1	Outcome Variables.....	87
4.3.2	Correlates of Risk Perception and Condom Use.....	88
4.4	Model 1: The Association between Likelihood of Infection and socio-demographic characteristics.....	89
4.4.1	Correlates of No Likelihood Perception	90
4.4.2	Correlates of Low Likelihood Perception	92
4.4.3	Correlates of Medium Likelihood Perception.....	93
4.5	Model 2: The Association between Worry about HIV/AIDS Infection and its Correlates..	96
4.5.1	Correlates of ‘Not Worried at All’	98
4.5.2	Worried at a Little.....	99
4.6	Model 3: Association between Condom Use at Last Sex and its Correlates	101
5	CHAPTER 5	105
	DISCUSSION	105
5.1	Correlates of Risk Perceptions and Protective Strategies	105
	CHAPTER 6	111
6	CONCLUSION.....	111
6.1	Conclusions and Recommendations	111
6.2	Recommendations and Policy Implication.....	114
7	References.....	117

CHAPTER 1

INTRODUCTION AND BACKGROUND

1.1 HIV/AIDS in Sub Saharan Africa

The social, economic, biological, psychological and cultural consequences of HIV/AIDS pandemic in the Sub Saharan African region are growing in size as well as complexity (Yeatman, 2009), and yet the effects of sexual debut on risk perceptions and protective strategies are often overlooked. The purpose of this study is to determine if age at first sex determines HIV risk perceptions and protective strategies against HIV among young people in Malawi. Many young people in Sub-Saharan Africa face the risk of contracting HIV, sexually transmitted infections (STIs) and unintended pregnancy. According to the Multiple Indicator Cluster Survey, one in three women (34.5 percent) aged 15-19 in Malawi had begun childbearing, 7.5 percent were pregnant with a first child while 27 percent had had a live birth (MICS, 2006). Furthermore, the Malawi Demographic and Health Survey results indicate that 24 percent of men and 12 percent of women had a history of STIs (MDHS, 2006). Globally an estimated 33 million individuals were living with HIV/AIDS at the level in 2007, with about two-thirds of them in Sub-Saharan Africa (MDG Report, 2009).

Sub-Saharan Africa still remains the region with the highest percentage of people living with HIV (63 percent), and in 2005 an estimated 4.3 percent of 15-24 year old females and 1.5% of males in the region were HIV-positive (Biddlecom *et al.*, 2007). In Malawi, HIV prevalence among pregnant women aged 15-24 years was 14.3 percent in 2005 and 12.3 percent in 2007 (Malawi HIV and Aids Monitoring and Evaluation Report, 2007). The results of a national survey conducted in Malawi indicate that the HIV prevalence rate among adolescents aged 15-24 was 7.4 percent, with female prevalence rate twice as much (10.6 percent) as that of the males (4.1 percent) of the same age group (MDHS, 2010). The DHS Comparative Report (2009) indicates that while comprehensive knowledge about HIV/AIDS has increased in most countries, especially in West Africa, levels of such knowledge remain unacceptably low (Sneeringer and Stacy, 2009).

Considerable proportions of men and women still lack knowledge of specific prevention methods such as abstinence, being faithful to one sexual partner, having one trusted partner,

and condom use. Similarly, knowledge about how HIV is transmitted and how it can be prevented is almost universal in Malawi and yet there is a high level of sexual activity among young people (Munthali *et al.*, 2006). The long term goal for the Health Sector in Malawi is; ‘To improve health status of people at all levels in a sustainable manner’. The goal is underlined with the overall policy statement which is to raise the level of health status of all Malawians by reducing the incidence of illness and occurrence of premature deaths in the population (Malawi Government HMIS Assessment Report 2009). In order to achieve this national goal there is need to reduce the HIV prevalence, especially among the adolescents. This calls for HIV intervention programmes to take into account the age at first sex, and its causal effect on the HIV risk perceptions and protective strategies among young people.

1.2 Definitions of Adolescents

Adolescents are defined in various ways. Most authors define adolescence as a period of transition from childhood to adulthood characterized by biological, cognitive, psychological and social changes (Crawford, 2003; Hoosain, 2003; cited in Munthali &Chimbiri, 2003). With regards to age, theWorld Health Organization (WHO), United Nations Population Fund (UNFPA) and UNICEF define adolescents as ‘young people aged 10-19 years undergoing a period of transition in which children attain adulthood‘ (Crawford, 2000 cited in Munthali & Chimbiri, 2003). The Convention on the Rights of the Child defines ‘children’ as those aged 0-18 years, while UNFPA, WHO and UNICEF define ‘youths’as those aged 15-24 years and young ‘people‘ as those aged 10-24 years.

For the purposes of this study adolescents will encompass the youngest (years) to 24 years, and sexual intercourse is defined as the insertion of the penis into the vagina. For the purposes of this study, unless specifically stated, ‘young people’ and ‘adolescents’ refers to people between ages 10-24 and will be used interchangeably.

1.3 HIV Risk Perceptions

A number of models used to explain health behaviour state that high HIV perceived risk is associated with low levels of risk-taking behaviour (Anderson *et al.*, 2007). Clark (2004) argues that perceptions of risks, as well as accurate knowledge of ways to avoid risks, play a crucial role in HIV/AIDS prevention. Anderson *et al.*, (2007) further argues that there is a reciprocal relationship between HIV risk perception and sexual initiation; that is, sexually

inexperienced youths who perceive themselves to be at high risk will be more likely than those who perceive themselves to be at lower risk to delay first sexual intercourse, and individuals who have had sex will perceive themselves at higher risk than those who are sexually inexperienced. In addition, Kaestle *et al.*, (2005) argue that early initiation of sexual intercourse among adolescents has been linked to increased risk of sexually transmitted infections (STIs) and pregnancy during adolescence since those who initiate sex at early ages are more likely to engage in riskier sexual behaviours. Munthali *et al.*, (2006) argue that self-perceived risk of HIV can motivate adolescents to change their risky behaviours and that older adolescents might perceive themselves to have a greater chance of getting HIV because they are engaged in more risky behaviours. They further state that about 16 percent of 15–19-year old women had given birth, one-third did not want their last birth at all, and more than one-quarter wanted the birth at a later time, and about half of all adolescents were worried about getting HIV/AIDS, while about half of adolescents were worried about getting pregnant or getting someone pregnant.

Empirical evidence from the DHS Comparative Report (2009) indicates that the percentage of respondents who reported themselves at high risk of contracting HIV or who already had HIV varied considerably across the countries studied (Sneering and Stacy, 2009). However, lack of published research on how those who initiate early sex are likely to perceive themselves at risk of HIV infection makes it almost difficult to integrate adolescents' HIV and reproductive health concerns in preventive programmes. This is why this study aims to investigate and establish if age at first sexual encounter among young people in Malawi does in future influence their HIV risk perceptions and protective behaviour.

1.4 Protective Strategies-Condom Use

Young women in developing countries are less likely than young men to use condoms during sex that poses special risks. Condom use is also much less common among young people in poorer households and among those living in rural areas (United Nations, 2011). Due to the problems in reporting condom use among young people, age at last sex was used as a measure of HIV prevention among the adolescents.

1.5 Age at First Sex

Age at first sex is the variable of interest in this study. Research evidence states that the age at which women initiate sexual intercourse marks the beginning of their exposure to reproductive risk (MDHS 2006). Research throughout Africa has highlighted the fact that the first sexual experiences are taking place in very different social settings compared to the previous generations, and that the driving forces behind this are the increase in factors that make traditional values weak, particularly in reducing the importance of virginity at marriage (Gueye *et al.*, 2001). Other researchers also agree that the timing of first intercourse is an important indicator of the onset and duration of exposure to the risk for both unplanned pregnancy and they state that those adolescents who delay sexual activity spend fewer years of their lives at risk of unplanned pregnancy and HIV/AIDS (Munthali *et al.*, 2004).

Moore *et al.*, (2007) argue that 40 percent of new cases of HIV infection occurred worldwide among young people between the ages of 15 and 24 years in 2006, with Sub-Saharan Africa being the worst-affected region accounting for two-thirds of the HIV-positive population of which 59 percent were female. Results from a longitudinal survey of the MDICP indicate that women who had an early sexual debut (that is, by age 15) had a higher HIV prevalence (11.1 percent) than women who had a late sexual debut (7.6 percent) (Boileau *et al.*, 2009). Clark (2004) challenges on rethinking about the associations of first sex and HIV risk perception and protective strategies: this paper endeavours to do so by examining if sexual debut sets precedence on adolescents' thinking on HIV as they grow up.

1.6 The Importance and Motivation for the Study

Young people in Sub Saharan Africa are at high risk of HIV infection. Women and young people are especially vulnerable. Globally, nearly 23 per cent of all people living with HIV are under the age of 25. And young people (aged 15 to 24) account for 41 per cent of new infections among those aged 15 or older. In 2009, women represented a slight majority (about 51 per cent) of people living with HIV. Because first sexual experiences may influence a young person's HIV risk and protective behaviour a better understanding of coital debut is needed. Pettifor *et al.*, (2009) states that early coital debut is associated with factors that may increase a young person's risk for HIV infection, such as forced sex and having older partners.

The relationship between perception of risk and sexual behavior is complex and poorly understood. Studies conducted in different cultures have associated HIV risk perception with a wide range of variables: number of sexual partners, knowledge of sexual partners' past sexual behavior, fear of AIDS, shame associated with having AIDS, community perception of AIDS risk, knowing someone with AIDS, discussing AIDS at home, closeness of parent-child relationships and religious affiliation (Prata *et al.*, 2006). Studies that have examined the association between the perception of risk and sexual behavior remain inconclusive because of the difficulty of disentangling the complex relationship between the two variables (Cleland, 1995 cited in Akwara *et al.*, 2003). This means that continuous research is needed in order to establish the critical factors influencing risk perception and protective strategies among adolescents. This is why this study also focuses on the relationship between socio demographic characteristics and the individual's perception of risk of HIV/AIDS and protective strategies with a particular emphasis on age at first sexual intercourse. Much as the direction of causal effect would have been more useful in making informed decisions about adolescent sexual reproductive behaviours in relation to HIV protective strategies, the study was confined to a cross sectional data that only allowed analyses examining association. Such information adds to the existing knowledge about adolescents' HIV perceptions and is very crucial in the design of young people's HIV intervention programmes if the HIV prevalence rates are to be reduced.

Furthermore, individuals' knowledge of HIV transmission and accurate assessment of their own risk are among the key factors in adoption of safer sexual practices such as condom use. Prata *et al.*, (2006) argues that adolescent behavior is of special interest for the number of life-years saved is greatest when infections are averted in relatively young individuals and that preventing HIV infection in women of childbearing age prevents transmission from mother child. Furthermore, it may be easier to change sexual attitudes, practices and risky behaviors among the young than among older people (Prata *et al.*, 2006). Information from this study will add to the existing information which policymakers use in order to design effective policies in the fight against HIV and AIDS.

The hypothesis in this study is that the earlier the age at which first intercourse occurs, the less likely adolescents are to perceive themselves at risk of HIV infection, and the more likely they are to engage in unsafe sex. Furthermore, self-perceived risk of HIV can serve as a motivation for adolescents to change their behaviors that place them at risk of HIV (Munthali *et al.*, 2006). Since early sexual experiences inform future sexual behaviours, it is very crucial

to understand the sexual and reproductive behaviours of young people as well as the factors that protect or put them at risk of HIV infection, STIs and unwanted pregnancy (Moore *et al.*, 2006). Gausset, (2001) cited in Clark, Poulin and Kohler, (2009) reiterate the same; ‘that broader social norms governing the acceptability of sexual behaviours like age of sexual debut and number of premarital and extramarital sexual partners are likely to play a larger role in determining HIV risks’. A number of studies cited in this paper have investigated the link between socio demographic characteristics including and the risk of contracting HIV but have not included the relationship between the age at first sexual intercourse and HIV risk perceptions among the young people. Munthali *et al.*, (2006) argue that understanding the major overall concerns of young people provides a useful perspective on how sensitive young people are likely to be to HIV as well as sexual and reproductive health information and related interventions.

Having stated the above, the aim of this paper is to examine the relationship between socio demographic characteristics including age at first sexual intercourse and perceived HIV risks perceptions and protective behaviour among young people in Malawi. The study examines whether a relationship exists between age at sexual debut and subsequent HIV perceived risks and protection strategies among adolescents. Multiple regression analyses on the cross sectional data from the 2004 Malawi Diffusion and Ideational Change Project adolescents sample who had reported engaging in sexual intercourse were run against the HIV risk perceptions and protection strategies so as to establish if there was a significant association. By examining age at sexual debut, alongside socio demographic characteristics and outcomes into the assessment of adolescent HIV risk perceptions and protective sexual behaviour, this study will contribute an important element of existing literature, as well as provide insights to HIV programme interventions targeting adolescents.

1.7 Aims of the Study

The objectives of the study are;

- i. To investigate whether age at first sexual intercourse does influence adolescents’ individual perceived risk perceptions of HIV.
- ii. To investigate whether age at first sexual intercourse does influence adolescents’ individual perceived protective strategies.

1.8 Research Questions

The research questions of this study are as follows;

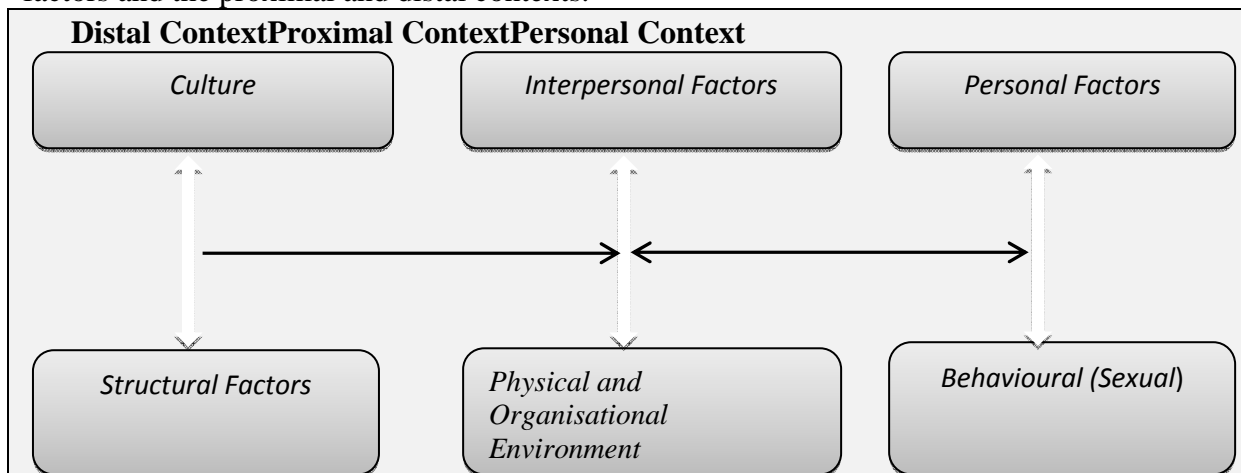
- a. Is there an association between perceived likelihood of infection (perceived risk) and socioeconomic factors (age at first sex being the variable of interest).
- b. Is there an association between worry over contracting HIV (perceived risk) and socioeconomic characteristics (age at first sex being the variable of interest).
- c. Is there an association between condom use and socioeconomic characteristics (age at first sex being the variable of interest).

1.9 Theoretical Framework

1.9.1 The Social Cognitive Model

The Social Cognitive Theory (SCT) addresses both the psychosocial dynamics influencing health behavior and methods for promoting behavioral change. Within SCT, human behavior is explained in terms of a triadic, dynamic, and reciprocal model in which behavior, personal factors (including cognitions), and environmental influences all interact (Bandura, 1997). Eaton *et al.*, (2003) argues that in order to understand sexual risk behaviour in Southern Africa, one needs to consider the interactive effects of factors at three levels: within the person, within his or her proximal context, and within the distal context. Personal factors include cognitions and feelings relating to sexual behaviour and HIV/AIDS, as well as thoughts about one's self (such as self-efficacy and self-esteem). In this context the proximal context comprises interpersonal relationships and the physical and organisational environment. The distal context includes cultural and structural factors within society. Culture comprises aspects such as the traditions and norms of the larger society, the social discourse within a society, shared beliefs and values, and variations in such factors across such subgroups and segments of the population. Structural factors include legal, political, economic, or organisational elements of society.

Figure 1: Framework for organizing the relationship between sexual behaviour, personal factors and the proximal and distal contexts.



Source: Eaton *et al.*, 2003: Unsafe Sexual Behavior in South African Youth; *Social Science and Medicine*(56)1: 149-165

This model states that understanding of the nature of HIV, the mechanisms of transmission and methods of prevention is very important. In a study conducted by some researchers, fewer than 50 percent of young people understood how HIV and AIDS are related (Elkonin, 1993; Naidoo, 1994; Richter, 1996; cited in Eaton *et al.*, 2003) which is a reflection of serious gaps in knowledge and prevention. In other few interview studies undertaken elsewhere, it appeared from respondents' spontaneous answers that their understanding of HIV/AIDS and prevention options was also sketchy (e.g. NPPHCN, 1996; Richter, 1996; Varga & Makubalo, 1996; cited in Eaton *et al.*, 2003). Within trusting relationships where contraception and sexual choices are discussed, condoms tend to be abandoned in favour of less intrusive, more effective contraceptives and that the act of leaving condoms behind symbolizes a new level of commitment within the relationship (Simpson, 1996; Wood & Foster, 1995; cited in Eaton *et al.*, 2003).

Furthermore, the importance of cultural and structural factors and the neglect of such factors in health behaviour research have been recognised in recent publications (Cockerham, 1997; Dressler and Oths, 1997; Eakin, 1997 cited in Eaton *et al.*, 2003). Since the model applied here is to understand influences on sexual behaviours specifically, a one-way process is depicted where individuals and their immediate environment are influenced by broader social conditions. Bandura (1977) cited in Eaton *et al.*, (2003) however argues that in general terms all these factors are potentially reciprocally determining. In other studies, it has been observed elsewhere that traditional African cultures are frequently patriarchal

and oppressivetowards women (Airhihenbuwa, 1995 cited in Eaton *et al.*, 2003). Writers on HIV/AIDS prevention in Africa have noted that pervasive, culturally entrenched gender discrimination increases the risk of HIV infection for African women (e.g. Ng'weshemi, Boerma, Bennett,& Schapink, 1997; Webb, 1997; cited in Eaton *et al.* 2003). In order to explore and understand the influences on sexual behaviours specifically, depicting a process where individuals and their immediate environment are influenced by broader social conditions this paper will draw on this Social Cognitive Model. The social-cognitive theories have been found to be valid and useful, especially in Western societies. They cannot be applied to in all circumstances and to all problems. This is true for developing countries like Malawi, where factors beyond the individual, cultural and distal have an impact that warrant special consideration. This model can be applied to adolescent HIV intervention programmes in Malawi by exploring crucial personal factors such as: the individual's capabilities to symbolize behavior, to anticipate the outcomes of behavior, to learn by observing others, to have confidence in performing a behavior (including overcoming the problems in performing the behavior), to self-determine or self-regulate behavior, and to reflect on and analyze experience (Bandura, 1997). This study explores the relationship between these personal, proximal and distal factors in relation to HIV risk perceptions and protective strategies among adolescents in Malawi.

1.10 Organization of the Dissertation

This report consists of six chapters. Chapter 1 gives an introduction and background to early sexual intercourse and the experiences that may influence a young person's HIV risk. It also highlights the global situation of HIV/AIDS and its consequences as well as the situation in Malawi with regards to the young people. The chapter explains why a better understanding of coital debut is needed in HIV intervention programmes, highlights objectives of the study and gives a theoretical framework which can be applied in intervention programmes. Chapter 2 is a review of some of the existing literature on adolescent sexual behaviour, factors leading to early sexual debut and the associated HIV risk perceptions, as well as protective strategies adopted by the young people. Chapter 3 explains the sample, study area and how the cross sectional data will be analysed using regression methods. Chapter 4 presents the descriptive as well as the multivariate findings of the survey with tables and charts used to present the results. Chapter 5 gives an overview of the discussion on the findings of the

study. A conclusion as well as suggestion on possible recommendations based on the findings is presented in chapter 6.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Malawi is representative of many other sub-Saharan African countries experiencing some of the most severe HIV/AIDS epidemics in the world. Adults aged 15 to 49 are most likely to engage in high-risk behaviour for HIV infection, and represent about 44 percent of the total population. For Sub-Saharan Africa, AIDS has become the number one cause of death and accounts for more than half of all hospital admissions (JICA and Malawi MHP 1999; cited in Gerland, 2004). A high level of HIV prevalence in a country suggests a greater probability that an individual will acquire HIV if he or she engages in risk behaviors than in a country with low prevalence (UNFPA, 2009). In Malawi, HIV prevalence among pregnant women aged 15-24 years of age was 14.3 percent and decreased to 12.3 percent in 2007 (Malawi HIV and Aids Monitoring and Evaluation Report, 2007). It has since further decreased to 11 percent nationally, with female adolescents (15-19 years) prevalence rate higher (4.2 percent) than among males (2.7 percent), and 6.4 percent among those females aged 20-24 years compared to 4.7 percent of males of the same age group (MDHS, 2010). Some researchers argue that AIDS awareness alone is a necessary but insufficient condition for individual change in risk behavior (Gerland, 2004). Instead age at first sex may be a positive factor in understanding HIV risk perceptions, which then shape the young people's future protective behaviour. This chapter highlights age at first sex for young people in Malawi in relation to HIV risk perceptions as well as protective strategies and also highlights some of the factors leading to early sexual intercourse among the young people.

Firstly, some scholars argue that perception of risk is a personal risk-assessment and may not reflect actual risk, but may reflect an individual's level of and access to knowledge about HIV (Prata *et al.*, 2006). Other studies argue that perception is socially constructed in that social experiences influence the way in which people perceive superficially identical risks (Cross, 1992 cited in Prata *et al.*, 2006). Some scholars argue that a high perception of risk might lead to a modification of sexual behaviour, for example refusal to have sexual intercourse with a partner (Akwara *et al.*, 2003).

A number of studies have so far been carried out on the association between increased risks of unprotected sexual intercourse and early sexual initiation. Strong clinical research suggests that there is a relationship between socio demographic characteristics including age at first intercourse and an individual's health. If an adolescent engages in early age at first intercourse, they are likely to end up having multiple partners and also, engaging in unprotected sexual intercourse (Gueye *et al.*, 2001). Further research indicates that early initiation into sexual intercourse is associated with multiple partners, unsafe sex and a high risk of sexually transmitted diseases and HIV as well as unwanted pregnancy (Sieving *et al.*, 2006). Some studies have also shown that the perception of risk of HIV may be high when a new sexual relationship is formed, but that the perception of risk diminishes as the relationship progresses (Ingham & van Zessen, 1997; Fapohunda & Rutenberg, 1999; Nzioka, 2001 cited in Akwara *et al.*, 2003).

Young age tends to render especially girls unable to negotiate safe sex and they end up being pregnant or being infected with HIV and that the wider the ages gap between the partners the greater the sexual risk for the girls (Manzini, 2001). Most studies carried out on young people's sexual behaviour suggest that the younger the age at which first intercourse occurs, the greater the frequency of sexual intercourse and there is increased likelihood that it will be unprotected and resulting in a higher risk of pregnancy and HIV infection (L'Engle *et al.*, 2006; Koenig *et al.*, 2004; Smith and Watkins, 2005). Further research shows that an individual's perception of risk is likely to be influenced by his or her own sexual behaviour and his or her partner's sexual behaviour (Cleland and Maharaj, 2004). A study conducted in the US showed that early initiators had an increased likelihood of having had multiple sex partners, been involved in a pregnancy, forced a partner to have sex, had frequent intercourse and had sex while drunk or high. The conclusion was that the adolescents who initiated sexual activity early engage in behaviors that place them at high risk for negative health outcomes (O'Donnell *et al.*, 2001).

In African countries, the median age ranges between 16 and 18 years (Meekers, 1994) and the situation is not different in Malawi, where 14 percent of women aged 15–19 had sex before age 15 and two-thirds had sex before age 18 (Multiple Indicator Cluster Survey, 2006). In a longitudinal study in South Africa in 2003–2007, the median age at first sex among women and men who were virgins at the beginning of the period, was 18.5 and 19.2 years, respectively (McGrath *et al.*, 2008). Statistics on teen sexuality in the United States reveal that about 7 percent of high school students report having had sex before the age of 13 and 67

percent among younger adolescents regret their first experience and wish they had waited longer (Kim, 2008). In most cases this initiation into sexual activity occurs without any protection and result in unwanted pregnancies as evidenced by a study in Malawi where 60 percent of all respondents reported that sexual acts that took place in the three months prior to the survey were not protected at all and only 24 percent of the sex acts were protected 100 percent of the time (Munthali *et al.*, 2006). Manzini (2001) argues that once sexual activity begins, it generally does not stop, and in many parts of the world, the male partners are usually much older than the girls. Research reveals that many young men claim that they need sex in order to stay healthy and that there is also a pervasive belief that sexual desire is a natural force that one should not attempt to control (Meyer-Weitz *et al.*, 1998 cited in Eaton *et al.*, 2003).

