Knowledge-behavior gap in condom use to prevent HIV infection: A case study of Ethiopian urban youth

A THESIS
SUBMITTED TO THE FACULTY OF THE GRADUATE SCHOOL
OF THE UNIVERSITY OF MINNESOTA
BY

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IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
MASTER OF ARTS

Marco Yzer, Advisor

June 2011

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Acknowledgements

Thank you to all that supported me in a myriad of ways to make sure that I finished this thesis! Every ounce of your support in all the forms it took meant a great deal to me and helped me so much!

I would like extend special thanks to my advisor, Professor Marco Yzer, for his support, advice, and belief in me when my thesis completion self-efficacy was low.

Special thank you also to Elias, my fiancé, I don't what to say other than **አግዜር ይስጥልኝ**! Thank you for your unwavering belief in me and all your support that helped me to complete my thesis!

Dedication

Ceci est dédié aux petits qui ont souffert.
&
Á mes parents Aster et Shoakena.
Mon père qui a toujours cru en moi et qui serait très fier de moi et de mon travail. Merci pour tout ce tu m'as appris, et même si tu n'es plus à mes côtés, je continue à apprendre de toi.
~Ta fille

Abstract

Why are there low levels of condom use in a population that lives in an area with high HIV prevalence and that has knowledge about protective nature of condoms? This incongruity between knowledge of the effectiveness of condoms as a measure to protect from HIV infection and lack of condom use is the issue examined in this thesis. Specifically, a study of Ethiopian youth suggests that the gap between knowledge, attitude, and practice (KAP-gap) is present because knowledge of the benefits of a behavior is necessary but not sufficient to elicit behavioral intent. This thesis proposes that condom use self-efficacy is needed to translate knowledge into behavioral intent. A multi-method approach was used by first reviewing published research to determine levels of condom use self-efficacy among Ethiopian youth. Next, a qualitative analysis of 162 Ethiopian print health communication materials was conducted to determine presence of condom use self-efficacy in extant media material.

This study found low self-efficacy to be an explanation for the condom use knowledge-behavior gap among urban Ethiopian youth. In addition, health messages available to urban youth in Ethiopia incorporated few self-efficacy messages. The study confirmed that knowledge is not enough to move people to behavior change. For health messages to be effective in increasing condom use behavior among this population, the salient predictors of condom use behavior identified using behavioral theory along with messages that increase condom use self-efficacy need to be incorporated into educational interventions.

Table of Contents

LIST OF TABLES ..... **VI**

LIST OF FIGURES ..... **VII**

CHAPTER 1: INTRODUCTION **1**

1.1 PROBLEM STATEMENT 1
1.2 ETHIOPIA: A CASE STUDY 2
1.3 THEORETICAL IMPLICATIONS 3
1.4 POLICY IMPLICATIONS 3
1.5 OBJECTIVES 4

CHAPTER 2: BACKGROUND **5**

2.1 EPIDEMIOLOGY OF HIV IN ETHIOPIA 5
2.2 SOCIAL CONTEXT OF HIV/AIDS IN ETHIOPIA 14
2.3 HIV CONTROL AND EDUCATION INITIATIVES 18
2.4 URBAN YOUTH AND EFFECTIVENESS OF CONDOM PROMOTION 20
2.5 KNOWLEDGE-ATTITUDE-PRACTICE (KAP) GAP 22
2.6 KAP-GAP IN CONDOM USE AMONG YOUTH 24

CHAPTER 3: LITERATURE REVIEW, THEORETICAL FRAMEWORK, AND HYPOTHESIS **27**

3.1 BEHAVIORAL THEORY LITERATURE REVIEW 27
Social Cognitive Theory *28*
Self-efficacy *30*
Theory of Planned Behavior *35*
AIDS Risk Reduction Model *39*
Information Motivation Behavior *41*
Protection Motivation Theory/Extended Parallel Process Model *42*
3.2 THEORETICAL FRAMEWORK 45
3.3 HYPOTHESES 47

CHAPTER 4: METHODOLOGY **48**

4.1 ANALYTICAL STRATEGY 48
4.2 RESEARCH DESIGN 51
4.3 QUANTITATIVE RESEARCH REVIEW 52
Methodology *52*
Results *54*
Discussion *59*
4.5 QUALITATIVE ANALYSIS 61
Methods *61*
Results *64*
Discussion *78*

CHAPTER 5: GENERAL DISCUSSION **81**

5.1 COMPILED DISCUSSION 81
5.2 LIMITATIONS AND FUTURE RESEARCH 85
5.3 CONCLUSION 86

REFERENCES **87**

APPENDICES **100**

APPENDIX A: ETHIOPIA COUNTRY DEVELOPMENT INDICATORS 100
APPENDIX B: TOP TEN CAUSES OF DEATH, ALL AGES ETHIOPIA , 2002 101

APPENDIX C: QUANTITATIVE RESEARCH REVIEW DATABASE ARTICLE SEARCH....102
APPENDIX D: QUALITATIVE ANALYSIS CODEBOOK....104
APPENDIX E: QUALITATIVE ANALYSIS IMAGES....107

List of Tables

Table 1: Summary KAP-gap among HIV risk groups (FHAPCO, 2007a). 11
Table 2: The urban-national HIV differential (FHAPCO, 2007b). 13
Table 3: Condom use KAP-gap 25
Table 4: Article inclusion/exclusion criteria 53
Table 5: Quantitative research review summary of articles. 55
Table 6: Topics of health messages by age and gender 65
Table 7: Health message medium by age and gender 66