On the same, Clark, Poulin, and Kohler (2009) argue that among the adolescents, sexual intercourse itself may be viewed as a signal of greater intimacy, trust, and commitment and establishing premarital sexual partnerships and gaining sexual experience is an important step toward marriage. Meekers (1994) adds that in urban areas there is less control on adolescent sexual behaviours and early sexual relations are viewed as a means of acquainting partners, and the modern education system orients the mindsets of the adolescents towards new social values and the school setting encourages interaction with the opposite sex. In Malawi it is estimated that 72 percent of men and 38 percent of women will have engaged in premarital sex before reaching their 20th birthday (Munthali, Chimhiri, and Zulu, 2004; cited in Clark, Poulin and Kohler, 2009). The trend is the same even in developed countries, where nearly 40 percent of girls who begin sexual activity at ages 13 or 14 are reported to give birth outside marriage, compared to 9 percent of those who remain abstinent until their early twenties and one in four teenage girls have at least one sexually transmitted infection, and one in five will become teen mothers (Kim, 2008). Bertrand and Anhang, (2006) argue that a person's ability to avoid HIV infection depends only partly on their own individual knowledge and skills, but that there are other social and economic factors that are beyond the individual's control and that can put young people at higher or lower risk of infection. With regards to protective strategies, condom use during higher-risk sex is still low among young people in developing regions. On average, less than half of young men and just over a third of young women used condoms during their last high-risk sexual activity in sub-Saharan African countries (United Nations, 2011).

In summary, research has proven that the risk of HIV infection is lower among adolescents who begin sexual activity in later years (McGrath *et al.*, 2008; Munthali *et al.*, 2006; Gueye *et al.*, 2001). If indeed, age at sexual debut influences future HIV risk perceptions, as hypothesized in this study, then McGrath *et al.*,(2008) suggest that sex education and HIV education interventions can successfully delay sexual debut in developing countries. In a country like Malawi that is working towards achieving the Millennium Development Goals by meeting the health targets, and where adolescents are indulging in early unprotected sexual activities, there is a need for more in-depth research and holistic programmes for young people that are geared towards delaying sexual debut. The following section highlights some of the factors that may lead to adolescents engaging in early sexual intercourse and potential consequences such as increased likelihood of pregnancy and STIs, as well as being infected with HIV.

2.2 HIV Risk Perceptions: Worry and Likelihood of Infection

A review of literature indicates that perception of risk is a prerequisite for behavior change among adolescents, a supposition supported by empirical studies (e.g., Ajzen and Fishbein, 1980; Weinstein and Nicolich, 1993; cited in Smith and Watkins, 2005). Risk perception is defined as an individual's ability to judge whether he or she is susceptible to a condition and determine how severe or serious the outcome will be (Malawi Bridge Project, 2004; p15). There is research evidence that HIV/AIDS-related knowledge is significantly related to AIDS-related worry, perceived risk, and behavioral change (Gregson *et al.*, 1998; Klepinger *et al.*, 1993; London and Robles 2000; cited in Smith, 2003).

Perceptions of risks, as well as accurate knowledge of ways to avoid risks, play a crucial role in HIV/AIDS prevention (Clark, 2004) and are also strongly related to an increase in self-protective behavior (Lindan *et al.*, 1991; cited in Cleland and Maharaj, 2004). Furthermore, a higher perceived vulnerability and anxiety about personal risk is linked to greater intended and actual sexual behaviour change (e.g., Strebel and Perkel, 1991; Van Aswegen, 1995; Van Wijk, 1994; cited in Eaton *et al.*, 2003). Smith and Watkins, (2005) argue that there is a complicated reciprocal relationship between HIV perceived risk and behavior change. The high rate of HIV infection among adolescents in South Africa indicates that much sexual activity is unprotected by condoms (Rutenberg *et al.*, 2003).

Literature states that individuals who perceive no likelihood of HIV infection may not modify their behaviour even when their actual risk is high, while others may adopt a fatalist attitude where they decide HIV infection as inevitable and see no point in modifying their behaviour (Sherppard *et al.*, 2001). A low proportion of respondents from a study conducted in Kwa-Zulu Natal revealed that respondents consistently or occasionally using condoms with their spouse or partner (Cleland and Maharaj, 2005). Similarly, in a study in Malawi 60 percent of the sexual acts were unprotected and a significant proportion of the adolescent population were switching partners, which put them at risk of contracting HIV and other STIs and unintended pregnancy (Munthali *et al.*, 2006). Furthermore, Forste *et al.*, (2002) argue that fear and concern about HIV motivates behavioural change, and those individuals who believe that they are already infected or would become infected with HIV/AIDS are more likely to be worried than individuals who perceive their risk of infection as negligible.

Worries about contracting HIV and self-perceived risks can serve as a motivation for adolescents to change behaviors that place them at risk to HIV. Some researchers argue that low perceived personal vulnerability is a risk factor because it reduces the motivation to take the necessary precautions (Eaton *et al.*, 2003). For example, in Malawi boys and girls who were fatalistic about their lives showed no motivation of taking protective strategies, and about 86 percent of them perceived themselves to become HIV positive within 10 years (Malawi Bridge Project, 2004), for instance, ‘When you find out that you are HIV positive, you feel like you are already dead because of the insults that you receive (Malawi Bridge Project, 2004; p19)’.

Oyedokun, and Odimegwu, (2003) argue that those individuals who perceive small risk, moderate risk, great risk, and HIV-positive and ignorant individuals, are less likely to use protection compared to those who perceive no risk at all. In a study conducted in Uganda, the majority of adolescents especially the females across all age groups were very worried about the possibility of getting infected with HIV. On average, among the 15-19-year-olds, about 72 percent of the females compared to 55 percent of the males expressed this opinion and among the 12-14 year olds, the corresponding percentages were 65 percent compared to 47 percent respectively (Koenig *et al.*, 2007).

The DHS Comparative Report (2009) indicates that women and men felt that a person could reduce the risk of HIV infection by abstaining from sexual intercourse, limiting sex to

one faithful partner, and always using a condom when having sex; the so-called—A,B,C prevention methods. Furthermore, the report indicates knowledge of the A(abstaining), B (being faithful), and C (condoms) prevention methods varied considerably across countries, both among women and men (Sneeringer and Stacy, 2009). While levels varied widely within and across regions, knowledge was somewhat higher in east Africa compared with the other two regions. Further results also showed that knowledge levels about abstinence increased among men in Rwanda and Malawi, remained steady among women in Rwanda, and declined among women in Malawi. Knowledge of faithfulness as a prevention method declined in Ethiopia and Malawi but increased in Rwanda and Uganda. Knowledge of condom use to prevent infection rose in all countries with two data points except Malawi, where it declined slightly among women (Sneeringer and Stacy, 2009).

Despite high HIV prevalence and high rates of sexual risk behaviors in Sub-Saharan African countries, results from studies indicate that most young people in these countries often perceive themselves as being at low risk of HIV infection (Anderson *et al.*, 2007). For instance, in South Africa it was found out that some communities perceived more risk for the young people in their communities than the adolescents themselves, who were inclined to underestimate their own vulnerability (Rutenberg *et al.*, 2003). Other studies reveal that perceptions of risk are unrealistically low in some groups with high rates of sexual activity and low condom use, where up to 45 percent of young men in certain samples practiced unsafe sex (e.g., Reddy, Meyer-Weitz, van den Borne, and Kok, 1999; cited in Eaton *et al.*, 2003). In a study conducted in Malawi, where almost everyone knows about HIV/AIDS, some respondents reported that they were not at all worried about HIV, believing they were not at risk of infection based on their knowledge and their spouse's behavior (Zulu and Chepngeno, 2003; Watkins, 2003; cited in Smith and Watkins, 2005). In another study among adolescents in Malawi more than a third of adolescents perceived themselves at great risk of contracting HIV and another believed they had 'no chance at all' of contracting HIV (Munthali *et al.*, 2006). In 1994, focus group discussions with primary school pupils in Malawi revealed that the youth generally perceived themselves at risk of getting HIV because of borrowing razor blades, visiting barber shops, sexual intercourse, injections and nonuse of condoms, 10 years down the line there was high knowledge levels about HIV/AIDS and STIs (Munthali *et al.*, 2004). A study conducted three years later in 1997 showed that only 45 percent of the youth appeared to be concerned about getting AIDS (Munthali *et al.*, 2004). In 2004, while more than a third of adolescents

perceived themselves at great risk of contracting HIV, the proportion who believed they had no chance at all' of contracting HIV accounted for another third of all adolescents (Munthali *et al.*, 2006).

With regards to adolescents in marriage, recent survey results on perceptions on whether concerns about HIV are reflected in youths 'marital aspirations in Malawi reveal that the majorities of men and women agreed that a monogamous marriage with a spouse who was relatively poor, more religious, and came from their own village would lower the risk of HIV/AIDS (Clark, Poulin and Kohler, 2009). Furthermore, over 80 percent of unmarried men and women planned to get tested for HIV prior to getting married (Clark, Poulin and Kohler, 2009). Evidence from a study in South Africa reveals a higher perception of risk within the community was associated with boys' increased desire to avoid a pregnancy in the near future and this suggests that HIV is influencing boys' risk of unprotected sex and unintended pregnancy (Rutenberg *et al.*, 2003). Results from a South African study reveal that while a higher proportion of women than of men felt at risk of HIV infection from their partner, women's perceived risk of HIV infection from their partner was the most powerful predictor of condom use (Cleland and Maharaj, 2005).

2.3 Misconceptions about HIV

Literature points out misperceptions exist among adolescents about how HIV is transmitted and how pregnancy occurs, which may influence adolescents' adoption of protective measures (Munthali *et al.*, 2006). In Malawi, a little more than half of all adolescents did not know whether or did not think that a woman could get pregnant the first time she had sexual intercourse or if she had sex standing up, while half thought that a woman could get pregnant if she washed herself thoroughly immediately after sex (Munthali *et al.*, 2006). Some adolescents (about 25 percent) who had heard of AIDS believed that the AIDS virus could be transmitted by sharing food or through witchcraft or supernatural means, and more than one third thought that HIV could be transmitted by mosquito bites (Munthali *et al.*, 2006). However, these myths no longer exist by now (5 years later) because of the massive campaigns on HIV awareness in Malawi. Further literature indicates that some adolescents perceive condoms as only for sex workers and promiscuous people, that using a condom means lack of love or trust, use of condoms will make people think they have HIV/AIDS, condoms make sex less enjoyable and that condoms cause loss of erection and premature ejaculation (UNFPA, PATH, WHO 2005).

Further misconceptions about female condoms are that they cause itching or rash on genitals, that it is difficult to use them consistently, that they can break during sexual relations, that it is difficult to insert female condoms, they can get pushed in or pulled out of vagina, are noisy, inner ring of the female condom feels uncomfortable and that it is difficult to use them in different sexual positions (UNFPA, PATH, WHO 2005). Some studies have shown that the effectiveness of condoms at preventing pregnancy and the transmission of HIV is determined by how consistently and correctly they are used (Munthali *et al.*, 2006). Further literature adds that the more likely the use of a condom at each act of intercourse, the greater will be the reduction in HIV infection (Bracher *et al.*, 2004). For young couples, the perception of risk of HIV infection is important for adopting protective strategies, and it is possible for a woman's perceived risk of HIV infection to over-ride the man's objections (Maharaj and Cleland, 2005). However, perceptions among boys and girls make them believe that a woman does not have the right to ask her partner to use a condom (Malawi Bridge Project, 2004).

Results from DHS data shows that the percentage of women who knew that HIV cannot be transmitted by sharing food ranged from 28 percent in Benin to 89 percent in Rwanda, and among men from 42 percent in Madagascar to more than 90 percent in Rwanda and Malawi. Only three countries, Rwanda, Uganda, and Malawi, had data on misconceptions about HIV transmission risk from mosquitoes and from sharing food for two time points. The percentage who knew that HIV cannot be transmitted by sharing food increased among both women and men in all three countries. The percentage who knew that HIV cannot be transmitted by mosquitoes also increased among both women and men in two of the three countries (Rwanda and Uganda), but there was little change in Malawi (Sneeringer and Stacy, 2009). Such misconceptions could influence adolescents' adoption of protective measures and it is very crucial to fully understand whether age at sexual debut influences these misconceptions about HIV/AIDS as well as protective behaviours. Having correct beliefs about HIV/AIDS is important to avoiding infection, but surveys have shown that many people have misconceptions. Surveys conducted in Southern, West and Eastern Africa presents several of these misconceptions among women and men age 15–49. In the vast majority of countries, knowledge that a healthy-looking person could have HIV has increased among women and men from the earlier survey to the more recent (Sneeringer and Stacy, 2009).

2.4 HIV Protective Strategies

This section highlights some of the protective measures taken by the young people as a means of protecting themselves against HIV/AIDS. These include condom use, abstinence and delaying sex, as well as marriage.

2.4.1 Condom Use

Condom use during higher-risk sex is still low among young people in developing regions. On average, less than half of young men and just over a third of young women used condoms during their last high-risk sexual activity in sub-Saharan African countries (United Nations, 2011). Literature evidence that a person's self-assessed risk of HIV infection may be based on the extent to which he or she takes preventative actions, such as condom use. If this is the case, then those with low self-assessed risk of HIV infection might be those who are consistently using condoms in high-risk sexual relationships or who are not at all engaged in high-risk behaviour (Adetunji & Meekers, 2000 cited in Sheppard *et al.*, 2001). Some researchers argue that condom use is associated with most of the demographic and behavioral characteristics such as age, education, religion etc. Previous studies have shown positive associations between education and condom use; ours shows a similar trend, except for women with a secondary or higher education (Prata *et al.*, 2006).

Some researchers argue that one has to first identify a risk before preventative action is taken. Results from a study conducted in Ghana in 2009 shows that respondents who believed that they were at no or small risk of contracting HIV/AIDS, were less likely to use condoms than those who believed that they have a moderate or great risk of getting AIDS, or who already had AIDS (Sheppard *et al.*, 2001).

There is significant evidence that sexual negotiation of any kind be it about condom use, faithfulness, or about the nature and frequency of sexual intercourse is lacking in many sexual relationships among young people (Eaton *et al.*, 2003). When young people become sexually active, they must have the skills to practice safe sex. This means either being faithful to one faithful partner or consistently using a condom properly. Data from household surveys show that the proportion of young people using condoms is still quite low even when they have sex with people who are not their regular partner (Bertrand and Anhang, 2006). Further research reveals that a person with low self-esteem is more likely

to think that condoms are offensive to their partner, to think that using condoms may make their partner think they are dirty, to be embarrassed about using condoms and to have a negative attitude towards condoms (Perkel *et al.*, 1991; cited in Eaton *et al.*, 2003). Condoms may be viewed as acceptable with casual partners, but unacceptable with more serious partners, who may view condom use as indicating a lack of trust (Chimbiri, 2007; Civic, 1999; Muhwava, 2003; cited in Clark, Poulin and Kohler, 2009). Condom use often depends on the nature of the relationship (e.g., whether the partner is a boyfriend/girlfriend or a more casual partner), the relative power that the adolescent has in the relationship (e.g., whether one partner is significantly older or has given the adolescent money or gifts in exchange for sex) and whether alcohol was consumed around the time of sexual (Munthali *et al.*, 2006). The disadvantage of condoms cited most often is loss of pleasure. Several studies report young men (and some women) claiming that they like sex to be 'skin on skin' (e.g., MacPhail and Campbell, 2000; NPPHCN, 1996; Reddy and Meyer-Weitz, 1997; Reddy *et al.*, 1999; Richter, 1996; cited in Eaton *et al.*, 2003). Further research reveals that youth in South Africa feel that many condoms are required for many rounds of sex; fear of condoms breaking or slipping; and awkwardness in purchasing condoms (Eaton *et al.*, 2003). It is further argued that for those who believe the myth that condoms may disappear into women, causing injury or death, this is obviously also a major disadvantage to condom use (Reddy & Meyer-Weitz, 1997 cited in Eaton *et al.*, 2003). It is interesting to note that in a study where 88 percent of sexually active respondents agreed that condoms protect against AIDS, none actually used them (Govender *et al.*, 1992; cited in Eaton *et al.*, 2003). All of the above mentioned factors are also directed to misconceptions about condoms.

2.4.2 Abstinence and Delaying Sex

Oyedokun and Odimegwu, (2003) argue that belief in abstinence, limiting of numbers of sexual partners, use of sterilized needles, partners taking blood test, other ways of preventing HIV/AIDS, being HIV-positive and risk perception about HIV/AIDS are correlated with use of protection at first sexual intercourse. Munthali *et al.*, (2006) cited in the Guttmacher Institute Report (2006) indicate that at least 7 in 10 adolescents were familiar with ways to avoid transmission of the AIDS virus, such as not having sex at all, being monogamous with an uninfected partner, or using a condom consistently and correctly.

Furthermore, some primary school pupils perceived themselves not being at risk of HIV infection because they were not involved in sexual intercourse (Munthali *et al.*, 2004) while some studies indicate that married girls are more likely to resort to sticking to one partner strategy more often than did unmarried girls (Clark 2004). Some Researchers argue that there is further perceived disadvantage of abstinence in that it prevents people from demonstrating their fertility by conceiving babies (Eaton *et al.*, 2003) while others argue that if delaying sexual intercourse in adolescence carries a lasting benefit of reduced STIs in young adulthood, this would represent a potentially huge impact for such a strategy in terms of long-term health benefits in the population (Kaestle *et al.*, 2003). Munthali *et al.*, (2006) argues (based on anecdotal evidence) that some young women use anal sex as a substitute for vaginal sexual intercourse in order to avoid the risk of pregnancy and/or to preserve their virginity. However, while anal sex cannot result in pregnancy, it represents high risks for STIs, including HIV, if protection is not used.

2.4.3 Marriage

Marriage is the primary indicator of the exposure of women to becoming pregnant. More than half of women in Malawi enter into marriage at the age of 18 years before they are physically, mentally and economically prepared for pregnancy (Munthali *et al.*, 2004). In some countries most, adolescent girls, generally view sex within marriage as safer than sex outside of marriage, which is implicitly assumed to be the only alternative (Clarke *et al.*, 2004). Some studies indicate that some parents in Malawi, for example, deliberately encourage early marriages to shield their daughters from such perceived risks (Bracher *et al.*, 2003 cited in Clark 2004). However some researchers argue that early marriage may pose a substantial risk with respect to HIV (Clark, 2004; Clark, Bruce, and Dude, 2006; cited in Clark, Poulin and Kohler, 2009). On the other hand, Clarke (2004) argues that although married girls are less likely than single girls to have multiple partners, this protective behaviour may be outweighed by the risks associated with the lack of condom use, increased frequency of sex, and high HIV prevalence among partners. DHS data showed that married and single girls from Kenya and Zambia often reported that their partners represented their greatest source of risk (Clark 2004). Results from a study in Malawi show that both unmarried men and women were deeply divided about whether they thought marriage offered protection from infection or not. Men were slightly more likely than women to view marriage as protective, and generally more respondents reported that HIV risks associated with early marriage were greater and

they believed that no one could completely avoid infection (Clark, Poulin and Kohler, 2009). In the US, sexual activity at an early age may affect marital and economic stability later in life, and that among women in their thirties, those who were sexually active during early adolescence are half as likely to be in stable marriages as those who waited until their early twenties to have sex and that engaging in early sexual activity elevates the risk of teenage girls becoming pregnant and single mothers (Kim, 2008).

2.5 Correlates of Risk Perceptions and Condom Use

These may be categorized into three categories; background socio demographic characteristics (gender, age, province, marital status, religion, education), psychological factors (personal ties with person with HIV or died of AIDS and knowledge of AIDS), and sexual characteristics (age at first sex and condom use). These factors can predict the way adolescents perceive HIV/AIDS as well as condom use.

2.5.1 Respondent's Age

There is growing literature evidence that age of a person is a factor that may influence sexual behaviour and the level of perceived risk of HIV infection. There is often low perception of risk among the younger ages compared to the older ages since knowledge of AIDS which is a catalyst of behavior change increases as age increases. Some researchers have found out that although the risk of HIV infection is high among young men and women they often do not perceive their risk to be high (Prohaska *et al.*, 1990 cited in Akwara *et al.*, 2003). In addition, a positive relationship between age and perceived risk has been found for young people in South Africa, where older youth were more likely than younger youth to have had sex (Prata *et al.*, 2006). Men and women in their teens are at increased risk of HIV infection because they often engage in unprotected sexual intercourse (Hulton *et al.*, 2000 cited in Akwara *et al.*, 2003). Furthermore some researchers argue that sometimes there is pressure for girls to prove their fertility before marriage and those boys may face pressure to prove manhood by impregnating a girl, or by having many sexual partners (Meekers & Calvès, 1997; Nzioka, 2001 cited in Akwara *et al.*, 2003). This implies that age of an individual is a determinant of risk perception, worry and protective strategies.

2.5.2 Education

Literature points out that as the level of education increased the odds of a perceived high HIV risk are increased (Sheppard *et al.*, 2001) and that modern education may expose adolescents to the school environment that enables them to interact more with the partners of the opposite sex (Meekers, 1994). Those with no education are more likely to have the lowest odds of high HIV risk showing the importance of increased education. Some researchers attribute this to lack of knowledge and awareness to make an informed risk-assessment (Sheppard *et al.*, 2001). A study conducted in Ghana found out that women with primary education were 26 percent more likely and women with secondary or higher education were 43 percent more likely to perceive themselves at high risk of HIV perception compared to those with no education (Sheppard *et al.*, 2001). This explains why the goal of most sex education programmes is to delay onset of sexual intercourse, and to promote consistent condom use and other forms of safer sex among those who have had sexual intercourse (Manzini, 2001). Munthali *et al.*, (2004) argue that making comprehensive sex education available in schools may encourage adolescents to have sex. Although Munthali *et al.*, (2004) does not mention whether the school environment affects late debut, results from a recent study conducted in rural South Africa indicate that this school environment is associated with later first sex in men and women (McGrath *et al.*, 2009). In Malawi, results from a national survey indicate that for women, education was related to the start of sexual act, where 29 percent of the women with no education had sex by age 15, compared with 5 percent for women with at least some secondary education (MDHS, 2006). Much as the level of formal schooling may influence perception of HIV risk and sexual behaviour some researchers have conflicting evidence. Caraël (1995) cited in Akwara *et al.*, (2003) found out that there was increased casual sexual activity among those with higher schooling. Education may also be an important protective factor, leading to a later age at first sex and higher HIV risk perceptions (Anderson *et al.*, 2007). Recent studies have found out that having eight or more years of schooling was strongly associated with contraceptive use, condom use at last sex and consistent condom use in the last six months (Koenig *et al.*, 2004).

2.5.3 Religion

Religions can also influence sexual behaviour through intermediate factors such as the age at first sex, marital status, and access to information and services. It may also influence attitudes to HIV and perception of risk (Akwara *et al.*, 2003). There are scholarly various arguments on whether varying levels of religious commitment between different churches, the type of messages about sex and institutional pressure within church or peer norms within a church-based social network have an effect in delaying first sex. Some scholars argue that church attendance elevates the odds of having first sex among adolescents, perhaps because the church setting provides an opportunity for these males to meet potential partners (Haas and Forste, 2002). Nzioka (1996) cited in Akwara *et al.*, (2003) noted that religious people considered AIDS to be a disease that affected those who transgressed against God. Consequently, those who were religious perceived their risk of HIV infection to be low. Some studies have shown that religion can also work to influence community practices and national policies. The Kenyan national AIDS programmes faced opposition from religious leaders at the onset, particularly on the issue of introducing sex education in schools and on condom use, which were thought to encourage promiscuity (Forsythe *et al.*, 1996) cited in Akwara *et al.*, (2003). Other studies have found out that religious affiliation was significantly associated with age at first sex in women but not in men (Mc Grath *et al.*, 2009). In a national study conducted in Malawi in 2006, results indicate that although religion may be very important to the majority of respondents, it was not an important reason given by adolescents for not having sex (Munthali *et al.*, 2006). However some researchers found out that church attendance was an important determinant of delayed sexual activity, but only when a child's friends attended the same church (Mott *et al.*, 1996).

2.5.4 Geographical Area/Residence

Geographical area may have an influence on sexual debut. Residence, and whether a person lives in an urban or rural area, can determine the level of access to information and reproductive health services, which could influence sexual behaviour and perception of risk (Akwara *et al.*, 2003). Living in a more rural rather than a peri-urban area may be associated with early or later age at first sex in men and women. Some researchers have found out that for both sexes, age at first sex was significantly associated with place of residence (Mc Grath *et al.*, 2009). They further argue that their findings suggest that

there may be a constellation of community-level factors that influence the timing of first sex (Mc Grath *et al.*, 2009).

Different ethnic groups with almost similar cultural practices usually live in proximity to each other within the 3 regions of Malawi. The socio cultural contexts in these regions can influence people's perceptions through internalization of specific sexual beliefs, norms and practices (Akwara *et al.*, 2003). Results from a national survey indicate that women in the Southern Region started having sex at an earlier age than women in the Central and Southern Regions, 21 percent of women in the Southern Region had sex by age 15, compared with 10 percent in the northern and Central regions (MDHS 2006). This could also be attributed to the religious and cultural variations across the three regions.

2.5.5 Household Wealth

Family income may increase the likelihood of sexual activity among adolescents, suggesting that those from higher income families have more leisure time in which to develop intimate relationships (Haas and Forste, 2002). Other researchers state that sexual activity at an early age may also affect marital and economic stability later in life, and that it is linked to maternal poverty (Kim, 2008). Kim (2008) found out nearly 30 percent of mothers who began sexual activity at ages 13 or 14 lived in poverty compared to 12 percent of those who waited until their early twenties. Furthermore, among women in their thirties, those who were sexually active during early adolescence were half as likely to be in stable marriages as those who waited until their early twenties to have sex (Kim, 2008). The Malawi Demographic Health Survey results (2006) indicate that more women (20.3 percent) and men (16.7 percent) from the lowest wealth quintile had sex before the age of 15, compared to less than 10 percent of men and women from the highest wealth quintile (MDHS, 2006).

2.5.6 Marital Status

Marital status is an important predictor of HIV risk perceptions and protective behaviour. It is hypothesized that married couples have a lower likelihood of engaging in risky sexual behaviors than the unmarried couples and that unmarried respondents are more likely to rely on condoms than those who are married. Recent survey results on perceptions on whether concerns about HIV are reflected in youths' marital aspirations in Malawi

reveal that the majorities of men and women agreed that a monogamous marriage with a spouse who was relatively poor, more religious, and came from their own village would lower the risk of HIV/AIDS (Clark, Poulin and Kohler, 2009).

Literature also states that whereas non-married women may have some ability to negotiate safer sex, married women face extra challenges because of the fear of being suspected of promiscuity by their spouses, which may lead to unwanted consequences such as separation or even divorce. Often, married women acquiesce in unsafe sexual practices, even if they suspect or know of their partner's extramarital relations (Blanc *et al.*, 1996). Although HIV cannot be spread through sexual intercourse in stable monogamous relationships between uninfected partners, among married women the presence and the nature of their partners' casual or extramarital sexual practices largely determines the risk of HIV transmission (Ahlburg *et al.*, 1997 cited in Akwara *et al.*, 2003).

In many African populations, first marriage is an important determinant of age at first sex, particularly for women (Mc Grath *et al.*, 2009). Recent studies show that women who both delayed sexual debut and did not marry their first partner were, once married, more likely to experience marital disruption and to be HIV positive, and women who marry their first partner but who have sex at a young age however are also at considerable risk of infection (Boileau *et al.*, 2009). Results from Demographic and Health Surveys (DHS) data from six African countries conducted since 1985 indicate that males spend much longer than females in the sexually active unmarried state in all countries. The authors give an implication that women would be exposed to higher risks of acquiring HIV from their husbands than vice versa even if after marriage neither partner had extramarital sex (Zaba *et al.*, 2004). In Malawi, the results from a national survey revealed that marital status made a difference in the likelihood of women having sex. While 19 percent of women 15-24 who had been married had sex by age 15, the corresponding proportion for never-married women was 8 percent (MDHS, 2006).

2.5.7 Gender Roles

Gender plays a significant role in determining perceptions of risk of HIV infection. Gender-based beliefs, pressures, roles and power may influence the ability of males and females to behave in ways that correspond to their risk perceptions. Females might realize that once they become sexually active, they may have less control than males in terms of condom

use and other protective behaviors, thereby increasing their chances of becoming infected with HIV. Also, young women might worry about becoming pregnant and transmitting HIV to a baby (Anderson *et al.*, 2003).

Sheppard *et al.*, (2001) states women generally have higher rates of HIV infection than men and this difference is more prominent among younger women. Studies have shown that generally men have greater influence in intimate relationships and women are more vulnerable to infection and unwanted pregnancies (Gage and Njogu, 1994; MacDonald, 1996 cited in Sheppard *et al.*, 2001). In a study conducted in Uganda it was found that men were 60 percent less likely to perceive themselves at risk of HIV infection compared to females. Similarly, results from Ghana showed that men were 23 percent less likely to report themselves at risk (Sheppard *et al.*, 2001). Other researchers argue that women may have a higher perception of risk because they lack the power needed to negotiate in sexual relationships.

Evidence from Blanc *et al.*, (1996) cited in Akwara *et al.*, (2003) suggests that about 25 percent of Ugandan men and women in their sample believed that a woman cannot refuse sex with her partner, even if she knows that he has AIDS.

2.5.8 HIV Counseling and Testing

Literature states that HIV/AIDS testing and counseling potentially play an important role in the construction of subjective assessments of HIV status, as well as recalibration of these self-assessments (Prata *et al.*, 2006). If individuals act on these assessments, and individuals who incorrectly think they're infected are less likely to protect themselves in risk situations, then HIV testing can reveal such overestimations and thus prevent the spread of the epidemic (Prata *et al.*, 2006). On the other hand, if overestimating risk will result in more people protecting themselves, receiving an unexpected HIV-negative test result could lead to lowering perceived risk and a disregard for protective behavior. Evaluating the effect of HIV testing on shaping estimates of HIV infection and the subsequent effect on risk behavior is an important future task for AIDS research (Prata *et al.*, 2006). This means that knowing one's HIV status plays a role in determining risk perceptions and protective strategies.

2.5.9 Age at First Sex

According to literature, the timing of first intercourse is an important indicator of the onset and duration of exposure to the risk for both unplanned pregnancy, and STIs and HIV (Zaba *et al.*, 2004; Munthali *et al.*, 2006; Manzini, 2001). Research has shown that younger female adolescents have higher biological risks both for complications of pregnancy and delivery and of STIs as well as HIV infection (Munthali *et al.*, 2006). However, Kaestle *et al.*, (2005) argue that earlier initiation of sexual intercourse is strongly associated with STIs for older adolescents but not for young adults over age 23 years. Unless the first intercourse is also the start of a mutually monogamous relationship, early age at first sexual intercourse is associated with a long period of exposure to sexual activity, a higher propensity to accumulate sexual partners, and increased chances of contracting sexually transmitted diseases (Dixon-Muller & Wasserheit, 1990; cited in Konings *et al.*, 1994).

Manzini (2001) argues that the high prevalence of HIV among 15-24 year olds in Kwa-Zulu Natal suggest that sex is initiated at an early age in South Africa, and other studies (Anderson *et al.* 2007; Pettifor, 2009; MDHS 2006) reveal that among those aged 15-24, more than half had had sex by age 18 and it is for this reason that first sexual intercourse is considered an HIV risk behavior. Literature also indicates that having sex with an older partner is likely to place adolescents at greater risk of STIs, including HIV, since older partners are more likely to have more sexual experience than a sexual partner of the same age (Munthali *et al.*, 2006). Such girls who have sexual relations with men who are more experienced and older risk their lives through illegal abortions, STIs, including HIV infection (Munthali *et al.*, 2004). In a South African study, girls first had sex with boys who were about four years older than them, but the age of the partners with whom they first had sex ranged from 8 to 42 years (Manzini *et al.*, 2001). Kaestle *et al.*, (2005) also states that younger ages at first intercourse are associated with higher prevalence of STI in comparison with older ages. In a study conducted in Malawi, more than two thirds of respondents believed older partners carried a greater risk (Clark, Poulin and Kohler, 2009). Clark (2004) argues that the level of a girl's possible exposure to HIV via unprotected heterosexual intercourse is a function of how long she has been sexually active, the frequency with which she has had intercourse, her use of condoms or other STI-protective methods, number of partners and whether any of her partners are infected. Gregson *et al.*, (2002), and Kelly *et al.*, (2003) cited in (Clark,

2004), identified age of adolescent girls' partners as a major risk factor, and argue that having sex with older partners substantially elevates HIV rates among adolescent girls.

Empirical evidence from DHS data of six African countries shows that there is a wide diversity of patterns, trends, and sex differentials in age at first sex (USAID, 2009). Different countries have different legal ages of sexual consent, for instance in Burkina Faso, Ghana and Malawi, the legal age of sexual consent for girls is 16 and in Uganda it is 18, in each of these countries, when the girl is a virgin and a minor, irrespective of whether it was consensual, sexual intercourse is deemed defilement and can result in prosecution of the male (Moore *et al.*, 2006). Other studies indicate that with a decline in age at first intercourse and increased reporting of coercive first sex, concerns of adverse reproductive health outcomes such as unintended pregnancy and sexually transmitted infections (STIs), including HIV, are important issues, particularly in the context of a high HIV prevalence (Maharaj and Munthree, 2006).

The Malawi Demographic and Health Survey (2006) indicates that the median age at first sexual intercourse for women increased slightly since 2000 from 16.9 years to 17.3 years in 2004 and by age 25, all women have had sex (MDH, 2006) and that 15 percent of women aged 15-24 and 14 percent of men aged 15-24 had sex by age 15 while the HIV prevalence rate for adolescents aged 15-24 was 12 percent (Malawi Demographic and Health Survey, 2006). Munthali *et al.*, (2006), cited in the Guttmacher Report (2006) states that more than 9 in 10 female adolescents and 8 in 10 males had sex for the first time with a boyfriend, girlfriend or spouse, and more than 7 in 10 adolescents did not use any contraceptive method the first time they had sex, while nearly 40 percent of females and 7 percent of males reported that they were not willing at all at the time of their first sexual intercourse.

2.5.10 Summary

The literature review above provides an essential foundation for this study and it can be concluded that understanding the relationship between age at first sexual intercourse and the perceived risks and protection strategies against HIV is therefore very crucial when dealing with adolescent HIV intervention programmes. There is not much of published research on how those who initiate early sex are likely to perceive themselves at risk of HIV and this lack of risk perception is a major factor which may lead into failure to

adopt protective measures. The literature provides strong evidence that it is important to take a holistic approach in trying to understand age at first sex and adolescent's risk perceptions and protective strategies in the design of HIV intervention programmes for young people.

2.6 Factors Associated with Early Sexual Debut

To better understand the relationship between early sexual debut and the HIV risk perceptions among the adolescents and protective behaviour, there is need to also understand the factors that lead these adolescents to indulge in such behaviour that expose them to HIV risks and unwanted pregnancies. This chapter presents information on a range of such factors. This information will enable a better understanding of the social and economic reasons why young people are vulnerable to HIV and unwanted pregnancy.

Among others, socio-economic status, family, peer pressure and other social aspects of adolescents' lives that have been shown to influence their protective and risk behaviours are also discussed. According to Eaton *et al.*, (2003), the factors that promote such risky behaviours or create barriers to safer practices can be categorised into personal factors; the proximal environment (including interpersonal factors, and the immediate living environment); and the broader social context (including structural and cultural factors. The 'Protecting the Young Generation Study' in Malawi revealed that most young people in Malawi engaged in unprotected sex, often as a result of peer pressure, poverty, influence of pornographic materials, drug and alcohol abuse, lack of parental guidance, lack of access to condoms, non-use of family planning, and trans-generational sexual relationships resulting in HIV infection, STIs and unwanted pregnancies (Munthali *et al.*, 2004). In South African studies, reasons cited for early unprotected sex include poverty, unemployment, overcrowding, and low levels of education as well as lack of knowledge about HIV and AIDS (Du Plessis *et al.*, 1993; Preston-Whyte and Zondi, 1991; cited in Eaton *et al.*, 2003).

Literature also indicates that more often the girls engage in unprotected sex with older partners and they have little power to negotiate contraceptive use, and that the situation may be exacerbated by some traditional practices in certain areas (Munthali *et al.*, 2004). To this effect, the Population Council is actively working towards increasing the availability and use of the female condom, which is the only safe and effective female-initiated method that provides simultaneous protection against unintended pregnancy

and STIs, including HIV (Population Council Annual Report, 2008). The following sections highlight some of the factors associated with early sexual intercourse among adolescents that render them at risk of HIV infection and unwanted pregnancies with regards to coercion.

2.6.1 Coercion

Coercion at first sex is an important social and public health problem that has a serious impact on the reproductive health and behaviours of young women, (Maharaj and Munthree, 2006). There is research evidence that it is common for the first sexual act to be coerced and that coercion may play an important role in compelling young women to engage in sexual intercourse at an early age. According to Manzini (2001), a girl's first sexual intercourse is often unplanned and may put her at risk of STDs and HIV infection as well as unwanted pregnancy. Moore *et al.*, (2007) add that coercive experiences at sexual debut have been shown to be associated with other sexual risks throughout the life course. Four types of sexual coercion at sexual debut among unmarried girls namely; forced sex; pressure through money or gifts; flattery, pestering, and threatening to have sex with other girls; and passive acceptance were revealed by a nationally representative survey of girls aged 12-19 year old girls in Burkina Faso, Ghana, Malawi, and Uganda (Munthali *et al.*, 2004).

Qualitative research also indicates that young people's heterosexual relationships in certain communities frequently involve sexual coercion of, and violence towards, the female partner. Although numbers are not generally reported, these studies describe young women who are physically forced or bullied into having sex. Boyfriends, who claim that a romantic relationship must necessarily involve full penetrative sex when and how the man wants it, feel justified in using physical assault or threats of violence to coerce their girlfriends into having sex (Varga and Makubalo, 1996; Wood and Jewkes, 1997; Wood, Maforah, and Jewkes, 1998; cited in Eaton *et al.*, 2003). This is true for Malawian adolescents, where males dominate over the females in influencing sexual activity and use of condoms. Other researchers attribute the lack of control over the terms of sex may be attributed to the negative impact that coercion at first sex has dealt to the emotional and psychological well-being of the adolescent girls (Maharaj and Munthree, 2006). Results from Malawi show that 38 percent of girls were 'not willing at all' at their first sexual experience followed by Ghana at 30 percent, Uganda at 23 percent and Burkina Faso at 15 percent (Munthali *et al.*, 2004). Results from the DHS Comparative Report (2009) indicate that the percentage

of young women forced at first sex ranged from 6 percent in Niger and Uganda to 27 percent in Malawi. Young women forced to have sex in last 12 months preceding the survey ranged from less than 1 percent in Niger and Uganda to 8 percent in Zambia.

Sexual coercion is associated with a higher likelihood of HIV infection and experiencing of unintended pregnancies. Munthali *et al.*, (2006) argue that younger male and female teens are likely to be more exposed to the risk of sexual coercion than the older adolescents and that age is very likely to be related to knowledge of risks and means of protection. In a study in Kwa-Zulu Natal, South Africa, results show that those who had been coerced at first sex were more likely to report having had an STI and having experienced unintended pregnancy, than those who had not been coerced at first sex (Maharaj and Munthali, 2006). In another study in Cape Town, South Africa women who had experienced coercion were significantly more likely to exchange sex for material needs, have multiple sex partners, engage in high rates of unprotected vaginal intercourse, and had more STIs (Moore *et al.* 2006). Furthermore, adolescents in Uganda who reported coerced first intercourse were significantly less likely than those who did not experience coercion at debut to be currently using modern contraceptives, to have used a condom at last intercourse and to have used condoms consistently in the last six months and were more likely to report their most recent pregnancy as unintended and to report one or more genital tract infections (Moore *et al.*, 2006).

2.6.2 Socio-economic status

The socioeconomic situation in which young people live can have both positive and negative impacts on their vulnerability to HIV infection and that lower socioeconomic status may result in lower educational attainment, which may result in gaining less information and skills to protect oneself from HIV (Bertrand and Anhang, 2006). Some studies have shown that there is a very close relationship between poverty and the spread of HIV/AIDS. Munthali *et al.*, (2004) and Adams & Marshall, (1998) cited in Eaton *et al.*, (2003) state that economic deprivation in certain households often leads girls to engage in sexual intercourse for economic benefits, where older boyfriends with money will usually offer gifts and financial assistance that parents cannot afford to the adolescent girls .

Further literature from South Africa supports the fact that poverty is the major reason for the spread of HIV, whereby women subjected to economic crisis indulge in sexual relationships with men in exchange for financial support cited as follows; 'Poverty is often the reason for the commodification of sex, in which women in dire economic circumstances agree to sexual relationships with men in exchange for financial support. In other instances the situation may not be so overtly an exchange, but an older boyfriend with money offers both status and the kinds of gifts and financial assistance that parents cannot afford (Adams and Marshall, 1998; Kelly and Parker, 2000; cited in Eaton *et al.*, 2003: p15)'. Rutenberg *et al.*, (2003) cite evidence from some studies on the importance of material and emotional support for the young girls by the older partners. The exchange of sex for money or gifts means that sex happens on the man's terms which usually means without a condom (Karim, 1998; Adams and Marshall, 1998; cited in Eaton *et al.*, 2003). In Malawi adolescent girls from poor households are more likely to engage in early sexual relations and early marriage for financial gains and some poor parents actually encourage their young daughters to provide sexual favors so that they can make money to support the family. In a national study in Malawi, 66 percent reported that they accepted money or gifts in exchange for sex of female adolescents who experienced forced sex, (Munthali *et al.*, 2004).

Further literature also indicates that the sexual domination of young women by their partners appears to happen more often in poor communities. These social and economic forces often put adolescent girls in a situation where they have to bargain their moral values just for survival and as a result, they often find themselves involved in nonconsensual relationships with more than one man (Munthali *et al.*, 2004). This often results in young women engaging in sex in exchange for money or gifts usually from older men and their perspective protection from possible future illness may be a lower priority than meeting immediate economic needs (Eaton *et al.*, 2003). It should be mentioned that not only adolescents indulge in sex in exchange for financial gains; female police officers, female estate workers, and female primary school teachers in Malawi got involved in risky sexual relationships with men who could give them money to supplement their incomes as their salaries were too low to cater for all their needs (Behavioural Surveillance Survey, 2006). Finally it can be deduced that under conditions of economic hardships and social pressure, gift giving has the potential to coerce adolescents into sexual activity (Maharaj and Munthree, 2006) and that for girls sex may bring benefits in the form of gifts or financial support for girls, while for boys having many girlfriends can be an affirmation of manhood (Rutenberg *et al.*, 2003).

2.6.3 Peer Pressure

The World Health Organisation Report (2004) states that adolescents who perceive their friends or peers to be sexually active are significantly more likely to engage themselves in sex, as well as have multiple sexual partners. In addition, the perception that one's peers are sexually active was one of the strongest identified risk factors. Peer pressure may be a result of social interaction, where it should be expected that the proportion of network partners very worried about AIDS should be the main determinant of the probability of the respondent reporting being very worried as indicated below; If social influence dominates, on the other hand, a different pattern should be expected: when a respondent's network is sparse, variations in the proportion of network partners who are very worried should exert only small effects on the respondent's probability of being very worried, whereas these variations should be associated quite strongly with a woman's risk perception in dense networks (Hellerringers and Kohler, 2005: p71).

Some studies indicate that both girls and boys experience considerable same-sex peer pressure to be sexually active and that for boys the pressure has to do with proving manliness, and having many sexual partners, while for girls pressure sometimes comes from sexually experienced peers who exclude inexperienced girls from group discussions because they are still 'children' (Buga *et al.*, 1996; Cassimjee, 1998; NPPHCN, 1996; (Blecher *et al.*, 1995; MacPhail and Campbell, 2000; Wood *et al.*, 1997a; cited in Eaton *et al.*, 2003: p14). Rutenberg *et al.*, (2003) state that although the majority of adolescents may not wish to become pregnant soon, they may be under a great deal of peer pressure to have a boyfriend or girlfriend, and for boys especially, to have many partners, and sexual activity with a partner confers the status of a relationship. In a study in South Africa, girls' preferences about the timing of a pregnancy were found out to be significantly associated with their peer group's perceptions of risk, which perhaps could be a proxy for their perception of their own personal risk (Rutenberg *et al.*, 2003). It was found out that young women who lived in communities where a high percentage of adolescents thought their friends were at high risk of acquiring HIV were significantly more likely to perceive that becoming pregnant in the near future would be a big problem than young women who

lived in communities where peers perceived less risk to their friends (Rutenberg *et al.*, 2003). Perkel, (1991) cited in Eaton *et al.*, (2003) state that young people with low self-esteem may be more concerned about what their partners think of them and with avoiding displeasure or rejection from partners than are people with more positive, self-affirming self-concepts. Furthermore, the desire of traditionally minded young Black men in South Africa to prove their virility by fathering children, and the pressure felt by girls to prove their love and fertility by conceiving, has been well documented (Kau, 1991; Preston-Whyte and Zondi, 1991; Varga and Makubalo, 1996; Wood, Jewkes, and Maforah, 1997 cited in Eaton *et al.*, 2003).

2.6.4 Family Structure

Research indicates that a key parental influence on teen sex is family structure, which refers largely to the number of parents living with, and their relationship to (biological, adoptive, step, or unrelated), the children in the families (Kim, 2008). Bertrand and Anhang (2006) argue that open communication about sexuality remains a challenge in many cultures and societies. Social science research over the decades suggests that parents can play a protective role in delaying early teen sexual activity and reducing the risk of harmful consequences and such protective parental influences include the intact family structure, parents' disapproval of adolescent sex, and a strong parent-child relationship (Kim, 2008). Boys and girls may be embarrassed to discuss issues related to sex; parents may be unwilling to talk about sex or be uncomfortable doing so, both of which may result in young people having limited knowledge and skills about prevention. In addition, parental factors that appear to offer strong protection against the onset of early sexual activity include an intact family structure; parents' disapproval of adolescent sex; teens' sense of belonging to and satisfaction with their families; parental monitoring; and, to a lesser extent, parent-child communication about teen sex and its consequences (Kim, 2008). South African adolescents report poor communication with parents about sexual matters and that when there is poor communication within the family about sex, both supervision and lack of supervision from parents may contribute to unsafe sexual behaviour (Eaton *et al.*, 2003). In the US, nearly all parents (90 percent) report having had a helpful conversation about delaying sex and avoiding pregnancy with their teenage children, compared to 71 percent of teens who report having had such a conversation with their parents. Further research in the US reveals that teens living in intact families also tend to report fewer

sexualexperiences and partners, and are less likely to report being infected with a sexuallytransmitted disease, compared to peers in non-intact families. This is primarily because teens in intact families tend to delay sexual activity (Kim, 2008).

Research results also reveal that increasing number of young people who do not grow up in a protective environment in which they have parental support, as a result of adultmortality from AIDS, may be increasingly vulnerable to infection (Bertrand and Anhang,2006) For instance, a study in rural Zimbabwe found out that among women aged 15–18years, young people whose mother had died and young women with an infected parent had a significantly higher prevalence of HIV than other young women, and they also had more STI symptoms and were more likely to become pregnant (Bertrand and Anhang, 2006). In Malawi as most African countries sex is regarded as a taboo subject and is not discussed between parents and children. Munthali *et al.*, (2004) argues that parents are not a major source of information because they do not normally talk to their children about sexual and reproductive health issues; this responsibility is left to other relatives, such as aunts, grandparents and other people within the community such as the traditional initiators. A survey in Malawi revealed that young girls and boys may imitate with their peers what they see at home, since in most communities they share rooms with adults who have sex while they watch (Malawi Bridge Project, 2004). These results however leave a lot to be desired, since the evidence is not common practice in Malawi. Other studies have also shown that negative experiences in childhood, such as being physically or sexually abused, can increase the probability of engaging in risky behaviors later in life (Munthali *et al.*, 2006).

2.6.5 Cultural Practices

There are norms and values in communities that increase or reduce the risk of HIV infection. The prevailing cultural and socioeconomic contexts have a strong impact on patterns of adolescent sexual and reproductive behavior. According to Munthali *et al.*, (2004), some cultural practices impact on STI/HIV/AIDS transmission and other sexual and reproductive problems on adolescents. Other researchers argue that at community level ideologies of masculinity and femininity may help to shape an individual's identity and self-concept and may thus have a strong impact on his or her role in sexual decision-making (Gage, 1998 cited in Akwara *et al.*, 2003). Akwara *et al.*, (2003) state that social norms may define 'a good woman' as one ignorant of sex or passive in sexual

encounters, whereas a real man 'may be defined as being sexually experienced, possibly with several partners'.

Munthali *et al.*, (2004) state that the socialization process that young people undergo is influenced largely by the existence of opinion leaders, including village headmen, traditional initiators, traditional birth attendants, churches and mosques, local political leaders, and teachers. Furthermore, some cultural practices, such as initiation ceremonies, early sex, early marriage and funerary cleansing rites have a strong role in shaping the sexual behaviors of young people in Malawi (Munthali *et al.*, 2004). While initiation ceremonies are a common practice in most Sub Saharan Africa and are meant for character-building, they are also known to encourage early initiation of sex where many initiates come out feeling that the initiation actually certifies them to experiment with sex since they are now considered adults (Munthali *et al.*, 2004). Most boys and girls in Malawi are initiated at early ages (as early as 7-9 years) and upon graduation, they are advised to 'to throw away the dust' have sex, which means to have sex with girls who have also been initiated within the same period (Malawi Bridge Project, 2004; Munthali *et al.*, 2004). Some traditions in Malawi arrange for a man to have sex with initiated girls in order to cleanse them, and most of the time without any protection, for instance girls who are initiated get to sleep with a man termed a 'fisi' (hyena¹) whose role is to initiate girls into sexual intercourse that the 'fisi-hyena' can sleep with several girls on the same night and without any protection, thereby increasing the vulnerability of girls to sexually transmitted infections (STIs) and HIV (Munthali *et al.*, 2004; p13). Munthali *et al.*, (2004) further argue that cultural norms are widely held that women should be inexperienced and naive in sexual matters and that pleasing men is the primary goal of sex and traditionally, early marriages have been used as a form of protecting of young girls from engaging in premarital sex and pregnancy in Malawi. However, Clark, Poulin and Kohler (2009) argue that people who believe that marriage will offer relative safety from the deadly virus may choose to marry earlier and those who fear becoming infected by their spouse may choose to delay marriage. There is also evidence that the norms regarding premarital sexual activity in African societies vary strongly, and in certain societies virginity is no longer highly valued, as in Uganda where premarital sexual relations are encouraged by constructing

¹ A male who is designated to sleep with girls who have just been initiated, they are termed 'hyena because they will sneak into the girls home at night.

separate dwellings for sexually active adolescents (Meekers,1994). Certain societies in Zimbabwe greatly disapproved premarital sexual relations and girls who have lost their virginity before marriage are required to confess, and their responsible lover would be forced to marry them (Meekers, 1994). Such traditional practices are likely to expose the adolescent girls to HIV infection, STIs and unwanted pregnancies. To overcome these cultural barriers, Meekers (1994) points out the possibility of education replacing traditional control of adolescents. The WHO Report (2004) states that education and schooling are key factors not only for reducing the risk of early sexual initiation, pregnancy, and early childbearing, but also for overcoming cultural factors that perpetuate the likelihood that adolescents will use condoms and contraception when they have sexual intercourse. Religion is another social factor in which Muslim women were less likely to indulge in early sexual intercourse than Christian women (Meekers, 1994). WHO recommends that programmes and policies that focus on improving school enrollment, retention, and performance among adolescents should, therefore, be given high priority and evaluated for improving adolescent sexual and reproductive health outcomes (WHO, 2004).

2.6.6 Gender Disparities

This section explains men's and women's attitudes toward negotiating safer sex with husbands, spousal communication about HIV/AIDS, and women's participation in major household decisions. Women's status relative to men, ability to negotiate safer sex, and participation in household decision-making can affect their vulnerability to HIV infection and their ability to take preventive action (Sneeringer and Stacy, 2009). Biologically, women are more than three times more vulnerable to HIV infection than men. Moreover, poverty, gender inequality, and socio-cultural taboos work together to increase young women's vulnerability. Because sexuality is a controversial topic in most cultures, young women are denied education about their bodies, reproductive health, and sexually transmitted infections (STIs) such as HIV. Common prevention strategies ignore the inability of young women to negotiate with their partners on abstinence, monogamy, or condom use. Millions of young women's first intercourse is marked with violence, force and coercion and is unlikely to occur with the protection of condoms (UNFPA, 2004).

Gender based norms do influence an individual's behaviour towards their perceived risk towards HIV and unwanted pregnancy (Anderson *et al.*, 2007). Literature also indicates that in many societies, people turn a blind eye to sexual abuse against young women,

and to gender-based violence more generally, both of which have important implications for HIV transmission. Literature also indicates that there are accepted notions of masculinity and femininity play a role in perpetuating gender disparities. For instance, in many cultural settings, young women are supposed to be sexually innocent and may therefore be reluctant to carry or suggest using condoms. Since condoms are also associated in many contexts with illicit or extra-marital sex, married women are often powerless to request their partner to wear a condom despite suspecting that he may be infected with HIV, for fear of reprisal at the implied accusation of being unfaithful (UNFPA Report, 2009). Furthermore, it is argued that when the status of women within sexual relationships is low they are at an increased risk of contracting HIV. For example, for many girls and young women the onset of sexual activity does not occur by choice (Bertrand and Anhang, 2006).

Results from a study conducted in South Africa show that those females who delayed their sexual debut were those who perceived high risk of HIV if they engaged in sexual intercourse. Most adolescents are not mature enough to view HIV as a risk when they engage in their first sexual encounter and the earlier the youths engage in sexual intercourse the higher the risk of being infected with HIV. Some researchers argue that more and more adolescents will continue being infected in the coming decades, a trend that is likely to change demographic characteristics of Sub Saharan populations in terms of age structure (Anderson *et al.*, 2007). It is also argued that the increasingly disproportionate impact of HIV and AIDS on women and girls throughout the world has implicated gender inequity as a driver of the epidemic. Furthermore, the cultural construction and social organization of gender have disempowered women and girls in many settings, making them particularly vulnerable to HIV infection and its consequences (Bertrand and Anhang, 2006). Eaton *et al.*, (2003) argues that research into the discourses that surround the subordination of women, reveals two main themes relating to male sexuality: biologically determined 'need', and sexual 'rights'. They claim that it is in man's nature to want many partners, and that staying with one woman therefore goes against the essence of being a man and that some women come to believe this, too (Eaton *et al.*, 2003).

2.6.7 Decline of Age at Menarche

Literature shows that age at menarche has declined in the past decades. In this context it may be regarded as a proxy determinant to early sexual initiation since young girls may experiment in sexual activities once they reach menarche. Zabin and Kiragu, (1998) argue that declining

age at puberty exposes young girls to the risk of premarital sexual activity and there may be an increasing trend in early sexual onset as the age at menarche drops. Furthermore, decline in age at menarche may have negative health impact on the reproductive health of the adolescents in the context of early marriage and childbearing or contracting sexually transmitted diseases or HIV (Zabin and Kiragu, 1998). The age at menarche in Malawi ranges from 13-15 years, but can occur as early as 9 years (Munthali and Chimbi, 2003). In South Africa, the mean age at menarche was reported to be at 13.7 (Vundule *et al.*, 2001). Probably, this early menarche can be attributable to improved health and nutrition and it has been reported that the earlier the age at menarche, the earlier the first intercourse is likely to occur.

2.7 Psychological Factors: Personal ties to people with HIV/AIDS

Personal ties to people with HIV/AIDS makes the AIDS epidemic a real part of adolescents' lives. Although there is no direct link between age at sexual debut and personal ties to people who are directly affected by HIV/AIDS, it is worth examining the effect on protective behaviour. Munthali *et al.*, (2006) argue that having a personal tie to someone with HIV/AIDS could make adolescents more cautious in their own risk and protective behaviours.

According to the AIDS risk reduction model, knowledge of AIDS is a prerequisite to recognizing risky behavior and taking action to change it, but findings regarding the relationship between knowledge and behavior have been inconsistent (Prata *et al.*, 2006). A cross-sectional study using DHS data from Uganda, Kenya and Zambia showed that knowing somebody with AIDS was predictive of protective sexual behavior, as were knowledge of HIV prevention methods and correct beliefs regarding AIDS patients (Prata *et al.*, 2006). Koenig *et al.*, (2004) also state that knowledge of someone who had AIDS or who had died of AIDS may increase an individual's awareness of the consequences of HIV/AIDS and may lead to safer sexual practices (Koenig *et al.*, 2004). A study in South Africa revealed that knowing someone who had died of AIDS was associated with sexual debut and with an elevated perceived HIV risk among females (Anderson *et al.*, 2007). Oyedokun and Odimegwu (2003) argue that having relations who have died of HIV/AIDS have impact on the use and consistency of condom use during sexual intercourse. Munthali *et al.*, (2006) further states that holding negative attitudes towards people with HIV/AIDS can influence one's own willingness to acknowledge risk and to get tested for HIV.

Anderson *et al.*, (2007) state that personal experience and familiarity with HIV/AIDS may be associated with more awareness of infection pathways, less stigma toward the disease and higher perceived risk of HIV infection. For example, the death of someone with AIDS may increase the subjective perception of risk among all members of the family or community even though some may be at very low risk. This literature above highlights some of the evidence on how AIDS information plays a role in shaping adolescents' HIV perceptions and protective strategies.

CHAPTER 3

METHODOLOGY

This chapter presents research methods used in the study, including research design, research setting, study population, sampling and data collection processes as well as the analytical strategy. In order to depict a wider scope of the methodology, a description of reliability and validity of data used in the study, as well as study limitations is also included.

3.1 Study Area

Figure 2: Showing the map of Malawi and the Study Area



Source: <http://www.un.org/depts/Cartographic/map/profile/malawi>.

Malawi is a landlocked country located in Southern Africa. It is bordered to the north and northeast by Tanzania, to the east, south and south west by Mozambique and to the west by Zambia. The country is 901 km long and ranges in width from 80 to 161 km. It has a total of 118,484 square km of which 94,276 square km is land area. The remaining area is mostly composed of Lake Malawi, which is about 475 km long and runs down Malawi's eastern boundary with Mozambique. The country is divided into three administrative regions, namely Northern, Central, and Southern. There are 28 districts; six in the Northern Region, nine in the Central Region, and thirteen in the Southern Region. These districts vary in population, geographical and socioeconomic factors. According to the 2008 Population and Housing Census, the total population was estimated at 13,066,320. With regards to the economy, Malawi is a low-income country with an estimated gross domestic product (GDP) per capita of 667 (PPP 1 US\$) (World Bank 2008). In 2005, official development assistance constituted about 27.8% of the GDP (UNDP 2007). Like most countries in the Sub-Saharan region, Malawi is classified in the group of low human development countries with a human development index (HDI) of 0.437 in 2005. The country's Human Development Index rank during the same period was 164 out of 177 countries (UNDP 2007).

The epidemiological profile is characterized by a high prevalence of communicable diseases including malaria, tuberculosis and HIV/AIDS; high incidence of maternal and child health problems; an increasing burden of non-communicable diseases such as cancers, hypertension, diabetes, cardiovascular diseases and mental illnesses, among others. The country also faces the resurgence of neglected tropical diseases. Although there has been a significant decline in infant mortality from 76/1000 live births in 2004 to 69/1000 live births in 2006 and under-five mortality from 133 in 2004 to 122 in 2006 (MICS², 2006), the rates are still high. The maternal mortality ratio of 807 per 100,000 live births was one of the highest in the world (MICS, 2006). In 2005, the adult HIV prevalence rate was 14.0%, in females (ages 15-24): 9.6% in males (ages 15-24) in 2005: 3.4% and number of deaths due to AIDS in 2005 was 78,000. The HIV and syphilis sero-survey of 2007 estimated national adult (15 – 49 years) HIV prevalence rate of 12 % (MOH³, 2007) which declined to 11 percent in 2008 (MDHS, 2010). The number of HIV persons who were alive and on Highly Active Anti-retroviral Therapy increased from 61,430 at mid-2006 to 158,137 by March 2009

² Multiple Indicator Cluster Survey

³ Ministry of Health

representing 64% of those ever starting treatment. Although the prevalence rate for Tuberculosis (TB) was not known because the prevalence survey was yet to be done, the 2007 TB annual report indicated a cure rate at 78%. In 2004, despite the major gains in reducing childhood mortality, life expectancy worsened in the other age groups, due in part to the HIV and AIDS pandemic. Overall, life expectancy declined from 44 years in 1990s to 38 years by 2004. The health system faces a critical shortage of human resources up to date. In 2009, the doctor to population and nurse to population ratios were 1:53,176 and 1:2,964, respectively; far below the WHO recommended standards for developing countries of 1 doctor per 5,000 populations and 1 nurse per 1,000 populations (Malawi Government, Health Information Systems Assessment Report, 2009).

3.2 Data Source and Sample

This dissertation uses the 2004 secondary data which comes from a wider study, the Malawi Diffusion and Ideational Change Project (MDICP), which is a joint collaboration between researchers from the Population Studies Center at the University of Pennsylvania, and the University of Malawi's College of Medicine and Chancellor College. The project collects panel data in the three administrative regions of Malawi: Balaka (southern), Mchinji (central) and Rumphi (northern) and was designed to investigate the role of social networks on HIV risk and related behavior. The last round of data collection was in 2010. The MDICP's first round of data collection occurred in 1998 and included a sample of 2,640 ever-married women and spouses in 125 villages across the three study sites. In 2001 the sample was augmented with new spouses resulting in 1571 women and 1097 men. The third wave of MDICP data collection took place in 2004 in which the project added 1,001 young women and men aged 15-28 to the 1998 cohort of ever-married respondents in each site in order to adjust for aging of the 1998 sample over time, which led to under-representation of the adolescent population by 2004; and to introduce never-married adolescents into the MDICP sample (the 1998 sample was restricted to ever-married men and women). These adjustments made the 2004 sample representative of the rural population in each sample districts.

3.2.1 Sample Size Calculation.

The initial sampling strategy of the whole project was not designed to be representative of the national population of rural Malawi, although the sample characteristics closely match the characteristics of the rural population of the Malawi Demographic and Health Survey. The target sample for the first MDICP in the 1999 wave was 500 ever married women age 15-49 in each district, plus their spouses. The third survey (2004) wave added a sample of approximately 400 adolescents age 15-29 in each district. The majority of these 400 were the ones that form part of the sample in this study. In 2004, the MDICP added an adolescent panel of men and women aged 15-29 to its existing sample of ever-married women and their spouses (Weinreb, 2006). Following the definitions UNFPA, WHO and UNICEF definitions which state that 'youths' as those aged 15-24 years and 'young people' as those aged 10-24 years, this study will target those aged 10-24 years of age, and filter out those age above the upper limit of the last age group. The final total sample in this thesis was 659 respondents and comprised of 403 males and 256 females. In brief, this panel can be broadly characterized as a disproportionate stratified random sample with stratification by sex and age (Weinreb, 2006), and took place in three roughly chronological stages as follows:

Stage 1: In order to maximize the number of adolescents from existing MDICP households, a 100 percent sample of adolescents listed in the main survey interviews was randomly drawn in order to allow for interesting and potentially important within-household linkages. These interviews accounted for approximately 32 percent of all adolescent interviews ((Weinreb, 2006).

Stage 2: In order to generate the remaining 75 percent of the adolescent sample, adolescents were drawn on the prior household rosters collected by listing teams. However, a problem was encountered; drawing a simple random sample of adolescents would have generated a dataset with high levels of multicollinearity between age and marriage due to the difference in mean age at marriage between men and women ((Weinreb, 2006).

Stage 3: In order to reach a target of approximately 350 individuals per site, or at least get closer to it, some individuals were consequently added to the original sample lists. This was done by drawing them at random from the household rosters. In other words, among these final additions, there was an equal probability of being selected into the sampling list.

3.2.2 Fieldwork and Data

The cross sectional data used in this study was collected in the 3 regions of Malawi from April to August, 2004. There were two data collection teams: the ‘main survey’ and the ‘biomarker collection’ teams where the survey team first administered the main questionnaire and later followed by the biomarker collection team, which typically visited respondents two or three days after the main survey interview and conducted HIV tests. Also, because HIV and STI tests were conducted in a laboratory in Malawi (as opposed to using rapid results HIV test kits, as MDICP did in 2006 and 2008), test results were given to respondents between two and four months after testing at each fieldwork site (Anglewicz *et al.*, 2009). All respondents had to consent to participation in the survey and HIV/STI tests. Because the administration of such tests required personnel trained in biomarker specimen collection and HIV/STI counseling, the project recruited a team of nurses to provide counseling, collecting biomarkers, and administering a short questionnaire. The additional personnel and time required to complete both the main survey and the biomarker collection necessitated two separate visits to each respondent. In addition, field logs were generated using Stata 9, transferred into Excel and Word files, and then given to supervisors for the next days’ fieldwork and where necessary changes to field logs could be improved using the Access database (Anglewicz *et al.*, 2009).

3.2.3 Methods of analysis

The aim of this study is to investigate whether background socio-demographic factors are associated with young people’s individual’s risk perceptions of HIV, (i.e., respondents’ evaluation of their chances of getting AIDS) and protective behavior measured by condom use at last sex. The selected socio demographic covariates included in this study are respondents’ background characteristics: age of respondent, gender, marital status, religion, province, educational level and age at first sex. Cross sectional data will be analyzed using STATA 11.0 software package. Separate male (N=403) and female (N=256) datasets were merged into one dataset (N=659). This was done in order to increase the explanatory power and enhance the interpretability of results. The analysis focuses on three outcome variables: HIV risk perception, worry over HIV and protective behaviour (condom use) in response to AIDS. Firstly, a bivariate analysis stratified according to gender will be conducted in order to come up with the respondents’ descriptive statistics indicating their background characteristics. This will be followed by multivariate analyses which comprise two multinomial regression analyses which are meant to test the association between likelihood of infection

and worry in relation to the socio demographic variables. Lastly, correlates of condom use will be explored in a binary logistic regression analysis. The following section describes in detail the methods of analysis including definition of variables.

3.3 Research Questions

This dissertation aims to answer the following questions in order to understand the association between socio demographic characteristics and HIV risk perceptions, worry over HIV and condom use. Is there an association between likelihood of infection (perceived risk) and socioeconomic factors (age at first sex being the variable of interest).

- i. Is there an association between worry over contracting HIV (perceived risk) and socioeconomic characteristics (age at first sex being the variable of interest).
- ii. Is there an association between condom use and socioeconomic characteristics (age at first sex being the variable of interest).

The first and second questions are aimed at examining if HIV risk perceptions and worry over HIV infection are associated with or determined by socio demographic covariates. The third question will be used to examine if protective behaviour (condom use) among young people is associated related socio demographic characteristics. In all the models the variable of interest is the age at first sex.

3.4 Definition of Variables

The outcome variables in this study are HIV risk perceptions which are measured by likelihood of HIV infection, worry over HIV infection, while protective behavior will be measured by condom use at last sex. Two multinomial logistic regression models will be run separately in order to examine if socio demographic characteristics are associated with HIV risk perceptions and with worry over HIV infection among adolescents in Malawi. The third model will test the association between condom use at last sex and sociodemographic characteristics of the respondents and will take the form of a binary logistic regression since the responses on condom use were binary (Yes=1 and No=0).

In the first two multinomial analyses the covariates included are the respondents' background characteristics: age of respondent, gender, marital status, religion, province, educational attainment and age at first sex. There may be other crucial factors in place which may shape the adolescents' attitudes over perceived risks and these may act as control factors in the models. Included in the two multinomial logistic regression analysis are the following potential confounding factors; AIDS-related knowledge, HIV test and personal acquaintance with a person who has died of AIDS.

Correlates included in the binary logistic regression whose outcome variable is condom use at last sex include; age of respondent, gender, marital status, religion, province, educational attainment and age at first sex. In addition to the socio demographic correlates, the binary regression included HIV risk perceptions; worry over HIV infection, HIV test status since these factors could potentially predict condom use among adolescents. This is confirmed by literature which state that those individuals who perceive some likelihood, of HIV infection, and HIV positive, are less likely to use protection compared to those who perceive no risk at all (Oyedokun, and Odimegwu, 2003).

3.4.1 Outcome Variables

Risk perception measured by likelihood of HIV infection, including worry over contracting HIV, and condom use at last sex were the three outcome variables in this study. Perception of risk may be considered to be the first stage towards behavioural change from risk-taking to safer behavior, and perceived risk of getting AIDS could have important implications for health if the perceptions are rational and lead to a willingness to avoid risky behavior (Akwara *et al.*, 2003).

3.4.1.1 Perceived Likelihood of infection

The MDICP asked individuals' perceptions of being infected with HIV in the 2004, 2006 and 2008 survey rounds. In 2004, the wording of the questions was: 'How likely are you of being infected with HIV now?', 'How likely are you of being infected with HIV in the future?' and, 'How likely is your partner of being infected with HIV?' The responses to all the questions were no likelihood=0, low=1, medium=2 and high=3. Due to the small total sample size (N=659) and low response rates for these individual perception questions, this dissertation computed a single measure of perceived likelihood of infection. This was done by pooling

individual responses for the 3 likelihood variables (current perceived likelihood of infection, future likelihood of infection and spouse likelihood of infection) into a single likelihood measure recoded as 'perceived likelihood of infection' with the same scale (0-3) and coding of responses.

3.4.1.2 Worry about HIV/AIDS

The wording of the question was: 'How worried are you to catch AIDS?' and had the following responses: (not worried at all=0), (worried a little=1), and (worried a lot=2). This question will be tested to establish if socio demographic characteristics are associated with worry over HIV infection among the adolescents.

3.4.1.3 Condom use at last sex

Condoms remain the most effective protection against HIV and other sexually transmitted infections (STIs) for sexually active young adults. It is crucial to examine the association between condom use and background characteristics which could influence HIV prevalence levels among adolescents. Data from household surveys show that the proportion of young people using condoms is still quite low even when they have sex with people who are not their regular partner (Bertrand and Anhang, 2006). In a 2004 national study in Malawi, apart from limiting sexual partners and abstinence, condom use was cited by 57 percent of women and 76 percent of men as the third protective strategy in avoiding AIDS (MDHS, 2004). Further literature indicates that where condom use is not very common among married couples or those in regular relationships and because of problems of interpretation (Dare & Cleland, 1994), information on condom use was restricted to the last sexual encounter. This dissertation used 'condom use at last sex' as a measure of protective behaviour where the question 'Did you use a condom at your last sexual encounter?' was asked with the binary responses Yes=1 and No=0.

3.4.2 Covariate Factors

The covariates included in the multivariate framework include the respondents' background characteristics: age of respondent, gender, marital status, religion, province, educational level and age at first sex, AIDS knowledge and HIV test. These are the explanatory or predictor

variables, which were used to predict the outcomes of risk perceptions and protective behaviors of the adolescents. The following section describes the associated covariates. The social cognitive theory states that in order to understand sexual risk behavior, one needs to consider the interactive effects of factors at three levels: within the person, within his or her proximal context, and within the distal context (Eaton *et al.*, 2003). The correlates selected for the analyses fall within the personal context (age, age at first sex, gender, religion, education, and AIDS knowledge) and the proximal context (province).

3.4.2.1 Province or Area of Residence

Some norms and values in communities in the 3 different provinces in Malawi have an effect in reduction or increase of HIV infection, and could predict HIV risk perceptions among the adolescents. According to Munthali *et al.*, (2004), some cultural practices in certain provinces can impact on STI/HIV/AIDS transmission and other sexual and reproductive problems on adolescents. In the Southern region of Malawi, boys and girls undergo initiation ceremonies, where they are told that they are men or women, and can indulge in sexual behavior. Such prevailing cultural contexts may have a strong impact on adolescents' HIV risk perceptions or worry over contracting HIV. Furthermore, funeral cleansing rites in the Southern province, where the wife of the deceased has to have sex with another man in order to remove spells, have a strong role in shaping the sexual behaviors of young people in Malawi (Munthali *et al.*, 2004). In this study, the respondents were evenly distributed per region (province), with 32.5 percent of respondents from the Southern region, 31.8 percent from the Central region, and 35.7 percent from the North. National survey results in 2006 indicate that women in the Southern Region started having sex at an earlier age than women in the Central and Southern Regions (MDHS 2006). This variable was coded as follows; Southern region=1, Central Region=2 and Northern region=3.

3.4.2.2 Educational Attainment

There is a strong association between the respondent's educational level and knowledge of AIDS prevention. This means that being in school and the level of education attained play a major role in adopting condom use for AIDS prevention and in shaping an individual's risk perception. However, some researchers argue that modern education exposes adolescents to the school environment that enables them to interact more with the partners of the

opposite sex, increasing their exposure to sexual activity (Meekers, 1994). Furthermore, education is positively correlated with the likelihood of having comprehensive knowledge about HIV/AIDS (MDHS, 2004), which could in turn influence the levels of worry, condom use and risk behaviour. In order to examine if education plays a role in shaping adolescents' perception risks and the way they protect themselves from contracting HIV, this study uses the question 'What is the level of education attained' which had responses tertiary=1, primary education=2, and secondary education=3.

3.4.2.3 Religious affiliation

Religion in Malawi is closely related to culture, and may be a predictor of HIV risk perception and protective behaviour among adolescents. The three provinces of Malawi vary a lot with regards to culture, which is strongly correlated to religion and which could have an effect on adolescents' risk perceptions and condom use. Christian values emphasize on monogamy as opposed to Moslem values that allow polygamy, which in turn could influence condom use and levels of worry and self-assessment with regards to risk of infection. Furthermore, church or mosque attendance may be a proxy of measuring how active or passive a religious member is. Some scholars argue that church attendance elevates the odds of having first sex among adolescents, perhaps because the church setting provides an opportunity for adolescents to meet potential partners (Haas and Forste, 2002).

Furthermore, there is conventional wisdom among Malawians that one stands a higher risk of HIV infection by marrying a non-religious partner, where most people place trust in religious people and feel that they could not risk HIV infection as much as they could with a non-religious person. Religious affiliation was measured through the question; what church do you belong to-with 13 categories of churches including no religion option.

For the purposes of the multinomial regression the various denominational responses were collapsed into 3 broad categories namely: Christian=1, Moslem=2, and No religion=3. The same various categories were recorded into binary values of Christian=0, Non-Christian=1 so as to be fitted into the binary regression analysis.

3.4.2.4 Current Age

Current age is an important variable mainly because it usually an indicator of an exposure to risk behavior and a strong determinant of ever had sex. Age may make a difference in the likelihood of young people having sex, the older they become the more likely they are to be involved in sexual activity and the more they are exposed to HIV infection. Age also affects condom use; where the younger the adolescents are the less likely they are going to use a condom. Munthali *et al.*, (2006) argue that younger male and female teens are likely to be more exposed to the risk of sexual coercion than the older adolescents and that age is very likely to be related to knowledge of risks and means of protection. Since the age variable was continuous, it was recoded into 3 categories as follows: 10-15 years=1, 16-20=2 years, and 21-24 years=3.

3.4.2.5 Age at first sex

Age at first sex is important in predicting HIV risk perception since it may be a positive factor in understanding HIV risk perceptions, which may shape the young people's future protective behaviour. Percentage of young women and men aged 15-24 who have had sexual intercourse before the age of 15 was declared an important indicator under the UNGASS⁴ Declaration of Commitment on HIV/AIDS indicator (UNAIDS, 2008). At about the same time this study took place, national results indicate that 15 percent of women and 14 percent of men aged 15-24 had sex by age 15, with young men's sexual debut having occurred at a slightly earlier age than women. Furthermore, those who started having sex at an early age (before age 15) had a higher HIV prevalence than those with a later sexual debut (18 percent compared with 15 percent or lower (MDHS, 2004).

Researchers argue that if an adolescent engages in early age at first intercourse, they are likely to end up having multiple partners and also, engaging in unprotected sexual intercourse (Gueye *et al.*, 2001). Most studies carried out on young people's sexual behaviour suggest that the younger the age at which first intercourse occurs, the greater the frequency of sexual intercourse and there is increased likelihood that it will be unprotected and resulting in a higher risk of pregnancy and HIV infection (L'Engle *et al.*, 2006; Koenig *et al.*, 2004; Smith and Watkins, 2005). This shows that age at first sex is an important predictor of risk perceptions and condom use among adolescents. Like in many other similar studies the age at first sex is measured through the question 'How old were you the first time you had sex?', and

⁴ United Nations General Assembly Special Session

the responses in this case were continuous data. For the purposes of the analysis, the variable age at first sex was used as a continuous variable in the multinomial regression analysis with the following stratifications; 'Less than 10 years'=0, '11-15 years'=1, '16-20 years'=2', and '20-24 years'=3', and 'Refused to answer'=4'. For the binary regression analysis the age groups were coded as dichotomous variables as follows; 'up to 15 years=0' and '16-24 years=1'.

3.4.2.6 Confounding Factors

HIV/AIDS exposure was assessed by asking if the respondent personally knew someone who had died from HIV/AIDS, knowledge of AIDS information and HIV test status. This study includes these three as possible confounding factors that were observed in the data. These covariates are all important in predicting HIV risk perceptions since they reflect one's knowledge of the dangers of HIV and knowing someone who has died of AIDS may affect personal safety and protection, while knowing one's HIV status may determine levels of worry and risk as well as condom use and consistency.

3.4.2.7 Knowledge about AIDS

Having accurate knowledge about AIDS is a precondition for evaluating adequately one's risk knowledge of HIV/AIDS; hence AIDS related knowledge might play an important role in determining the effect of age at first sex on risk perceptions and protective strategies among adolescents. For those who are HIV infected, knowledge of their status allows them to better protect their sexual partners, to access treatment, and to plan for their future (MDHS, 2004). AIDS-related knowledge was measured through the question 'Have you ever seen AIDS information?', and had responses 1=Yes and 0=No.

3.4.2.8 Knowledge of Someone who died of AIDS

There is research evidence that HIV/AIDS-related knowledge is significantly related to AIDS-related worry, perceived risk, and behavioral change (Gregson *et al.*, 1998; Klepinger *et al.*, 1993; London and Robles 2000; cited in Smith and Watkins, 2003). Some researchers argue that having a personal tie to someone with HIV/AIDS could make adolescents more cautious in their own risk and protective behaviors (Munthali *et al.*, 2006).

Furthermore, literature states that acquaintance with someone who has died or is living with AIDS is a proxy for the levels of AIDS morbidity and mortality in the community, which is hypothesized to shift the perception of AIDS from a distant to an immediate threat (Macintyre *et al.*, 2001). Recent research results reveal that knowledge of someone who died of AIDS was correlated with an increased-HIV-risk-perception (Kenyon *et al.*, 2010). It can thus be concluded that knowing someone who has died with AIDS also increases the perception of personal risk, presumably because it may remove the illusion of safety within one's social circle, hence the importance of including this variable as a predictor of risk perception and protective strategies. This personal acquaintance with a person who has died of AIDS was measured through the question —Is there anyone who has died of AIDS in the past 3 years, and had responses Yes=1 and No=0.

3.4.2.9 HIV Tests

Knowledge of HIV status helps HIV-negative individuals make specific decisions to reduce the risk of contracting the disease and to increase safer sex practices so they can remain disease free. For those who are HIV infected, knowledge of their status allows them to better protect their sexual partners, to access treatment, and to plan for their future (MDHS, 2004). With regards to condom use, literature indicates that young men who have been tested for HIV are significantly more likely than those who have not been tested to have used a condom during their most recent sexual intercourse (Kenyon *et al.*, 2010). For both multinomial and binary regression analyses, HIV test status had the corresponding responses were No=0 and Yes=1 and was measured through the question 'Have you ever been tested to see if you have the AIDS virus?'

3.5 Methods of Analysis

The sample used in the study is restricted to sexually experienced young women and men aged 15 to 24 (256 females and 403 males). Smith and Watkins, (2005) state that although the sample is not strictly representative of Malawi, comparison with a nationally representative survey shows that it is close to being nationally representative of the rural population intercourse. Descriptive statistics and inferential statistical models will be computed in order to examine if there is an association between socio demographic characteristics and HIV risk perceptions and condom use among adolescents.

Three models will be run to predict perceived HIV risks and protective behaviours, model 1 and 2 employing a multinomial regression and Relative Risk Ratios (RRR) as output and model 3 employing a binary logistics regression. For the binary model, odds ratios output were used for ease of interpretation, and results are presented as odds ratios (OR) with 95 percent confidence interval (CI).

3.5.1 Descriptive analysis

Firstly, descriptive statistics to obtain the frequencies of the background characteristics of respondents (age, marital status, mean age at sexual debut, education, economic status of household) will be computed. Secondly, variables which measure risk perception will be computed; likelihood of infection and levels of worry as well protective strategies against HIV. Lastly, descriptive statistics indicating knowledge of HIV/AIDS and knowledge of someone who died of AIDS variables will be computed.

3.5.2 Multivariate Analysis

Three models will be fitted in this analysis. The models will examine the relationships between socio-demographic and cultural factors and the likelihood of infection; worry about HIV/AIDS; and condom use at last sex. The socio demographic correlates are province, gender, religious affiliation, educational attainment, age, age at first sex. Due to the uneven distribution of responses on marital status, the 3 models have not included marital status. In all the models potential confounding factors include knowledge of someone with HIV, knowing someone who had died of AIDS, and HIV test status. The predictor variable of interest in this dissertation is the age at first sex while the outcome variables are HIV risk perceptions, worry over HIV and condom use at last sex. Due to the small separate sample sizes for both males (N=405) and females (N=256), which yielded statistically insignificant results, the two datasets were merged in order to increase the explanatory power of the analysis and also to enhance interpretability of the results. The following section explains the three models that will be used in more detail.

3.5.3 Multinomial logistic regression

Multinomial logistic regression is used where a categorical dependent variable has more than two categories. The multinomial regression model allows for multiple outcomes that are nominal in nature, rather than ranked in some meaningful ways. The multinomial regression model breaks the regression up into a series of binary regressions, comparing each group to a baseline group and output is interpreted as Relative Risk Ratios.

3.5.3.1 Model 1: Is Likelihood of HIV Infection Associated with SocioDemographic Characteristics.

In model 1, likelihood of infection consists of 4 groups: high likelihood, medium likelihood, low likelihood, and no likelihood at all. High likelihood is set to be the baseline group. Multinomial regression will assess the odds of low likelihood of infection versus socio demographic variables; no likelihood at all socio demographic variables; and medium likelihood versus demographic economic variables in relation to high likelihood of infection (base outcome). The multinomial regression model mainly has Relative Risk Ratios (RRR) that would predict the odds of being a low likelihood perceiver as compared to high likelihood perceiver, and the odds of being no likelihood at all perceiver as compared to high likelihood perceiver. The general model for multinomial regression is denoted by:

$$pr(y_i = m | x_i) = \frac{\exp(x_i \beta_m)}{1 + \sum_{j=2}^J \exp(x_i \beta_j)}$$

Models for each dependent variable (Likelihood of infection) can be written as:

- Pr. $y = 1 / X = 1 / 1 + \exp(\beta_1 X) + \exp(\beta_2 X)$ (first category, high likelihood)
 - Pr. $y = 2 / X = \exp(\beta_2 X) / 1 + \exp(\beta_1 X) + \exp(\beta_3 X)$ (second category, low likelihood)
 - Pr. $y = 3 / X = \exp(\beta_1 X) / 1 + \exp(\beta_2 X) + \exp(\beta_3 X)$ (third category, no likelihood at all)
 - Pr. $y = 4 / X = \exp(\beta_1 X) / 1 + \exp(\beta_2 X) + \exp(\beta_3 X)$ (Fourth category, no likelihood at all)
- (The first category is the reference group is *high likelihood*)

3.5.3.2 Model 2: Is Worry over HIV Infection Associated with SocioDemographic Characteristics

In model 2, worry over infection was stratified into 3 groups: worried a lot, worried a little, and not worried at all. Worried a lot is set to be the baseline group. Multinomial regression will assess the odds of low levels of worry over infection versus high levels of worry, and not worried at all versus high levels of worry with respect to the socio demographic variables. The multinomial regression model would also produce Relative Risk Ratios (RRR) that would predict the odds of being a low levels of worry adolescent as compared to high levels of worry adolescent's vis-à-vis socio demographic variables. The general model for this second multinomial regression is denoted by:

$$pr(y_i = m | x_i) = \frac{\exp(x_i \beta_m)}{1 + \sum_{j=2}^J \exp(x_i \beta_j)}$$

Models for the dependent variable (worry over infection) can be written as:

Pr. $y = 1 / X = 1 / 1 + \exp(\beta_1 X) + \exp(\beta_2 X)$ (first category, worried a lot)

Pr. $y = 2 / X = \exp(\beta_2 X) / 1 + \exp(\beta_1 X) + \exp(\beta_3 X)$ (second category, worried a little)

(The first category is the reference group-worried a lot)

3.5.3.3 Model 3: Is Condom Use at Last Sex Associated with SocioDemographic Characteristics

This model used a logistic regression analysis since logistic regression is well suited for describing and testing hypotheses about relationships between a dependent (dichotomous) outcome variable and one or more independent (explanatory) or predictor variables. In this case, binary logistic regression model has been used to test the association between condom use (dependent outcome variable) and socio-demographic characteristics including risk perceptions and worry over HIV. Focusing on the variable of interest, age at sexual debut as an independent variable, analysis has been done in order to examine the association between condom use at last sex and demographic characteristics including HIV risk perception among young people in Malawi, i.e. examining if a change in the demographic attributes sets a precedence among young peoples' thinking on condom use.

In this model the equation will be in the form:

$$\ln \{P_i / 1 - P_i\} = \alpha + \beta_1 x_{1i} + \beta_2 x_{2i} + \dots + \beta_k x_{ki}$$

Where, $P_i / 1 - P_i$ is the odds ratio, $i=1, 2 \dots n$

P_i represents the probability of occurrence of the dependent variables (condom use at last sex)

x_{1i} , x_{2i} and x_{ki} represent the independent variables (age, place of residence, educational attainment, and age at first sex, religion and likelihood of infection).

$\beta_1 \dots \beta_k$ represent the slopes of the variables $x_1 \dots x_{ki}$ respectively.

In this case condom use was measured with a dichotomous variable indicating whether the respondent had used a condom at the last penetrative sex or not. All the demographic variables of interest have been re-coded into dichotomous variables, e.g. the dichotomous variable 'age at first sex' is defined as follows: value of 0=below 15 years and 1=16-24 years. The cutoff point has been determined by the mean age at first sex which is 14.9 years. For ease of interpretation, odds ratios which are equal to $\exp^5(B)$ were used. An odds ratio of 1.0 indicates that there is no relationship or association between the independent and dependent variables. The goodness of fit (Chi-square) is the fit of the observed values (Y) to the expected values. In such analysis, if the p-value for the overall model fit statistic is less than the conventional 0.05 then there is evidence that at least one of the demographic characteristics e.g. age at first sex contributes to the prediction of the outcome (Long, 1997), which is condom use at last sex.

⁵ Exponential of the Beta coefficient

3.5.4 Limitations

Firstly, literature states that people hesitate when asked about the most intimate area of their lives, their sexual behavior and will often report on it inaccurately (Poulin 2010). This paper makes conclusions on information on age at first sexual encounter that was based exclusively on respondents' self-reports. This data collection method often has limitations that are attributed to the tendency for people to under-report socially unacceptable behaviours (e.g. having multiple sex partners) and to over-report socially acceptable behavior (Malawi Behavioural Surveillance Survey, 2006; Kaestle, 2005). Smith and Watkins (2005) argue that self-reports may be particularly problematic for behaviors that are targeted (or encouraged) by government prevention campaigns. Recent results from a study in Malawi indicate that a significant fraction of young women who claimed in the survey to have never been sexually active affirmed sexual experience during the in-depth interview, fielded shortly thereafter (Poulin, 2010). Other researchers agree that 'sexual behaviours rely on sensitive self-reported information, which is susceptible to misreporting. In particular, it is believed that men tend to over report, whereas women may underreport sexual behaviors' (Nnko, et al., 2004; cited in Clark, Poulin and Kohler, 2009: p32).

Research indicates that if early sexual experience is misreported in the light of campaigns promoting abstinence for youths, two types of reporting error are expected: young sexually active respondents may deny having ever had sex, and among older respondents (many of whom would be married and therefore not need to deny sexual activity) there may be a tendency to report that first sex had occurred at a later age than it had, particularly if first sexual encounter was with someone other than their spouse (Poulin 2010). Furthermore, some researchers argue that age may be misreported by some respondents who do not know their exact age, or misreporting under the influence of interventions (Zaba, 2004). In Malawi HIV prevention programmes strongly promote postponement of first sex and teenagers may become reluctant to report sexual activity (Poulin 2010). To

substantiate the arguments, Mensch et al., (2008) compare self-reports of ever having sex with STI biomarkers for young women in rural Malawi and find that approximately 8–10 percent of women who claim never to have had sex are infected with an STI. Rosenbaum (2006) cited in Poulin (2010) found out that in a sample of adolescents who reported having had sex in an initial interview claimed to be virgins in a follow-up interview after taking virginity oaths. However, McGrath et al., (2008) argue that generally, sexual behaviour surveys are subject to social desirability bias and inconsistent reporting of age at first sex for other reasons. The other limitation is that the study lacks longitudinal data to allow a more in-depth analysis and examination of a causal effect. Instead, analysis is based on one cross-sectional survey in Malawi, with independently drawn samples between men and women and which do not produce significant results.

Lastly, as a result of the study's cross sectional design, no causal conclusions can be drawn about whether factors associated with age at first sex predict HIV risk perception among young people in Malawi. It was not possible in this study to use pooled data from the 1998, 2001, 2004, 2006, 2008 datasets since after thorough exploration and validation of the datasets, there was an indication that the independent variable of interest (age at first sex) was available only in the 2001 and 2004 datasets only, but with a very small sample of the same respondents interviewed in both years, since a new adolescent sample was added to offset sample attrition from the 2001 sample. Furthermore, sample attrition and marriages after each wave resulted in addition of new respondents in the households, which make it difficult to compare the same respondents over time.

In summary this chapter describes in detail the sampling design, study area, data collection methods, analytical strategy and limitations of the study. This background to the research design is meant to give the reader an insight into the analytical strategy, as well as the limitations in the study into consideration when interpreting the results.

CHAPTER 4

ANALYSIS AND FINDINGS

4.1 Introduction

This chapter presents the findings from the analysis of the cross sectional data from the 2004 wave of ongoing longitudinal surveys of the Malawi Diffusion and Ideational Change Project. In the first instance, descriptive statistics are presented in the chapter and inferential statistics are then provided in the second part. The study population includes 403 young men and 256 young women in the 2004 adolescent sample of the MDICP dataset. The chapter starts by providing a description of the sample. It outlines the socio-demographic characteristics of men and women including their marital status, level of education, religious affiliation and relative household wealth in terms of assets. The chapter further gives a picture of the respondents' sexual behaviours in which age at first sex, number of sexual partners, and condom use at first and last sex and perception of risk of HIV infection are examined. The chapter also provides results from multivariate analysis which explain the association between age at first sex and HIV risk perceptions, in which the association between age at first sex among young people, and their perceptions on HIV/AIDS are highlighted. Data on some of the important sexual and risk perception characteristics were small, hence the exclusion of factors such as consistency of condom use, number of former partners, frequency of sex etc. The following are the risk perceptions that were valid with regards to data: worry about catching HIV/AIDS, likelihood of catching AIDS, condom use with first partner as well as with a spouse, perceptions on circumcision effect on HIV, and perceptions on whether HIV can be transmitted with one time sex or not. Finally, based on the multivariate analyses, the chapter discusses the results and makes an inference on whether there exists an association between socio demographic characteristics and HIV risk perceptions among young men and women in the study area.

4.1.1 Socio-Demographic Characteristics

In order to make meaningful interpretation of the young men and women's sexual behaviour with regards to whether socio demographic characteristics do set precedence

on their sexual behaviours, it is important to first understand the respondents' social and demographic characteristics. This section gives a snapshot of the social and demographic characteristics of the adolescent sample from the three regions of Malawi in 2004. This study compares some of the findings to the results of the 2004 Malawi Demographic Health Survey (MDHS) since it is the only nationally representative survey which was conducted in the same year (2004) as the MDICP study whose data this study makes an inference on.

Table 4.1 Distribution of Selected Social and Demographic Characteristics

Social and Demographic Characteristics		Males (N=256)		Females (N=403)		All Respondents	
Variable	Response	N	Percent	N	Percent	N	Percent
Province	Southern	133	33	77	30.1	210	31.9
	Central	128	31.8	85	33.2	213	32.3
	Northern	142	35.2	94	36.7	236	35.8
Age of respondents*	<i>Median Age</i>	16.9		18.7			
	10-15 years	56	14.9	65	28.1	121	20
	16-20 years	240	64	156	67.5	396	65.3
	21-24 years	79	21.1	10	4.3	89	14.7
In School**	No	170	42.2	87	58.4	257	39
	Yes	233	57.8	169	66	402	61
Highest educational level	Primary School	302	74.1	198	77.2	500	76.1
	High School	101	25.9	54	22.8	155	23.6
	Tertiary	0	0	2	0	2	0
	None	0	0	2	0	2	0
Marital Status**	Separated/widowed	25	6.1	8	2.3	33	4.9
	Never married	378	93.9	248	96.9	626	95.1
Religion**	Christian	301	74.7	171	71	472	73.3
	Muslim	83	20.6	49	20.3	132	20.5
	no religion/other	19	4.7	21	8.7	40	6.2
House Material (Wall)	Mud/Sun brick	229	57	134	55.5	363	56.4
	Firebrick	174	43	107	44.5	280	43.6
House Material (Roof)	Metal	86	21.4	66	27.2	152	23.6
	Thatch	317	78.6	175	72.8	491	76.4

*p<0.001 **p>0.05 Note: Religion and house material (15 missing cases for females),.

The results show that the total respondents were evenly distributed in the 3 provinces of Malawi, with about a third of the sample in each region for both males and females. The distribution of males was 32.5 percent in the Southern region, 31.8 percent in the Central and 35.7 percent in the Northern region. A similar distribution is evident among females; 30.1 percent in the Southern region, 33.2 percent in the Central and 36.7 percent in the Northern region.

Further results reflect a youthful population under study, where the median age for the young men is 16.9 years and 1.8 years younger than the median age of the young women (18.7 years). The majority of respondents were aged between 16-20 years (65 percent for both sexes) with more females (67.5 percent) than males (64 percent) and followed by those aged 10-15 year (20 years for both sexes). The least respondents were aged 21-24 years (14.7 percent for both sexes) and almost one in five (21.1 percent) compared to 4.3 percent of females.

The results further indicate that the majority (95.1 percent) of the respondents were never married, with more respondents among women (96.9 percent) than men (93.9 percent). These results are not surprising given that the design of the study was aimed at interviewing the never married adolescents. It is quite surprising that a proportion of young men (6.1 percent) and young women (2.3 percent) were already separated or widowed at the time of the study. These results imply that 9 out of ten of the young men and women in the sample were never married, which was expected in the study since the aim was to interview the never married adolescents.

Religion plays a vital role in shaping young peoples' attitudes and behaviours as well as their HIV risk perceptions and protective strategies. It is common belief among Malawians that religion plays a major role in combating HIV/AIDS hence the Faith Based Organisations that exist and work in sensitising the population on HIV/AIDS (Munthali *et al.*, 2006). It is also believed that certain religious beliefs can possibly make young people more prone to contracting HIV as with case of polygamy among Muslims in Malawi. The results in this study indicate that seven out of ten of young men (71.0 percent) and young women (74.7 percent) were Christians compared to Moslems who contributed to 20.6 percent of young men and 20.3 percent of the young women. The minority of the respondents contributed to 4.7 percent of young men and 8.7 percent of women who had no religion or belonged to other religion category. Other religion in Malawi includes traditional religion or

cult such as ‘⁶nyau’ and those who claim to have no religion. The Malawi Demographic and Health Survey (2008) indicates that there are more Christians in Malawi (86 percent) compared to 13 percent of Moslems, 0.9 percent who had no religion (MDHS, 2010).

The respondents were also asked about their educational background. Much as education is a key determinant of the lifestyle and status an individual enjoys in a society, it also affects many aspects of life, including demographic and health related behaviour (MDHS 2006). Studies have consistently shown that educational attainment has strong effects on reproductive behaviour, contraceptive use, fertility, infant and child mortality, morbidity, attitudes and awareness related to family health and hygiene (MDHS 2006). The results in this study reflect that more of the young men (58.4 percent) and young women (66.0 percent) reported being in school at the time of the study, compared to four out of every ten young men (41.8 percent) and three out of every ten young women (33.9 percent) who reported not attending school. Furthermore, respondents were asked on their level of education attainment, the majority of them had some primary school (74.3 percent among males and 77.3 among females), compared to 25.7 percent and 21.1 percent of females who had some secondary education. Very few of the males (1.6 percent) and none of the females had tertiary education.

The type of material used for walls and roofing of dwellings is may be a proxy indicator of the economic standing of the household and reflects the potential exposure to disease-causing agents (MDHS, 2006). The results from this study indicate that slightly above half of the young men (57.0 percent) and young women (55.5 percent) lived in mud or sun brick made houses, compared to 43.0 percent of young men and 44.5 percent of young women who lived in fire brick houses. The majority of the respondents had houses mostly roofed with thatch (76.6 percent of men vs 72.8 percent of women) compared (21.4 percent of men vs 27.2 percent of women) who had metal roofs. These results imply that at the time of this survey, the majority of these young men and women in Malawi lived in houses made of traditional material, and that young women were more likely to live in fire brick houses and metal roofs compared to men (usually without electricity); nine percent of households in Malawi had electricity at about the same time (MDHS, 2010). The Welfare Monitoring Survey (2009) in Malawi showed that mud bricks (31 percent) and burnt bricks (49 percent) were the

⁶ Nyau are a form of masquerades cult who worships at the graveyard. They are mostly found in the Central Region.

most common materials used for walls and that 60 percent of households used grass for roofing their dwellings and 40 percent used iron sheets as roofing material (WMS, 2009).

4.1.2 Relative Household Wealth

This following section looks at the household wealth as measured by non-monetary asset ownership. Ownership of goods provides proxy measures of the economic status and health status of the respondents' lives. Respondents were asked about their household's ownership of particular durable goods and Table 4.2 highlights the results.

Table 4.2: Percentage of Ownership of Household Assets,

Household Assets	Females (N=256)		Males (n=403)		All Respondents	
	N	Percent	N	Percent	N	Percent
Paraffin lamp	137	53.52	206	50.37	343	52.0
Bicycle	131	51.17	234	57.21	365	55.4
Radio	190	74.22	306	74.82	496	75.3
Television	11	4.3	22	5.38	33	5.0
Bed with mattress	99	3.8	111	27.14	210	31.9
Sofa Set	57	22.3	61	1	118	17.9
Table and chair(s)	132	51.6	172	4	304	46.1

Poverty can also be measured in non-monetary terms and the above table reflects the wealth distribution of the respondents in non-monetary dimensions. The most commonly owned asset by the households among young men and women in 2004 was a radio (74 percent) followed by almost above half of the households owning a bicycle (54 percent on average). Furthermore, about half of the young men and young women owned a lamp, with less than a third of households among young men (27.4 percent) and about a third of young women (36.8 percent) had a bed with a mattress, 42.1 percent of men and 51.6 percent of women had a table with chairs, while a minority (less than a quarter) of both sexes had a sofa set. The least owned asset among the respondents' households was the television (5.4 percent of boys) and 4.3 percent of girls. At about the same period, nationally, 62 percent of households owned a radio, four in ten households owned a paraffin lamp, and only 5 percent of households owned a television (MDHS, 2004). The implication of these results is that at least 7 out of ten households in this study had access to electronic media, more than half had bicycles as the most common type of vehicle and means of transport, with only one

in twenty households having access to visual mass communication (television). Although data on access to sanitation was not included in this chapter, at about the same time, MDHS results indicate that use of traditional pit latrines accounted for 79 percent of all households (MDHS 2006). In the same year that this study was undertaken, based on the poverty lines it was found out that 52.4 percent of the population in Malawi was poor (Second Integrated Household Survey, 2005).

4.1.3 Family Planning

Table 4.3: Showing Contraceptive Use by Gender

Contraceptive Use		Females (N=256)		Males (n=403)		All Respondents	
		<i>Freq</i>	<i>Percent</i>	<i>Freq</i>	<i>Percent</i>	<i>Freq</i>	<i>Percent</i>
Ever Used Family Planning	Yes	22	8.6	77	19.1	99	15.0
	No	223	87.1	301	74.7	524	79.5
	Can't Remember	11	4.3	25	6.2	36	5.5
Currently Using Modern Family Planning	Yes	10	45.5	36	46.8	46	46.5
	No	12	54.5	41	53.2	53	53.5

With regards to modern family planning, the results indicate that the percentage of those young women and men who reported ever using modern contraceptives was below 20 percent, indicating a low modern contraceptive prevalence rate. Of those who reported ever using the modern contraceptives, the results indicate that 45.5 percent of the women and 46.8 percent of the men reported currently using the modern methods at the time of the survey. Furthermore, the higher percentage (46.8 percent) of the boys who reported currently using contraceptives at the time of the survey could be attributed to condom use meant to protect them from HIV/AIDS with other partners and not meant to limit their family sizes. Contraceptive prevalence rate in Malawi increased from 26 percent in 2000 (MDHS 2000) to 41 percent in 2005 (MICS, 2006) and 65 percent in 2008 (MDHS, 2010).

4.2 Sexual Characteristics

This section examines some of the patterns of sexual behaviour among the young men and young women in the 2004 MDICP dataset. Firstly, it is worth noting that the age at which young men and women initiate sexual intercourse marks the beginning of their

exposure to HIV/AIDS and other reproductive risks. The association between the age at first sex and the HIV risk perceptions in young men and women's future is an important factor to examine in order to make meaningful, effective and relevant HIV intervention programmes for the youths. Table 4.3 indicates the sexual characteristics of the respondents.

Table 4.4: Indicating Selected Sexual Characteristics of the Respondents, Men and Women 2004

Sexual Characteristics		Females (N=256)		Males (N=403)		All Respondents	
Variable	Response	Freq	Percent	Freq	Percent	Freq	Percent
Ever had sex	Yes	105	41.0	276	68.5	381	57.8
	Never	90	35.2	58	14.4	148	22.5
	Refused/Missing	61	23.8	69	17.1	130	19.7
	Total	256	100.0	403	100.0	659	100.0
Age at first sex	Less than 10 years	1	1.0	35	12.7	36	9.4
	11-15 years	58	55.2	129	46.7	187	49.1
	16-20 years	45	42.9	80	29.0	125	32.8
	21-24 years	1	1.0	32	11.6	33	8.7
	Sub Total	105	100.0	276	100.0	381	100.0
Had Sex in the past 12 months	Yes	41	39.0	161	58.3	202	53.0
	No	34	32.4	115	41.7	149	39.1
	Don't Know/Missing	30	28.6	0	-	30	7.9
	Sub Total	105	100.0	276	100.0	381	100.0
Total Number of sexual partners	One	40	38.1	91	33.0	131	34.4
	More than 1	35	33.3	185	67.0	220	57.7
	Don't Know/Missing	30	28.6	0	-	30	7.9
	Sub Total	105	100.0	276	100.0	381	100.0
Median Age at first sex	(Years)	14.9		16.1		15.5	

The above results indicate that the median reported age of first sex among those who reported being sexually experienced was 16.1 among young men and 14.9 among young women. A possible explanation could be that young girls begin having sex earlier than young boys due to several reasons of causes of early sexual debut cited in chapter 2. The recent MDHS (2008) reports that the median age at first sex for all males (20-54 years) and females (20-49 years) was 18.6 years and 17.3 years respectively (MDHS, 2010), showing that young men debut later than the young women.

Furthermore, 68.5 percent of the young men reported that they had ever had sex compared to 14.4 percent who reported never having had sex. The results indicate that 41.5 percent of young women reported that they had ever had sexual intercourse, compared to 35.2 percent who reported that they had never had sex. Given the nature of sensitivity of the questions on sexual behaviour, significant proportion (17.1 percent of young men and 23.8 percent of young women) refused to answer the question. Although these results should be interpreted with caution since there was a lot of missing data for both females and males, they however give an indication that young men were more likely to have had sex at the time of the survey compared to the young women.

Figure 3: Reported Age at First Sex, Men and Women, 2004

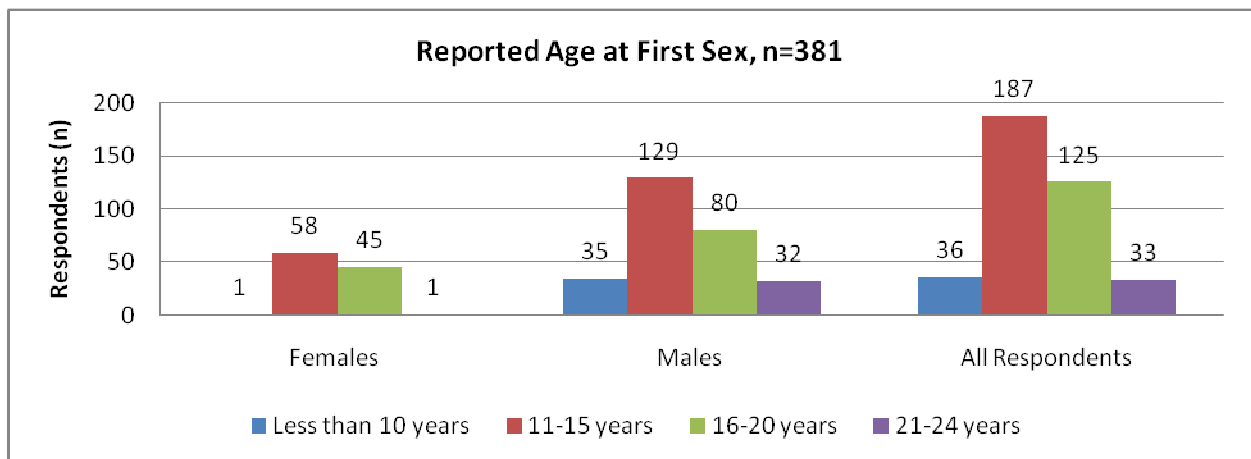


Table 4.3 indicates that 55.2 percent of those who had sexual experience among the young women had early sexual debut (11-15 years) followed by those who had first sex at between the ages 16-20 years (42.9 percent), followed by those who had sexual debut after 20 years (0.1 percent). The results indicate that 46.7 percent of the young men had sexual debut between 11-15 years, followed by those aged 16-20 years (29 percent) and those who had sexual debut before the age of ten (12.7 percent). Sexual debut among the young women was uncommon among the age groups 21-24 years and among both sexes. These results are graphically depicted in figure 2 above.

These results generally imply that both young women and men were more likely to experience first sex between the ages 11-15 years, and that young women were more likely to debut earlier than young men. The results also imply that more of both young men and women experienced early sexual debut, followed by those who had first sex between 16-20 years. Some researchers have evidence supporting that age at first sex for most young women

in Africa occurs between ages 17–20 years (Pettifor *et al.*, 2009) and that adolescent females in Sub-Saharan Africa tend to have sex at an earlier age than their male counterparts, and thus are at particular risk for HIV, unwanted pregnancy and other adverse outcomes (Biddlecom *et al.*, 2007).

Furthermore, of the sexually active respondents, the majority of young men (58.3 percent) reported that they had sex in the last 12 months compared to young women (39 percent) compared to 41.7 of young men and 32.4 percent of young women who had had sex in the same reference period. 28.6 percent of the young women either refused to answer the question or the data was missing.

Further results indicate that twice as much young men (67.0 percent) as of young women (33.3 percent) had had multiple partners at the time of the study. The results for the young women may be skewed due to the high non response rate (28 percent). The implication of these results could be that young men were more likely than young women to have multiple partners and to have had sex in the last 12 months. These results may not be interpreted without taking into consideration the fact that there is literature evidence which states that men tend to over report the number of sexual partners while women tend to underreport (Pettifor *et al.*, 2004) and the fact that there was a higher non response or refusal rate among the females.

For the purposes of this study, early sexual debut has been classified as having sex before the age of 15 years, and in line with legislative policies in ⁷Malawi. The results imply that on average about six out of ten (57.5 percent) adolescents aged less than 15 years in the sample had ever had sex at the time of the survey. These could be more given the refusal/non response rate and this should be a worrisome scenario in Malawi if more and more children have sex below the age of 16 years and fall pregnant or catch HIV/AIDS, especially for the girls who may pass the virus to the newly born baby.

4.2.1 Perceived Risk for HIV

In order for young people to take precautions to protect themselves from HIV, they first have to think that they are potentially at risk for becoming infected with HIV (Pettifor *et al.*, 2004).

⁷The Malawi constitution describes a child as someone who is 16 years and below.

The respondents were also asked about their perceptions towards worry over HIV/AIDS, their perceived likelihood of infection, their optimism or pessimism about HIV/AIDS, their perception on whether one could catch the virus by having sex once and if there was an effect of circumcision on HIV/AIDS. Table 4.4 indicates the results;

Table 4.5: Risk Perceptions and Worry Levels among Males and Females, 2004

Perceived Risk Perceptions and Worry Over HIV		Females (N=256)		Males (N=403)		All Respondents	
Variable	Category	N	Percent	N	Percent	N	Percent
Likelihood of HIV Infection*	No Likelihood	176	75.5	233	62.6	409	67.6
	Low	40	17.2	108	29	148	24.5
	Medium	8	3.4	17	4.6	25	4.1
	High	9	3.9	14	3.8	23	3.8
Likelihood of partner HIV Infection*	No Likelihood	74	74.7	115	36.9	189	46
	Low	11	11.1	105	33.7	116	28.2
	Medium	8	8.1	63	20.2	71	17.3
	High	6	6.1	29	9.3	35	8.5
Likelihood of future HIV Infection*	No Likelihood	91	47.2	123	63.7	214	55.4
	Low	61	31.6	53	27.5	114	29.5
	Medium	30	15.5	7	3.6	37	9.6
	High	11	5.7	10	5.2	21	5.4
How worried are you in contracting HIV/AIDS?	Not worried at all	107	43.5	169	41.9	276	42.5
	Worried a little	50	20.3	79	19.6	129	19.9
	Worried a lot	89	36.2	155	38.5	244	37.6

*p<0.001

Table 4.4 indicates that 7 out of ten young women (75.5 percent) felt that there was no likelihood at all that they could be infected with HIV, followed by those who felt at low risk (17.2 percent) and less than 5 percent who felt at moderate risk (3.4 percent) and those who felt at high risk (3.9 percent). A similar trend is evident among young men; 6 out of ten young men (62.6 percent) felt at no risk at all, followed by those who felt low risk (29.0 percent) and less than 5 percent who felt at moderate (4.6 percent) or high risk (3.8 percent). These results imply that the adolescents were more likely to perceive no risk of HIV infection at all (67.6 percent) and that young women were more likely to perceive no risk at all than the males.

The results also indicate that almost three quarters of young women (74.7 percent) perceived no chances of being infected by their partner, followed by those who

perceived low (11.1 percent), medium (8.1 percent) and high risk (6.1 percent). Among young men half as much as the females (36.9 percent) perceived no risk of infection from a partner, while 33.7 percent perceived low risk and medium risk (20.2 percent) and high risk (9.3 percent). Overall, the adolescents were less likely to perceive no risk of infection from a partner (46.0 percent), males were less likely to perceive no risk of infection than females. It is therefore evident from these results that females felt no threat of HIV infection from a partner than the males. This clearly shows that more girls are of the opinion that there are less chances of being infected by the partners they would marry in future, compared to the boys who may be more cautious and careful about catching HIV/AIDS from their partners.

With regards to one's future infection the results indicate that among the young women, less felt that there were no chances of HIV infection in the future (47.2 percent), compared to 31.6 percent who perceived low risk, 15.5 percent who perceived medium risk and 5.7 percent who perceived high risk. An almost different pattern is evident among men where more of them perceived no HIV risk in future (63.7 percent), followed by 27.5 percent who perceived low future risk, and less than 10 percent who perceived medium to high risk.

Overall results indicate that adolescents were generally more likely to perceive no likelihood of future HIV infection (55.4 percent) and males were more inclined to perceive no future risk than females. This may imply that the adolescents were optimistic and had some future hope about HIV infection, or it could be that they did not feel the immediate threat of AIDS and felt it could be a distant threat. Overall one in four (42.5 percent) of the total respondents were not worried about contracting HIV at all, while 19.9 percent reported being worried a little and 37.6 percent were worried a lot. While these general results indicate that adolescents were more likely to worry over contracting HIV, gender stratification reveals that females were slightly more likely than males (43.5 percent versus 41.9 percent) to report not being worried at all, and males were more likely to be worried a lot than females. Bearing in mind that Malawi has a youthful population, and has an HIV prevalence rate of 14 percent (MDHS, 2006) it is worrisome that almost 4 out of ten boys and girls were not worried about catching HIV. A possible explanation for the low levels of worry at this period could be due to the HIV advocacy and awareness campaigns in Malawi during which advocacy campaigns were intensified, which made young people recognize the dangers of the disease. Studies of other populations in sub-Saharan Africa have documented similar levels of worry about AIDS and relationships between characteristics and worry: the married worry more than the single (Kengeya-Kayondo *et al.*, 1999; Lindan *et al.*, 199; cited

in Smith and Watkins, 2005), women worry more than men(United Nations, 2002), and whereas women worry most about their spouses, men worry most about their extramarital partners (Kengeya-Kayondo, *et al.*, 1999; Bunnell, 1996; Lindan, *et al.*, 1991 cited in Smith and Watkins (2005).

However the study did not go further into examining the reasons or factors behind their hope of not contracting HIV in subsequent years taking into consideration the increase in number of people dying of AIDS within the population at that time, with some respondents even experiencing HIV related deaths of a relative or someone they knew. Perhaps this could be an area for further research: examining individual's hope factors associated with HIV future infection, and determining levels of hope among the adolescents.

In summary, the results above indicate that adolescents were generally more likely to worry over contracting HIV, with females more likely than males to report not being worried at all, and males were more likely to be worried a lot than females. Adolescents were more likely to perceive no likelihood of HIV infection with young women more likely to perceive no risk at all compared to their male counterparts. Furthermore, more young women were of the opinion that there were less chances of being infected by their partners they would marry in future, compared to the boys who felt at a higher risk of catching HIV/AIDS from their partners. Finally adolescents were generally more likely to perceive no likelihood of future HIV infection and males were more inclined to perceive no future risk than females.

4.2.2 HIV Related Knowledge and HIV Testing

Knowledge about the respondents' condom use, attitudes and practices, as well as family planning is very important in understanding their protective behaviour patterns against HIV/AIDS. Adolescents' views on chances of infection by having a once off sex act, effects of circumcision and their views on whether the AIDS problem was getting better or worse were included in the analysis. These factors are directly linked to self-evaluation and assessment of HIV infection and are crucial in making informed decisions about HIV intervention programmes for the youths. The analysis also included an indicator of whether the respondent had been tested for HIV since some researchers argue that HIV test could be an experience that could act as a catalyst for condom use, regardless of the test outcome(Sweat *et al.*, 2000). The following table presents selected indicators related to HIV knowledge.

Table 4.6: Showing HIV/AIDS Knowledge and Perceptions

HIV/AIDS Knowledge		Females(N=256)		Males (n=403)		All Respondents	
<i>Variable</i>	<i>Category</i>	<i>N</i>	<i>Percent</i>	<i>N</i>	<i>Percent</i>	<i>N</i>	<i>Percent</i>
Ever heard or seen AIDS Information	Yes	197	77.0	277	68.7	474	71.9
	No	54	21.1	116	28.8	170	25.8
	Can't Remember*	5	2.0	10	2.5	15	2.3
Know anyone who died of AIDS	Yes	164	64.1	291	72.2	455	69.0
	No	89	34.8	110	27.3	199	30.2
	Can't Remember*	3	1.2	2	0.5	5	0.8
Do you think AIDS problem is getting better or worse	Better	78	30.5	116	28.8	194	29.4
	Worse	178	69.5	287	71.2	465	70.6
Chances of infection by having sex once?	No Chances	16	6.3	47	11.7	63	9.6
	Chances	240	93.8	356	88.3	596	90.4
Does circumcision affect chances to HIV infection	Has an effect	24	9.4	29	7.2	53	8.0
	Does not have an effect	232	90.6	374	92.8	606	92.0
Tested for HIV?	Yes	217	84.8	333	82.6	550	83.5
	No	39	15.2	70	17.4	109	16.5

P<0.05

*can't remember or missing information

The table above indicates that at the time of the study 7 out of 10 adolescents had heard of AIDS information compared to about a quarter who had not and that females were more likely to have heard or seen AIDS information compared to the males. Furthermore, the majority of respondents (69.6 percent) knew somebody who had died of AIDS, and males were more likely to know of an AIDS death than females (72.6 vs 64.8 percent). These results imply that there is widespread knowledge about AIDS information; however mere knowledge that is not comprehensive is not adequate catalyst in behaviour change among adolescents. Probably death of someone due to AIDS may only send a strong message across if the one who died happens to be a close relative, since their absence and the impact and dangers of HIV can be felt.

Furthermore, the results indicate that the majority of the adolescent boys (71.7 percent) and girls (69.4 percent) were of the opinion that the AIDS problem was getting worse, probably implying that there could be a fatalistic perception with regards to their thinking about future partner infection. These results do not support the results which show that less than half of the young men and women felt they was a chance that they could be

infected with the HIV in future. This probably is an indication that the young men and women were pessimistic about the problem of HIV/AIDS, but still had some hope of not getting future infection themselves and could perhaps be a good yardstick and indicator to consider for intervention programmes among the youth. There is widespread knowledge among young men nowadays that AIDS is spread mainly through heterosexual sex. The respondents were asked if having sex once would infect one with HIV. The results indicate that over 9 out of ten young women (93.6 percent) and men (88.6 percent) felt that there were chances that one could be infected with HIV by having sex once. Only less than 15 percent of the boys and girls felt that there were no chances of infection by having sex once. This may be attributed by the fact that comprehensive knowledge of HIV is now universal among young Malawians, and the fact that HIV is mostly contracted through heterosexual sex is also almost universal. However, recent scholarly debate reiterates that one time sex may not get one infected, but the majority of Malawians still have the fact and strongly believe that one gets infected with one time unprotected sex. The survey also sought to know if abstinence could protect one from HIV and the results revealed that the majority (96.7 percent) of the boys and girls (72.4 percent) were positive. In the same vein 90.9 percent of girls and 99.2 percent of boys perceived that traditional medicine cannot protect one from HIV/AIDS.

There has been a lot of debate worldwide over circumcision having an effect on HIV/AIDS. In Malawi, circumcision is practiced in many communities and often serves as a rite of passage to adulthood. Recently, male circumcision has been associated with lower transmission of STIs, including HIV (MDHS 2004). The results from this study indicate that very few young men (9.2 percent) and women (7.1 percent) felt that male circumcision had an effect in decreasing or increasing HIV/AIDS, while the majority of boys and girls (9 out of ten) felt circumcision did not have an effect on HIV/AIDS. The study did not examine the reasons for their varied beliefs, nor did it examine the direction of the perceived effect. National results at about the same time in Malawi indicate that circumcised men had a slightly higher HIV infection rate than men who were not circumcised (MDHS, 2006). However, some researchers indicate that observational studies in various settings have found consistent, significant, and negative associations between male circumcision and HIV infection (Poulin, 2007). Using the same sample as in this study, it was found out that when comparing HIV prevalence rates across the MDICP's three study sites, the region home to the highest HIV prevalence (8.6 percent) was also where most husbands (80 percent) were circumcised (Poulin, 2007). MDHS results

also leave a lot to be desired, if circumcision does reduce HIV infection; they indicate that in 2004 circumcised males contributed to 13.2 percent of the HIV positive compared to the uncircumcised (9.5 percent) (MDHS, 2006).

With regards to HIV testing, the results indicate a low testing rate among young men and women at the time of the study. The results of this study show that the proportion of sexually active young people who had not had an HIV test in the preceding 12 months was 84.8 percent among young women and 82.6 percent among young men, regardless of their knowledge of their status. Results of a national survey in the same period in about the same period this survey took place, results show that 25.2% of women and 26% of men age 15-24 had tested for HIV (MICS, 2006), an indication of lower testing levels among adolescents. Knowledge of the percentage of sexually active young women and men aged 15-24 who received an HIV test in the last 12 months and who know their results forms UNAIDS Indicator 5 and WHO Universal Access Indicator 38 (WHO, 2001). Recent results from the same study area indicate that 80% of unmarried youths reported willingness to be tested for HIV along with their partners at the time when they are getting married and that encouraging engaged couples to take one or more HIV tests during the marriage process would greatly reduce the odds of either partner bringing HIV into the union unwittingly (Clarke, Kohler and Poulin, 2009).

In summary, the majority of adolescents had heard or seen AIDS information as well as experienced or heard of a death related to HIV. Females were more likely to have heard or seen AIDS information compared to the males, while males were more likely to know of an AIDS death than females. Furthermore the adolescents were of the opinion that the circumcision did not have an effect on HIV/AIDS and that the AIDS problem was getting worse, while 9 out of ten young women and men felt that there were chances that one could be infected with HIV by having sex once.

4.2.3 HIV Prevention and Condom Use

Condom use is one of the preventive strategies against HIV. Forste *et al.*, (2002) argue that worry and concern about HIV could motivate condom use, and that individuals who believe that they are already infected or would become infected with HIV/AIDS are more likely to be worried than individuals who perceive their risk of infection as negligible. Furthermore, condom use at first sex is also an important determinant of HIV risk among

young girls and boys since the first encounter may result into pregnancy or HIV infection. Abstinence versus condom use has been a bone of contention between some Faith Based Organisations⁸ in Malawi and most NGOs fighting NGOs, while some individuals in Malawi still opted for traditional medicine for STI diseases due to embarrassment one would encounter by visiting the hospitals or clinic. The following section discusses results on condom use, abstinence and other protective measure (traditional medicine).

Table 4.7: HIV Preventive Strategies among Males and Females, 2004

HIV Prevention Strategies		Females(N=105)		Males (n=276)		All Respondents	
Variable	Response	N	Percent	N	Percent	N	Percent
Condom use at first sex*	No	38	51.0	72	47.2	110	47.2
	Yes	37	49.9	86	52.8	123	52.3
Condom use at last sex*	No	27	25.7	64	23.2	91	25.4
	Yes	78	74.3	183	66.3	261	74.6
Frequency of Condom Use*	Beginning	13	17.3	24	15.1	37	15.9
	Sometimes	44	58.7	83	52.6	127	54.5
	Every time	18	24.0	51	32.3	69	29.6
Is it acceptable to use a condom with a spouse?	Acceptable	38	36.2	93	33.7	131	34.5
	Not Acceptable	67	67.3	183	64.2	250	65.5
Can Abstinence protect one from HIV?	No	73	96.7	114	72.4	187	34.5
	Yes	2	3.3	44	27.6	46	65.5
Can traditional medicine Protect from HIV?	Yes	1	1.3	2	0.7	3	1.3
	No	74	98.7	156	98.7	230	98.7
	Total	105	100.0	276	100.0	381	100.0

*p<0.05 These are responses based on only those who responded to ever having sex and missing cases and 'can't remember/don't know/ missing' were treated as invalid responses (30 females +118 males).

Table 4.6 indicates that condom use at first sex was higher among the young men (52.8percent) compared to the young women (49.3 percent). This could be explained by the fact that some girls may be coerced into having sex, usually with older boys and do not use condoms, and also that the boys may have over reported on condom use. Some researchers argue that the association between early debut among young women and condom use may vary according to whether they had had forced sex or not (Pettifor *et al.*, 2009), which was not explored in this study. With regards to condom use at last sex, the

⁸The Roman Catholic Church doctrines do not support condom use.

results indicate higher likelihood of condom use among all adolescents (74.6 percent), with young women more likely to have reported having used a condom at last sex (74.3 percent) than young men (66.3 percent). These results are self-reported and should be interpreted with caution, especially in that era (2004) when condom advocacy by NGOs and HIV awareness was at its peak, and also the probability of adolescents' responses being biased. On the other hand, higher condom use may be due to the girls' fear of being pregnant or having a baby of which boys probably may not have to worry much about. Low consistency use of condoms is reflected by the results, where less than 30 percent of total adolescent boys and girls reported using a condom every time they had sexual intercourse. About a third 32.3 percent of the young men reported that they used a condom every time compared to 24 percent of young women. Less than 20 percent of both young men (15.1 percent) and women (17.1) reported that they had used a condom only at the beginning of their sexual encounters. This means that although there might be widespread knowledge of condoms, there was no consistency in the use, which is a crucial factor in the fight against HIV. Taking into consideration that during the time of the study, there was widespread campaign on HIV prevention in Malawi, the higher proportion of condom use could partly be due to respondents' reluctance to admit a passive attitude towards AIDS. However, an important aspect of this analysis is that only a small proportion of adolescents reported consistent condom use as a preventive strategy against AIDS. It should also be noted that the response rate on condom use for the young women was low and therefore results for women should be taken with caution.

Condom use among married couples is not widely approved in Malawi, it is almost a taboo. Further results in this study indicate that 67.3 percent of young women felt that it was not acceptable for one to use a condom with a spouse, compared to 64.2 percent of young men who had similar perceptions. This means that about two thirds of boys and girls disapproved condom use with a spouse, implying that the condoms may not widely be used in wedlock. In a national survey in 2001 and 2004, results indicate that never-married women and men were much more likely than ever-married individuals to have used condoms (MDHS 2006). This may be true since using a condom in wedlock may lead one partner especially the wife, to suspect partner infidelity; moreover it is almost a taboo for a woman in Malawi to even suggest condom use in wedlock, lest she would be labeled 'loose' or promiscuous. Lastly, the majority (over 90 percent) of both young men and women felt that one could protect themselves from HIV by abstaining from sex and not through traditional medicine. Females were much more likely than males to feel that abstinence protects one from HIV and were

equally likely as men to perceive that traditional medicine could not protect from HIV infection.

4.3 Multivariate Analysis

Three models have been fitted in this analysis. The first model examines the relationship between likelihood of infection and socio-demographic variables including age at first sex as the variable of interest. The second model examines the relationship between worry about HIV/AIDS and the socio-economic characteristics. The third model examines the relationship between condom use at last sex and the socio-economic variables. Confounding factors which include knowledge of someone with HIV and knowing someone who had died of AIDS have been included in all the models as controls. The following section explains the three models that have been used in more detail.

4.3.1 Outcome Variables

There are three outcome variables that are being examined in this study; likelihood of infection, worry over HIV infection and condom use at last sex. Likelihood of infection was measured using the 3 questions: 'what is the likelihood that you are infected with HIV?' and, 'What is the likelihood that you may be infected in future' and 'what is the likelihood that your future partner will be infected with HIV? Running multinomial logistic models using each question does not yield significant results. In order to enhance the interpretability of the results and increase the explanatory power of the model, the responses from the three questions have been pooled in order to come up with one variable of 'perceived likelihood of infection'. Worry was measured using the question 'how worried are you of contracting HIV/AIDS?' while condom use was measured through the question 'did you use a condom the last time you had sex?' The following table shows the dependent variables, categories and their codes:

Table 4.8 Outcome Variable: Categories and Codes

Outcome Variables		
<i>Variable</i>	<i>Category</i>	<i>Code</i>
Perceived likelihood of HIV Infection	No Likelihood	0
	Low	1
	Medium	2
	High	3
How worried are you in contracting HIV/AIDS	Not worried at all	0
	Worried a little	1
	Worried a lot	2
Condom Use at Last Sex	No	0
	Yes	1

4.3.2 Correlates of Risk Perception and Condom Use

The predictor variables or covariates are the respondents' background characteristics: age of respondent, marital status, religion, province, educational attainment and age at first sex. Potential confounding factors included in the models are; AIDS-related knowledge and, HIV test status and personal acquaintance with a person who died of AIDS. The following table shows the predictor variables, categories and codes.

Table 4.9: Predictors: Categories and Codes

Independent Variables		
<i>Covariate</i>	<i>Category</i>	<i>Code</i>
Province	Southern	0
	Central	1
	Northern	2
Level of Education	Primary	0
	Secondary	1
	Tertiary	2
Ever seen or heard of AIDS information	No	0
	Yes	1
Know anyone who died of AIDS	No	0
	Yes	1
Religion	No religion/other	0
	Moslem	1
	Christian	2
Current Age	10-15 years	0
	16-20 years	1
	21-24 years	2
Age at First Sex	Less than 10 years	0
	11 to 15 years	1
	16-20 years	2
	21-24 years	3
	Refused to answer/missing	4
HIV Test	No	0
	Yes	1

4.4 Model 1: The Association between Likelihood of Infection and socio-demographic characteristics

A multinomial regression model was fitted to the data in order to examine the direction and strength of the association between perceived likelihood of HIV infection and socio demographic variables. The following table presents Relative Risk Ratios between the associations of perceived likelihood of infection and the socio economic variables among young men and women in the sample. The following tables present results of the association between socio demographic characteristics and likelihood of HIV Infection among young men and women in 2004.

Table 4.10: Relative Risk Ratios Showing the Association between Socio Demographic Characteristics and Perceived Likelihood of Infection.

Likelihood of Infection		<i>No Likelihood</i>		<i>Medium</i>		<i>Low</i>	
Covariate	Category	RRR	P> z	RRR	P> z	RRR	P> z
Gender	Female(ref)	1		1		1	
	Male	1.920	0.09**	0.765	0.03*	0.573	0.06**
Province	Northern(ref)	1		1		1	
	Southern	0.808	0.79	1.464	0.72	0.808	0.79
	Central	0.964	0.95	1.059	0.94	0.964	0.95
Level of Education	Primary (ref)	1		1		1	
	Secondary	0.393	0.19	0.336	0.20	0.523	0.38
	Tertiary	0.543	0.32	0.643	0.09**	0.722	0.87
Heard/seen of AIDS info	Yes (ref)	1		1		1	
	No	0.543	0.32	0.862	0.02*	0.676	0.54
Know Anyone who died of AIDS	Yes (ref)	1		1		1	
	No	2.757	0.04*	1.046	0.95	3.302	0.08**
Religion	Moslem (ref)	1		1		1	
	No Religion	0.791	0.16	0.771	0.03*	0.157	0.04*
	Christian	0.193	0.37	0.991	0.02*	1.294	0.03*
HIV Test	Yes (ref)	1		1		1	
	No	1.384	0.05**	0.857	0.85	1.048	0.07**
Age of Respondents	21-24 years (ref)	1		1		1	
	10-15 years	0.891	0.86	0.832	0.09**	1.005	0.99
	16-20 years	0.964	0.97	1.267	0.84	0.779	0.71
Age at First Sex	20+ years (ref)	1		1		1	
	Less than 10 years	1.936	0.001*	0.56	0.015*	0.276	0.05**
	11-15 years	1.55	0.01*	0.81	0.08*	0.395	0.06**
	16-20 years	0.814	0.37	1.134	0.27	0.931	0.16

Multinomial logistic regression Number of obs = 582
LR chi2(27) = 81.63
Prob > chi2 = 0.0000
Log likelihood = -533.86349
Pseudo R² = 0.071

(High likelihood is the base outcome) **Significant at 10% level *Significant at 5% level
The 20+ years reference category in the 'age at first sex' variable includes those who had never had sex.

4.4.1 Correlates of No Likelihood Perception

Among those who perceived that there was no likelihood of infection, the following were the results. Gender, knowledge of someone who died of AIDS variables werestatistically

significant factors of no risk perception at 10% level, while religion, HIV test status, and age at first were statistically significant at 5% level. The results indicate that gender plays an important role in shaping adolescents' thinking over the likelihood of infection. Relative to those who perceived high likelihood, males were 1.9 times more likely to perceive themselves as having no likelihood of HIV infection (RRR=1.9; $p=0.5$) compared to females.

Having known someone who died of HIV/AIDS may affect one's perception towards HIV. The results indicate that there is a strong positive association between likelihood of HIV infection and knowledge of knowing someone who died from AIDS ($p<0.5$). Relative to high risk perceivers, those who had no knowledge of someone who had died of AIDS were more likely (RRR=2.8; $p<0.5$) to report that they had no likelihood of infection than those who had. This basically implies that those who had knowledge of someone who had died from AIDS were more likely to perceive some risk of HIV infection.

HIV/AIDS testing and counseling potentially play an important role in the construction of these subjective assessments of HIV status. Results indicate that relative to high risk perceivers, those who had no HIV test at the time of the survey had 40% increased odds (Relative Risk Ratio=1.4, $P<0.1$) of reporting that they had no likelihood of HIV infection compared to those who had had a test.

Relative to high risk perceivers, adolescents who had their first sexual intercourse before the age of 10 years had about 90% higher odds of reporting no likelihood of infection than those who had had sex after 20 years or older (OR=1.9; $p<0.05$). An increase in the age results in a decrease in the likelihood of reporting no risk but in the same direction; where those aged 11-15 years had 55% higher odds of reporting no risk (OR=1.55, $p<0.05$) compared to those who had sexual debut after 20 years and older ages. The results indicate that a further increase in the age significantly decreases the likelihood of no risk perception probably because as one grows up they are likely to be better informed about the dangers of HIV and the probability of contracting it if they do not abstain.

Furthermore, relative to high risk perceivers, those who had sex after 15 years were less likely to perceive no risk of infection compared to those who had had sex for the first time at a later age, although the results are not statistically significant at both 5% and 10% levels (Relative Risk Ratio=0.8; $p>0.1$). These results could imply that young men and women who had first sex prior to age 15 years had increased odds of perceiving no likelihood of HIV infection, although the associations were stronger among those age 10 years and less.

It then follows that those who had sexual debut at a later stage were less likely to perceive no risk of infection.

Place of residence (province), level of education, hearing or seeing AIDS information, age of respondents were not significant predictors of HIV risk perception with regards to no likelihood of infection.

4.4.2 Correlates of Low Likelihood Perception

Generally, the results indicate a weak association between perceived low likelihood of infection and gender, knowledge of someone who died of HIV and having an HIV test, age at first sex, and religion; results are significant at 10% level ($p < 0.1$) except for religion ($p < 0.05$). Relative to high risk perceivers, young men had significantly decreased odds of low likelihood perception with regards to HIV infection compared to young women. There is 0.5 times less likelihood that males perceived low likelihood of infection than females (Relative Risk Ratio=0.57; $p < 0.1$). This may imply that females may perceive low likelihood of HIV infection compared to the young men, which is at least some risk perception, which may be a catalyst of behavior change assuming the adolescents have comprehensive knowledge of HIV/AIDS.

Further results reveal an association between religion and low likelihood of infection, at 5% significance level. Relative to high risk perceivers, those who had no religion or who belonged to traditional cults were significantly less likely to report that they perceived themselves as having low likelihood of infection than their Moslem counterparts (Relative Risk Ratio=0.16; $P < 0.05$). Belonging to Christian religion increased the odds of perceiving low likelihood of infection; adolescents had significantly higher odds of reporting low likelihood of infection than their Moslem counterparts (Relative Risk Ratio=1.2; $P < 0.05$). This means that those who belonged to a religion had some feeling of not being safe with regards to HIV infection compared to those who had no religion who did not even feel even low risk of infection.

A strong association exists between knowledge of someone who died of HIV and perceived low likelihood of HIV infection. Relative to high risk perceivers, those who did not have knowledge of someone who had died of AIDS were more likely (Relative Risk Ratio=3.3; $p < 0.1$) to report that they perceived low likelihood of infection than those who knew someone who had died of AIDS. This implies that those who knew someone who had died of AIDS

were more likely to perceive higher risk of infection than those who did not know any death due to AIDS. These results confirm other studies which state that having a personal tie to someone with HIV/AIDS could make adolescents more cautious in their own risk and protective behaviours (Munthali *et al.*, 2004). Furthermore, knowing someone who has died with AIDS also increases the perception of personal risk, presumably because it may increase the illusion of not being safe within one's social circle and hence high likelihood perception (Eaton *et al.*, 2003).

Results also indicate that HIV test is not a strong predictor of low risk perception. The results indicate increased the odds of no risk perception among those who had no HIV test (Relative Risk Ratio=1.05; $p < 0.1$) than those who had a test. This implies that those who had an HIV test were more likely to report that they perceived themselves as having some chances of infection; however results should be interpreted with caution since the majority of respondents had not tested for HIV.

Further results indicate that relative to high risk perceivers, there was a strong positive association between age at first sex and low likelihood of infection; the results are significant at 5% level and 1% level. The results indicate that those who had very early sex, in this case below 10 years were significantly less likely to report that they perceived low likelihood of infection than those who had sexual debut after 20 years and later (Relative Risk Ratio=0.2; $p < 0.05$). An increase in the age does not change the direction of the association but weakens it. The results indicate that relative to high risk perceivers, there are 0.4 times decreased odds that those aged 11-15 years would report low likelihood of HIV infection compared to those who had sex after 20 years (OR=0.4; $P < 0.1$). While these results point to the same direction as those who perceived no likelihood at all, a conclusion can be made that those who had early debut (sex before 15 years) felt at no risk or low risk of HIV infection compared to those who had sexual debut at later years.

4.4.3 Correlates of Medium Likelihood Perception

With regards to moderate risk perceivers, the trend is a bit different to the 'no risk' and 'low risk' perceivers where age of respondents and having heard or seen AIDS information are significant predictors in addition to gender, religion, and age at first sex. Religion, age at first sex, having seen or heard of AIDS information, and gender show a strong positive

association to medium risk perception of HIV; results significant at 5% level, while age of respondents shows a weak positive association with results significant at 10% level.

The results indicate that relative to those who perceive high likelihood of infection, youngmen were less likely to perceive medium likelihood of infection (Relative Risk Ratio=0.76; $P<0.05$) compared to young women. This implies that the young men had less moderate feeling of safety against HIV compared to the females who felt unsafe and considered themselves at moderate risk of HIV infection.

Further results indicate decreased odds of not having seen or heard AIDS information with respect to moderate perception among the respondents (Relative Risk Ratio=0.86; $P<0.05$). This implies that compared to high risk perceivers, adolescents who had not heard or seen HIV information were less likely to perceive themselves as having moderate HIV risk infection. This means that those who had seen or heard of AIDS information were more likely to perceive medium likelihood of HIV infection, hence the importance of dissemination of AIDS information.

With regards to religion, relative to high risk perceivers, and compared to Moslems there is less likelihood that adolescents who did not belong to any religion or belonged to traditional cults perceived themselves as having medium risk of contracting HIV (Relative Risk Ratio=0.79; $p<0.05$). Results also indicate lower odds even among Christians (Relative Risk Ratio=0.99; $p<0.05$) compared to the Moslems. Conventional knowledge states that not belonging to a religious group could decrease perception of HIV risk and that belonging to a religious group increases the likelihood of high risk perception. However, these results should be interpreted with caution since there were fewer responses for the medium likelihood category.

Current age is an important factor in predicting HIV risk perceptions, since the more one grows in age the more they know about HIV/AIDS and the more they have acquaintance with people who have died of AIDS. Relative to the high risk perceivers, and compared to those who were aged above 20 years, the results indicate a weak association; lower odds of reporting moderate risk among those who were aged 10-15 years (Relative Risk Ratio=0.8; $p<0.1$). Although the results that those who were aged 16-20 years were more likely to perceive moderate perception were statistically insignificant (Relative Risk Ratio=1.3 $p>0.1$), there is a general indication that the older the person grows the more likely they self-evaluate themselves as having an HIV risk, which is a catalyst for behavior change.

These results imply that relative to high risk perceivers, those who had early sexual debut were less likely to perceive medium risk of infection than those who had early debut.

In summary, the above results indicate that among the low risk perceivers and with regard to high likelihood perceivers, males had higher odds of reporting 'no risk' compared to females, had lower likelihood of reporting low and medium likelihood perception than females. This implies that males may feel safer than females with regards to HIV risk and females may feel at risk and unsafe from contracting HIV. Adolescents who had no religion were less likely to perceive any HIV risk compared to Christians and Moslems who perceived risk, although low. Those who did not have knowledge of someone who had died of AIDS were more likely to report that they perceived low likelihood of infection than those who knew someone who had died of AIDS. Furthermore, those who had not had an HIV test were more likely to perceive low risk of infection and those who had early sex (before 15 years) generally perceived no or low likelihood of infection than those who had later sex at later ages (20-24 years).

Relative to high risk perceivers, there is a general indication among no risk perceivers that males were more likely to perceive no risk at all compared to the females; those who did not know of someone who died of AIDS were more likely to perceive no risk at all, implying that they felt safer from HIV. This could be attributed to their experience of an AIDS death and its impact within their social circles. Those who did not belong to any religious group were more likely to perceive no risk, implying that belonging to a religious group may shape one's thinking towards behavior change whose catalyst could be some fear of contracting HIV, which could be determined by perception of oneself as being at risk. Furthermore, those who had no HIV test at the time of the survey were more likely to perceive no risk of infection, and those who had early sexual debut were more likely to feel safe (no likelihood of infection) compared to those who had sexual debut at 20-24 years.

Among the medium risk perceivers, males were less likely to perceive themselves as being at moderate risk compared to females, those who had not heard or seen AIDS information were less likely to perceive moderate risk compared to those who had information, non-religious adolescents were less likely to perceive moderate risk compared to Moslems.

Furthermore, age of the respondents was also a predictor of moderate risk where those who were aged 10-15 years were less likely to perceive moderate risk compared to those aged 20-24 years. Lastly those who had first sex before 10 years and between 11-15 years

were less likely to perceive moderate risk compared to those who had sexual debut at 20-24 years and older ages.

Much as some literature points out that education levels and residence (province) may influence perception of HIV risk, there is no such evidence in this study since the results are not significant ($p > 0.05$), i.e. province and level of education were not predictors of HIV risk perceptions in this study.

4.5 Model 2: The Association between Worry about HIV/AIDS Infection and its Correlates

This second model examines the relationship between worry about contracting HIV/AIDS and the socio economic characteristics. A multinomial logistic regression was used to analyze the relationship between worry about HIV infection and socio demographic characteristics. The following table presents odds ratios between the association of worry about HIV infection and the socio economic variables among young men and women in Malawi.

Taking the group 'worried a lot as the base outcome', the results were categorized into 2 groups: those who were not worried at all and those who were worried a little. The following section explains the results in details.

Table 4.11: Relative Risk Ratios Showing the Association between Worry about HIV/AIDS Infection and its Correlates.

Worry About HIV infection		Not Worried at All		Worried a little	
Covariate	Category	RRR	P> z 	RRR	P> z
Gender	Female(ref)	1		1	
	Male	0.917	0.698	1.028	0.921
Province	Northern(ref)	1		1	
	Southern	2.544	0.054**	1.79	0.018*
	Central	3.221	0.021*	2.63	0.007*
Level of Education	Primary (ref)	1		1	
	Secondary	0.499	0.99	1.983	0.001*
	Tertiary	0.889	0.44	1.361	0.987
Heard/seen of AIDS info	Yes (ref)	1		1	
	No	0.986	0.951	0.788	0.399
Know Anyone who died of AIDS	Yes (ref)	1		1	
	No	0.076	0.752	0.076	0.752
Religion**	Moslem (ref)	1		1	
	No Religion	0.477	0.041*	1.885	0.049*
	Christian	0.864	0.003*	0.975	0.95
HIV Test**	Yes (ref)	1		1	
	No	2.62	0.094**	0.606	0.143
Age of Respondents	21-24 years (ref)	1		1	
	10-15 years	0.942	0.842	0.73	0.363
	16-20 years	1.285	0.508	0.834	0.689
Age at First Sex*	21-24 years (ref)	1		1	
	Less than 10 years	1.028	0.001*	1.735	0.035*
	11-15 years	1.325	0.013*	0.497	0.004*
	16-20 years	0.243	0.104**	1.591	0.09**

Multinomial logistic regression Number of obs =581
LR chi2(27) = 40.3
Prob > chi2 = 0.0019
Log likelihood = -533.86349
Pseudo R²=0.063

(Worried a lot is the base outcome). **Significant at 10% level *Significant at 5% level

The results indicate that relative to those who were worried a lot, province and age at first sex were strong predictors of not being worried at all, results are significant at 1% level ($p < 0.1$), while religion and HIV test were significant at 5% level ($p < 0.05$).

4.5.1 Correlates of 'Not Worried at All'

Compared to those residing in the Northern region, there are 2.5 times increased odds that those in the Southern region perceived themselves as not being worried about contracting HIV/AIDS (Relative Risk Ratio=2.5; $p<0.05$). Residing in the Central region increased the likelihood of perceiving themselves as not being worried at all (Relative Risk Ratio=3.2; $P<0.05$). This implies that the Southerners were better off in terms of having a sense of worry about contracting HIV, assuming that worry could lead to behavioural change. Controlling for the central or southern region gives the same results and a conclusion can be made that these results do not explicitly inform on whether province is indeed a predictor of worry about HIV, probably because the respondents were evenly distributed throughout the provinces.

Furthermore, the results indicate that relative to those who perceived a lot of worry, there was less likelihood that those who had no religion (Relative Risk Ratio=0.48; $p<0.05$) would perceive themselves as not being worried at all about HIV than their Moslem counterparts. Being Christian strengthens the association (Relative Risk Ratio=0.86; $p>0.05$) and maintains the same direction; less likelihood to perceive no worry at all. Although the association is weak, the implication is that the adolescents were more likely to be somewhat worried about contracting HIV, despite belonging to a religion or not.

A strong association exists between the outcome variable (worry) and age at first sex among young men and women. Relative to those who considered themselves as being worried a lot, those who had first sex before 10 years significantly increased odds of not worrying at all over HIV infection (Relative Risk Ratio=1.02; $p<0.01$), compared to those who had late debut (20-24 years).

Results indicate a similar pattern as age group increases to 11-15 years; 32 percent increased odds (Relative Risk Ratio=1.32; $p<0.01$) of not being worried at all about HIV infection than those who debut at a later stage. These results generally imply that those who had first sex in the early stages in life were more likely not to worry about contracting HIV, hence a conclusion that late debut may set precedence in being worried over HIV/AIDS among adolescents.

Further results indicate that relative to those who perceived lots of worry, young men and women who had had no HIV test were 2.6 times more likely to perceive no worry at all than those who had tested for HIV (Relative Risk Ratio=2.6; $p<0.1$). These results are

significant at 10 percent level. This implies that those who had an HIV test were more likely to perceive some worry about contracting HIV.

In summary, the above results may imply age at which they had first intercourse, an HIV test; province and religion were significant predictors of not being worried at all about contracting HIV. Gender, level of education, exposure to AIDS knowledge and AIDS death and age of respondents were not significant predictors of not being worried at all.

4.5.2 Worried at a Little

The results indicate that province and level of education were strong predictors of little worry, results are significant at 1% level ($p < 0.001$), while age at first sex and religion are significant at 5% level ($p < 0.05$). These results indicate a similar pattern as among those who were not worried at all. Relative to those who considered themselves as being worried a lot, there were 1.8 times increased odds that those from the Southern region would perceive little worry (Relative Risk Ratio=1.8; $p < 0.01$) and that those from the Central region were 2.6 times likely to perceive little worry over contracting HIV (Relative Risk Ratio=2.6; $p < 0.01$). This implies that province is a predictor of worry over HIV and those adolescents were more likely to show some level of worry about contracting HIV.

Education was also a significant predictor of little worry over HIV and there is evidence of increased odds of adolescents who had attained secondary (high) school education to perceive little worry compared to those that had attained primary school education (Relative Risk Ratio=1.98; $p < 0.01$). Those who had attained tertiary education displayed a similar characteristic, though results were not significant. These results imply that those who had higher educational attainment were more likely to perceive some worry over HIV infection than those with lower educational levels.

Results also indicate that those who had no religion were more likely to perceive little worry over HIV (Relative Risk Ratio=1.9; $p < 0.05$) compared to those who were Moslems. Being Christian was not significant although results indicate a reverse trend; less likelihood of perceiving little worry over HIV.

A strong association exists between age at first sex and little worry; those adolescents who had sex before age 10 were more likely to have little worry (some worry) over contracting HIV compared to those who had sexual debut in the 20s (Relative Risk Ratio=1.74; $p<0.01$). Furthermore, relative to those who perceived lots of worry, adolescents who had sexual debut between ages 11-15 years were less likely to perceive some worry over HIV infection (Relative Risk Ratios=0.5; $p<0.05$), while those who had debut between 16-20 years were more likely to perceive some worry (Relative Risk Ratio=1.5; $p<0.05$). These results are very interesting since they show that those aged 11-15 years were less likely to perceive little worry, and those who debuted before 10 years were more likely to perceive some worry about contracting HIV, results which may be contrary to a lot of literature.

Lastly the results indicate that gender, having seen or heard of AIDS information, knowing someone who had died of AIDS, HIV test and age of respondent were not significant and hence not predictors of little worry over HIV/AIDS among the adolescents.

In summary, the results indicate that relative to those who considered themselves as being worried a lot, province could be a strong predictor of worry about contracting HIV. This then implies that place of residence (province) is more likely to influence young people in the way they worry about HIV, i.e. it may play a role in setting precedence on adolescents' thinking about worry over HIV/AIDS. HIV test plays a role in determining worry levels, those who had no HIV test were less likely not to worry about contracting HIV. Furthermore, those without a religion were less likely not to worry about HIV compared to those who had a religion.

With regards to those who perceived little over as compared to those who worried a lot, the results indicate a similar pattern as among those who were not worried at all; compared to those from the Northern region, those from the Southern and Central region perceived little worry. The results further indicate that those who had higher educational attainment were more likely to perceive some worry over HIV infection than those with lower educational levels. Results on age at first sex as a predictor of worry about HIV are quite interesting: they show that those aged 11-15 years were less likely to perceive little worry, and those who debuted before 10 years were more likely to perceive some worry about contracting HIV, results which may be contrary to a lot of literature which states that those who debut early are more likely to perceive little worry.

4.6 Model 3: Association between Condom Use at Last Sex and its Correlates

This third model is a binary logistic regression which examines the relationship between condom use at last sex and the socio economic characteristics. Condom use at last sex was used since this is a more valid measure of condom use in terms of recall of use. Running separate male and female models produced null results, hence results of the pooled sample has been computed. The following table presents results of odds ratios between the association of condom use at last sex and the socio economic variables among young men and women in Malawi.

Table 4.2: Odds Ratios Showing the Association between Condom Use at Last Sex and its Associated Correlates

Dependent/Outcome Variable (Condom Use)	Category	Relative Risk Ratio (RRR)	P> z
<i>Socio Demographic Characteristics</i>			
Province	provnort(Northern) (ref)	1	na
	provsout(Southern)	1.08	0.895
	provcent (Central)	0.988	0.981
Education	(primarysc) (primary-ref)	1(ref)	na
	educsesco (secondary)	1.498	0.07**
Religious affiliation	moslem (ref)	1	na
	noreligi (No religion)	0.277	0.17
	christia(Christians)	0.36	0.03*
Respondent age	age 21-24 years	1(ref)	na
	age 10-15 years	0.924	0.88
	age 16_20 years	0.695	0.385
Age at first sex	never had sex (ref)	1	na
	agefirst(<10 years)	0.662	0.161
	agefirst(<11-15 years)	0.96	0.074**
	agefirst(16-20 years)	1.109	0.021*
	agefirst (21-24 years)	0	0.001*
<i>Knowledge of AIDS Information</i>			
Seen/heard AIDS info	Heard or seen AIDS info (No)	1(ref)	na
	HeardseenA~o (yes)	1.278	0.042*
Know anyone died of died	Know AIDS death (No)	1(ref)	na
	KnowAIDSde~h (Yes)	1.075	0.861
HIV Test	HIV Test (No)	1(ref)	na
	HadHIVtest (Yes)	1.036	0.935
<i>Perception of Risk</i>			

Worry Over HIV	worriedl(Worried a lot)	1(ref)	Na
	notworri(Not worried at all)	1.186	0.072**
	worried(Worried a little)	0.907	0.84
Likelihood of Infection	highlikeli(High likelihood)	1(ref)	Na
	nolikeli(No likelihood at all)	4.664	0.055**
	lowlikel(Low likelihood)	2.22	0.293
	mediumli(Medium likelihood)	2.259	0.365
Number of obs = 255 LR chi2(19) = 32.67			
Prob > chi2 = 0.0262 Log likelihood = -132.54358			
Pseudo R2 = 0.1097			

**Significant at 10% level

*Significant at 5% level

Binary logistic regression was used to examine the relationship between condom use and perception of HIV risk while controlling for other factors that are likely to influence sexual behavior. This was done by starting with a model that includes socio demographic variables as the only explanatory variable and then perception of risk and knowledge of AIDS factors were added in a stepwise approach and their effect was observed. Separate models for males and females did not yield significant results and combining both males and females improved the explanatory power.

The results indicate that relative to those who had used condoms at last sex, there were 4 variables that were strongly associated to condom use and significant at 5% level. These are worry over HIV, perceived likelihood of being infected, age at first sex, knowing someone who died of AIDS, and religious affiliation while educational attainment showed a weak association (results significant at 10% level). Gender and tertiary education variables were dropped from the model due to collinearity of variables in the models.

Results also indicate that compared to those who reported no condom use at last sex, there was 50 percent increased odds of condom use among those who had secondary school education (Odds Ratios=1.5; $p < 0.1$) compared to those who had some primary school education. This implies that those who had less educational levels (below secondary school) were less likely to use condoms at last sex, which is what most research has found out.

Religion is also a predictor of condom use. Relative to those who reported condom use, adolescents who belonged to Christian religion were more likely to use condoms at last sex compared to Moslems. Having no religion was not significant both at 5% and 10% levels. These results imply that belonging to Christian religious group increased the likelihood

of condom use, and these results may be linked to worry over HIV which shows that those who had no religion were more likely to perceive no likelihood of infection at all, a fatalistic perception given the high prevalence of HIV.

Adolescents who perceived 'no likelihood of infection' were less likely to have used condoms at last sex compared to those who perceived high likelihood of infection. This is evident from the decreased odds of condom use at last sex among those who perceived no likelihood of HIV infection (Odds Ratios=0.83; $p<0.05$).

Further results indicate a strong positive association between reported age at first sex and condom use at last sex; results are significant at 5% level. The results indicate that relative to those who reported condom use at last sex, adolescents who reported early sexual debut (before 11-15 years) had lower odds of condom use at last sex than those who had never had sex (Odds Ratios=0.66; $P<0.05$). An increase in the age at first sex increases the relative strength of the association (Odds Ratios=0.9; $p<0.5$), where those aged between 16-20 years displayed a higher likelihood of condom use at last sex. Those who reported that they had sex at a later stage (20-24 years) in their lives were more likely to use condoms at last sex compared to those who had never had sex (Relative Risk Ratio=1.1; $p<0.05$). These results imply that relative to those who used condoms at last sex, adolescents who had sexual debut before 15 years were less likely to have used a condom at last sex compared to those who had never had sex or who had sex at 20-24 years.

Knowing someone who died of AIDS has been found to be a significant predictor of condom use. Results indicate that adolescents who knew someone who had died of HIV/AIDS were more likely to have used a condom at their last sexual encounter (Odds Ratios=1.2; $p<0.05$) compared to those who had not experienced an AIDS death.

Worry about HIV may shape adolescents' sexual and protective behaviour. The results indicate a weak association between worry and condom use among the respondents. There were 1.1 times as much likelihood of condom use at last sex among those who reported no worry about HIV compared to those who were worried a lot (Odds Ratios=1.1; $p<0.1$). This implies that those who were not worried about HIV infection were most likely not to use a condom at last sex than those who were worried a lot.

Place of residence, likelihood of future infection, likelihood of future partner infection, age and hearing about AIDS information were not significant at either 5 % level ($p\text{-value}>0.05$)

as well as at 10% level ($p\text{-value} > 0.1$). This implies that these sociodemographic covariates have nothing to do with condom use among adolescents in the future.

CHAPTER 5

DISCUSSION

5.1 Correlates of Risk Perceptions and Protective Strategies

This dissertation set out to examine the association between socio demographic characteristics and self-perceived risk of HIV infection and condom use among youngwomen and men in rural Malawi. The results generally indicate some associations betweenage at first sex which is the variable of interest, and self-perceived risk. Other significantpredictors of risk perception and worry are religion, gender, knowledge of someone who died of AIDS, education and religion. The study assumed that background factors atnational, community and individual levels operate through a range of intermediate sociodemographic and psychosocial factors (AIDS information) to influence perception of HIVrisk and condom use. The Social Cognitive Model employed in this study states that among the crucial personal factors are the individual's capabilities to symbolize behavior, to anticipate the outcomes of behavior, to learn by observing others, to have confidence in performing a behavior (including overcoming the problems in performing the behavior), to self-determine or self-regulate behavior, and to reflect on and analyze experience (Bandura, 1997). The results could be related to this model in order to come up with informed decisions about adolescent's sexual behavior with regards to HIV prevention strategies and intervention programmes.

Because reports of sexual behaviour are unreliable, this study measured behaviouralcharacteristics indirectly by analyzing the association between perceived risks includingworry over HIV infection and protective strategies measured by socio demographiccharacteristics including age at first sex as a variable of interest. It is important to understand this relationship because for adolescents to take appropriate measures to protectthemselves against HIV/AIDS, they need to have a correct perception of their risk andcorrect information on protective strategies. The results of this study are important becausefor adolescents to take appropriate measures to protect themselves against HIV/AIDS, theyneed to have a high perception of their risk. Consistent with previous research, this studyfound that a majority of the youth in the study perceived themselves as being at little or norisk of HIV infection. Although perceived risk may not be the same with

the actual risk, and assuming risk assessment is a prerequisite for behavior change, then the results are worrisome. The following section will discuss the results, starting with the outcome variables and later on the predictors.

Condom use: Condom use is one of the few interventions known to be effective in reducing the risk of HIV infection. Educational levels, worry about HIV, age at first sex and likelihood of infection emerged significant predictors of condom use among the adolescents. Firstly, males were much less likely than females to report use of condoms at last sex. Secondly, those who had higher school educational attainment and those who indicated some worry over contracting HIV were more likely to use condoms. Lastly those who perceived themselves at no risk of infection and those who had early sexual debut (before age 15 years) were less likely to have used condoms at last sex. While condom use at last sex may be a more valid measure of condom use in terms of recall of use, it does not capture the consistency of use, an essential element of condom effectiveness (Pettifor *et al.*, 2004). With regards to other protection measures from HIV, descriptive statistics indicate that females were much more likely than males to feel that abstinence protects one from HIV and were less likely than men to feel that traditional medicine could protect from HIV.

Worry over HIV: Province, religion, level of education, and age at first sex were strong significant predictors ($p < 0.05$) of worry levels among adolescents, while HIV test was a weak predictor ($p < 0.1$). There are decreased odds of Christians and those with no religion in not worrying at all, implying they too were worried over contracting HIV compared to Moslems. In this regard it is difficult to conclude whether religious affiliation does set precedence to adolescents thinking with regards to worry. Those with higher school education attainment were less likely to perceive no worry over HIV, probably because they were exposed to information and were cautious as not to be indulged in risky behaviour and probably felt unsafe. An interesting result is that those who had early sexual debut (less than 15 years) were more likely to worry a little and less likely not to worry at all about contracting HIV, implying that they too had some sense of insecurity about contracting HIV. Consistent with literature that those who debut early are less likely to worry about contracting HIV, these results also show that they were equally worried as those who had late debut. One may have early sexual intercourse and stop, and lead the rest of their lives in a non-risky behavior way, while some individuals may have late sexual debut and not stop in so doing exposing themselves to HIV/AIDS. Descriptive statistics indicate that 42.2 percent of the respondents were not worried at all, and males (41 percent) were slightly less

likely to be worried compared to females (43.5 percent). Literature states that whereas men are more accurate in assessing their likelihood of infection and display less uncertainty in assessing their HIV status, women who are worried about AIDS infection are significantly more likely to be infected than women who worry less (Anglewicz, 2004).

Perceived Likelihood of Infection: Gender, religion and age at first sex were the most significant predictors of likelihood of infection ($p < 0.05$), while AIDS information, knowledge of someone who had died of AIDS, and HIV test were weaker predictors ($p < 0.1$). The results indicate that males were less likely to perceive some likelihood of infection as compared to the females; which implies that they were more likely to perceive no likelihood of infection. This could be attributed to their higher condom use than the females, but the question of consistent condom use lowers their safety levels. Those who knew someone who had died of AIDS were less likely to perceive no likelihood or low likelihood of infection, implying that knowledge gave them a sense of insecurity with regards to infection. Furthermore, those who did not belong to any religion were less likely to perceive themselves as being at low or medium risk, but were more likely to perceive themselves at no risk compared to Christians and Moslems. Age at first sex was a strong predictor of HIV risk perceptions; those adolescents who had early debut (before 15 years) were more likely to perceive low or no likelihood of infection, compared to those who debuted late (above 20 years). A positive attitude among those who had early sex was the tendency to worry about HIV/AIDS, as explained earlier in the text. Lastly, those who had no HIV test were more likely to perceive no risk of infection, although they were less likely not to be worried at all, as explained earlier in the text.

The results in this study indicate the same significant predictors across the three outcome variables, and in order to avoid repetition, the following section will discuss the correlates. Significant results are shown for the following correlates of risk perceptions, worry and condom use.

Gender: Gender plays a role in shaping adolescents thinking with regards to likelihood of infection and results indicate that males were less likely to perceive low or medium likelihood of infection. Instead they were more likely to perceive no likelihood of infection. Males were also more likely to use condoms at last sex compared to females, a result which should be interpreted with caution since condom use may be over reported by

males who may want to give the impression of being cautious. Gender in this study is a significant predictor of worry over HIV.

Age at First Sex: The results generally show that age at first sex is a significant factor with regards to adolescents' perceptions towards HIV as well as condom use, i.e. age at first sex is an important predictor of both HIV risk perceptions and protective strategies. The strong associations indicated in the three models indicate that adolescents who had early debut were less likely to perceive themselves as having high risk of HIV infection, were less worried about contracting HIV and were less likely to have used condoms at their last sexual encounter compared to those who had sex at 20-24 years. In this study, those who had their first sexual intercourse before the age of 15 years had more than 50% lower odds of reporting no risk or low risk of infection compared to those who had first sex at 15 years or older age. These results confirm other research findings done elsewhere. Literature indicates that young people's sexual behaviour suggest that the younger the age at which first intercourse occurs, the greater the frequency of sexual intercourse and there is increased likelihood that it will be unprotected and resulting in a higher risk of pregnancy and HIV infection (L'Engle *et al.*, 2006; Koenig *et al.*, 2004; Smith and Watkins, 2005).

Educational Attainment: There is evidence that education may be a predictor of worry about contracting HIV and not of HIV risk perceptions. Those who had a higher educational attainment were more likely to worry about HIV and use condoms at last sex compared to those who had primary school education attainment. Although there is a thin line between worry and risk perception, these results were not significant for risk perception, hence this dissertation makes a conclusion that education may play a role in setting precedence over worry and condom use among the adolescents.

Knowledge of someone who died of AIDS: Knowing someone who died of AIDS is a predictor of risk perception (low likelihood) and not of condom use and worry. The results indicate that generally, those who knew of someone who died of AIDS were more likely to worry about contracting HIV and felt at risk of infection. This could imply that they would be more cautious in their behavior than those who did not know of someone who died of AIDS. At the time of the survey there was still the tendency of not revealing that someone had died of AIDS even if there was clinical evidence, for fear of stigma. Most HIV related deaths were

sometimes attributed to witchcraft and hence even if mortality was on the rise in the study areas they would not be attributed to AIDS.

Hearing and seeing AIDS information: This variable was not a strong predictor of worry and condom use except for moderate likelihood of infection; adolescents who had not heard or seen AIDS information were less likely to perceive themselves at moderate risk. This means that those who had seen or heard of AIDS information were more likely to perceive some likelihood of infection, hence the importance of dissemination of AIDS information. Hearing or seeing AIDS information is not a predictor of condom use and worry over HIV. These results are worrisome, since there was over 70% knowledge levels of HIV information among the adolescents, yet this information seem not to influence their thinking with regards to protective behavior and worry levels. The insignificance of AIDS information as a predictor of both worry and condom confirms the conclusions by other researchers that the source of knowledge is not a very good predictor of behaviour and perception of risk (Prohaska *et al.*, 1990, cited in Akwara *et al.*, 2003).

Religion: Religion plays an important role in shaping peoples' sexual behaviour, the conventional wisdom among most Malawians was that those who are more religious indulge less or not at all in infidelity and are at less risk to HIV/AIDS infection, although this paper does not have evidence for this. Some researchers found out that church attendance was an important determinant of delayed sexual activity, but only when a child's friends attended the same church (Mott *et al.*, 1996). The multivariate results indicate that religion is a predictor of risk perceptions, worry and condom use. Adolescents who did not belong to any religion were less likely to perceive themselves at risk and were less likely to worry about HIV. These feelings of safety among those who had no religion may be fatalistic in the era of high HIV prevalence rates. Religious people may not necessarily be immune to risky sexual behaviour and may also indulge in religious activities just to cover up their past, for instance if they want to get married. Some researchers argue that that church attendance may elevate the odds of having first sex among adolescents, perhaps because the church setting provides an opportunity for these males to meet potential partners (Haas and Forste, 2002). In some communities people who have been known to be promiscuous have turned religious and got married to someone who thought that their likelihood of infection was low. The distribution of respondents by religion in Malawi indicates that more than half of all respondents are Christians (86 percent of women and 84 percent of men), while 13 percent of women and 12 percent of men are Muslims. Less than 1

percent of women and 3 percent of men reported no religious affiliation (MDGS 2010). Age of respondent: Age of respondents was significant among moderate risk perceivers, and the younger the age the less likely they were to perceive being at risk of infection and the older they were, the more prone they felt of being infected. There is a general indication that the older the person grows the more likely they self-evaluate themselves as having an HIV risk, which is a catalyst for behavior change. This may be so due to the fact that as one grows they are gradually exposed to information on AIDS, are exposed to AIDS deaths knowledge, and may feel the negative impact of HIV if a close relative died of AIDS. This factor was not a predictor of worry and condom use, which means that the age of the adolescents had nothing to do with their levels of worry over HIV and use of condoms at last sex.

HIV test: HIV test was a predictor of worry and likelihood of infection and of condom use. Those adolescents who had not had an HIV test were less likely to perceive some likelihood of infection and were less likely to worry about contracting HIV and use a condom at last sex. However, taking into consideration that over 80 percent of the respondents were not tested in the sample, reported high condom use at last sex, the results should be interpreted with caution. HIV testing in Malawi was not popular at the time of the survey and although one's HIV status could be a catalyst for behavioural change, this predictor may not be a good measure for determining risk perceptions and protective strategies among adolescents in this study.

CHAPTER 6

CONCLUSION

6.1 Conclusions and Recommendations

Age at first sex is an important indicator of exposure to risk of pregnancy and sexually transmitted infections during adolescence (Zaba *et al.*, 2004). Studies have shown that the risk of HIV infection is low among women who begin sexual activity later (Mc Grath *et al.*, 2009), and that school attendance was significantly associated with later age at first sex. The Measure DHS (2009) report states that age at sexual debut in Africa remains low, with considerable proportions of men and women having first sex before age 15 and that in recent years, the median age at first sex has remained generally unchanged (Sneeringer and Stacy 2009). Analysis of survey data on HIV prevalence in eight countries shows that young women 15–24 years old that had their sexual debut when they were younger than 15 years old are more likely to be HIV-positive. Some researchers argue that the association between perception of risk of HIV infection and sexual behaviour remains poorly understood, although perception of risk is considered to be the first stage towards behavioural change from risk-taking to safer behavior (Akwara *et al.*, 2003). This may be true, but it should also be noted that most adolescents are not mature enough to view HIV as a risk when they engage in their first sexual encounter and the earlier the youths engage in sexual intercourse the higher the risk of being infected with HIV. While a number of studies in sub-Saharan Africa have documented the relationships between age at first sex and HIV risk perceptions, this study also adds to such literature. This study has endeavoured to explore socio demographic characteristics and their effects on HIV risk perceptions, worry about contracting HIV and condom use. The overall results in this study indicate that the odds of sexual debut are significantly related to HIV risk perception and protection strategies among young people in Malawi, i.e. age at first sex is among one of the crucial factors in shaping adolescent's future perceptions about HIV and the way they would protect themselves from contracting HIV. Other strong predictors that proved significant and crucial in setting precedence in adolescents' thinking about HIV risk perceptions worry and condom use were marital status, religion, knowledge of someone who died of AIDS, and gender. Educational attainment, having access to AIDS knowledge were weak predictors of HIV risk perception, worry and condom use at last sex.

These results should however not be conclusive in the absence of the limitations to the study. Focusing on the correlate of interest, this study concludes that age at first sex does set precedence in adolescents thinking about HIV risk perceptions and condom use. These results confirm results from other studies conducted elsewhere which indicate that young people who debut early are more likely to be exposed to risky behaviour and are unlikely to use condoms, less worried about contracting HIV and perceived themselves as having low risk of HIV infection. This means that those young people who have sex at a later stage may be more cautious in their sexual behaviour in the future years than those who debut later. However, this might not be true assuming that those who debut early may have had coercive sex, and might have experienced the negative aspect of it than the pleasurable aspect, making them to be more careful and not repeat, or being selective in choosing a partner in future.

Further results reveal that being worried over HIV, likelihood of being infected, and worry about contracting HIV, age at first sex, and educational attainment were significant predictors of condom use at last sex. The study concludes that those adolescents who perceived low risk of infection, had early sexual debut and had higher school educational attainment were more likely not to use a condom at last sex.

Focusing on the correlate of interest-age at first sex, the results indicate that early sexual debut leads to risky sexual behaviour probably due to the fact that the young people are less worried and have a certain sense of safety against HIV and a perception of low risk of contracting HIV. Such young people are less likely to use a condom especially for the first time, or may use them inconsistently when they engage in frequent sex. It is worth noting that individuals may perceive their risk of getting AIDS to be high or low depending on their previous sexual behaviour or that of their partners. In this case, risky sexual behavior is the influencing factor on perception of risk. In some cases, a person's perception of risk may be passive, and not necessarily based on his or her previous sexual behavior (Akwar et al., 2003). Descriptive statistics show that young people generally think that it is not acceptable to use condoms with a spouse, think that there are no chances of contracting HIV/AIDS by having sex once. The perception of HIV/AIDS as being a distant disease, coupled with the problem of drugs and alcohol abuse is perpetuating the risky behavior among the young people. These perceptions are fatalistic in this era of HIV/AIDS where most Governments and donors are allocating resources in the fight against AIDS, hence need to change the mindset and sexual behaviour

of such adolescents. Results of such studies could be useful in designing programme specific intervention goals.

It is worth mentioning that some of the observed associations may be attributable to unmeasured factors (e.g., family structure or economic status) that could play a role in shaping their risk perceptions and protective strategies. Moreover, the cross-sectional nature of the data makes it impossible to establish causality in the observed relationships between the outcome variable and its correlates (demographic characteristics). This study recognizes the problems of using self-reports of sexual behaviour as dependent variables, and that it is highly likely that the proportions reported from the survey data may be distorted, which in turn could affect the results. Researchers argue that feelings of personal vulnerability are very subjective and vary by context and time (Idele, 2002 cited in Akwara *et al.*, 2003). Thus, sexual behaviour is more likely to be based upon subjective perceptions of risk rather than actual risk. Furthermore, some researchers also argue that some socio cultural contexts can influence people's perceptions through internalization of specific sexual beliefs, norms and practices and may not necessarily lead to increased perception of HIV risk if these practices are deemed to be necessary for social support (Akwara *et al.*, 2003).

6.2 Recommendations and Policy Implication

Young people in Sub Saharan Africa are at high risk of HIV infection. Because first sexual experiences may influence a young person's HIV risk, a better understanding of coital debut is needed. Early coital debut is associated with factors that may increase a young person's risk for HIV infection, such as forced sex and having sex with older partners. Previous research in Kenya and elsewhere (Bauni & Jarabi, 2000; Nzioka, 1996; Ingham, Woodcock & Stenner, 1992 cited in Akwara, *et al.*, 2003) suggests that individuals, particularly young people, often feel invulnerable to HIV infection. AIDS may be seen as a distant rather than an immediate threat: a disease that affects other people (Akwara, *et al.*, 2003).

The AIDS epidemic is complex, and successful efforts to limit transmission must rely on a combination of medical, social and behavioral approaches. Several studies have made it clear that young people should be at the center of strategies to control HIV infection. The population-based data from this survey provide information that can enable program officials to add value to the design of youth specific intervention programmes in the fight against AIDS. Malawi is one of the countries affected by HIV/AIDS in sub Saharan Africa, coupled with negative reproductive health indicators (MDHS 2010). There is conventional knowledge among the population that among other socio demographic characteristics of adolescents early age at first sex is associated with risky sexual behaviour in later years, which is what this study has endeavoured to scientifically prove. The results provided in this study can be used as a source of strategic information on HIV-related indicators such as risk perceptions and condom use practice, which in turn can assist program managers and policymakers in devising tailored and effective responses to the HIV/AIDS epidemic in sub-Saharan Africa. Furthermore, a clear understanding of adolescent sexual relations is necessary to shape and fine-tune prevention interventions (UNICEF, UNAIDS, WHO and UNFPA, 2009).

The Malawi HIV Prevalence Report (2008) attributes younger age at sexual debut to have contributed to a higher HIV prevalence in the southern region (Blantyre) compared to the central region. Such conclusive remarks over the difference in HIV prevalence

between Blantyre City and Lilongwe City may not be valid in the absence of a study like this one since the report results were merely based on the median age at first sex.

Research findings indicate that for adolescents, engaging in sexual activity may be integral to the dating and courtship process preceding marriage where sexual intercourse itself may be viewed as a signal of greater intimacy, trust, and commitment (Clark, Poulin and Kohler, 2009). Findings in this study that early sexual debut does have an influence in adolescents' thinking with regards to HIV risks as assumed in the hypothesis, may be useful in the design of youth intervention programmes. Instead of directing financial resources towards programmes on IEC (Information, Education and Communication) programmes and lifeskills/orientation in schools where the young people learn about sex related issues, and how they can protect themselves from HIV or pregnancy, the government should emphasize programmes that advocate increasing age at sexual debut, among the young people. Intervention efforts should encourage youth to delay coital debut and promote strategies to make young people's first sexual experience safer. Miangotar Yodé (2004) argues that delaying the entry into sexuality could be safer and more secure to protect the sexual and reproductive health in adolescence. Given the risks associated with early debut, prevention campaigns should continue to encourage youth to delay the onset of first sex and aim to address contextual and structural factors that can help make this first experience safer for young people (Pettifor, *et al.*, 2009). However it is not effective to deal with intervention programmes that deal with sexual debut only, this study recommends holistic approaches in dealing with HIV/AIDS among young men and women whereby gender issues, drug abuse and alcohol are integrated in the models with an emphasis on delaying sexual activity..

The results that there is low condom use among adolescents should be of great concern to the government. HIV prevalence rate among adolescents is high, especially among the 20-24 year olds, young girls continue to have sex with older partners in exchange for gifts and money, and teenage pregnancy continues to be on the rise. It is not easy for the government to stop adolescents in having sex, as studies show that 'once teenagers start having sex they do not stop (Akwaru *et al.*, 2003). Descriptive results in this study indicate that more young women reported having had sexual intercourse than men, and among those who reported being sexually experience, younger men indicated that they had had sex in the past 12 months compared to women. It is however possible to advocate for consistent condom use among adolescents especially girls, which is being done through life skills in schools and

youth programmes through various media channels. While continuing education on the benefits of condom use in reducing risk of HIV, there is need to address cultural and religious factors and sensitivities surrounding condoms and young people in Malawi. A further recommendation is that local barriers to condom availability and use by both young men and women need to be removed, e.g. condoms are mostly available in shops, spazas or tuckshops and social places such as bars and hotels. It is not easy for young people to buy condoms at such places, introducing them widely in schools could be a solution. Recent studies state that among young women who have had sexual intercourse, fewer than half say they could get a condom by themselves (UNAIDS, WHO, UNICEF, UNFPA, 2009). For all this to be effective there is need for political will, i.e. a strong leadership by governments is essential to making this happen, countries should put an effort to support the provision of 'youth-friendly' reproductive health information, education and services rather than largely depend on external donors.

Further recommendation on the MDICP longitudinal study is that the question on 'age at first sex' should be maintained in the next waves so that in future a causal relationship can be established through longitudinal analysis, which this study has not been able to accomplish, due to lack of data on the variable 'age at first sex' in most of the waves. This study also recommends that there should be a follow up analysis (for instance the Malawi Demographic and Health Survey for the years 2000, 2004 and 2010) to determine if age at first sex does influence HIV risk perceptions or sexual behaviours among young men and women, where a causal effect would be established.

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