List of Figures

Figure 1: Estimated HIV Prevalence (FHAPCO 2006). 6
Figure 2: Sequence of database search for quantitative research review articles. 52
Figure 3: Condom use self-efficacy frame 67
Figure 4: Health messages using condom use and condom use self-efficacy frames 68
Figure 5: Message example: Self-efficacy and response efficacy. 68
Figure 6: Mode of HIV transmission frames. 70
Figure 7: Examples of posters that used the HIV transmission frame. 70
Figure 8: HIV prevention frames. 71
Figure 9: Examples of health messages that used the HIV prevention frame 72
Figure 10: Social issue frames 72
Figure 11: Examples of health messages that used the social issues frame. 73
Figure 12: Consequence or severity of HIV frame 74
Figure 13: Examples of posters addressing the severity of AIDS 74
Figure 14: Unspecified content, Example 1. 76
Figure 15: Unspecified content, Example 2. 77

Chapter 1: Introduction

1.1 Problem statement

"…I think, I reach a conclusion, I turn the conclusion into a decision, and then I discover that acting on the decision is something else entirely, and that doing so may proceed from the decision, but then again it may not…I don't mean to say that thinking and reaching decisions have no influence on behavior. But behavior does not merely enact whatever has already been thought through and decided. It has its own sources, and is my behavior, quite independently, just as my thought are my thoughts, and my decisions my decisions" (Schlink, 1997, p.20).

This fictional character's analysis of his thought and decision making process illustrates the complexity of human behavior and the decision process. Our behaviors in a variety of contexts demonstrate a discrepancy between our knowledge, intentions, and actions. In other words, we know we should perform a behavior but we have weak intention to perform the recommended behavior and we often fail to clear the final hurdle and perform the behavior. Researchers have observed and studied this phenomenon in a range of behaviors including smoking cessation, seat belt usage, exercising (Sniehotta, Scholz, & Schwarzer, 2005), recycling/pro-environmental (Kollmuss & Agyeman, 2002), and job seeking behaviors. HIV preventative behaviors such as condom use are not an exception and the same gap is observed between knowledge and behavioral intent (Fishbein, Hennessy, Yzer, & Douglas, 2003).

Health messages are often designed and implemented with the expectation that providing the information about a particular health issue is sufficient to get behavior change. This expectation is no different to early models of communication such as the hypodermic needle approach where media was thought to have a direct effect on the consumer of information. Health communications interventions often do not take into

account the complexity of human behavior or decision making. In addition, they often do not define the target behavior or identify the target population (Fishbein et al., 2003)

1.2 Ethiopia: a case study

The HIV epidemic has had a devastating impact on many sub-Saharan African countries and Ethiopia is not an exception. HIV is the leading cause of morbidity and mortality in Ethiopia. (Hladik, Shabbir, Jelaludin, Woldu, Tsehaynesh, & Tadesse, 2006). HIV has had an extreme impact in the social make-up and the economic development of the country. There have been constant and varied efforts to reduce the prevalence of HIV; including infrastructural (e.g. expanding testing sites and medical capacity) and educational. The main method used to provide health education material to the population has been interventions through the mass media. However, behavior change that corresponds to the interventions has not been observed (Cherie, Mitkie, Ismail, & Berhane, 2005).

During a 2006 trip to Addis Ababa, Ethiopia I observed an abundance of HIV educational messages on billboards, posters, magazines, television and radio advertisements and integrated into TV programming such as game show questions. Even the backs of car license tab stickers placed in car windshields had HIV messaging that was viewable to those in the vehicle. During several discussions, people expressed that they felt Addis Ababa was saturated with HIV messages and they felt overwhelmed with HIV messaging from different media sources to the point of some ignoring the messages as background noise.

1.3 Theoretical implications

Behavioral theories explain the workings of decision making process of individuals. These theories provide explanatory and predictive power as to the health behavior decisions individuals make. These theories can and are often used as blueprints in designing and implementing interventions that have as goals to change a particular health behavior. Health interventions based on behavioral theories are a difficult undertaking and the more complex the health behavior being addressed is the harder it is for a communication intervention to accomplish its given behavior change goal. This is because a complex health behavior results from the interaction of several variables on an individual and social level. Despite this complexity, interventions designs based on behavioral theory will be more effective since the determinants of the behavior are better understood.

1.4 Policy Implications

Studying the determinants of HIV preventative behaviors enables the development policy that is guided by theory and research. This formative research should be the basis from which health messages are developed. Health messages and interventions developed in this way can be evaluated to determine if they are reaching the target audience in the manner planned and if any elements need to be changed, maintained, or expanded. Such interventions have a higher likelihood to be more effective as they are salient to the target audience, increasing the chance for behavior change and hence meeting policy goals of protecting and improving individual and population health.

1.5 Objectives

This thesis will look in behavioral theory for explanations of why there is a gap between knowledge and condom use behavior to prevent HIV infection. It will also examine why communications interventions have not been more effective in achieving behavioral change and how behavior theory can be incorporated into messages to make them more effective among urban youth in Ethiopia.

Chapter 2: Background

This chapter will first provide an overview of the epidemiology of HIV in Ethiopia. I will look at who is at highest risk for HIV infection, geographic spread of HIV, and primary modes of HIV transmission. This will be followed by an overview of the social context in which HIV occurs and its economic impact. This analysis will increase understanding of the conditions of HIV spread as well as identifying ways communication and education efforts could better integrate contextual issues to effectively elicit change in the behavior of target audiences. The next section of the chapter will focus on urban youth as a segment of the population that is at particular risk for HIV infection and demonstrate the need for research and interventions targeted at this group. The last section will establish the presence of a gap between knowledge of condoms as a tool to prevent HIV infection and lack of condom use behavior or practice among urban youth in Ethiopia.

2.1 Epidemiology of HIV in Ethiopia

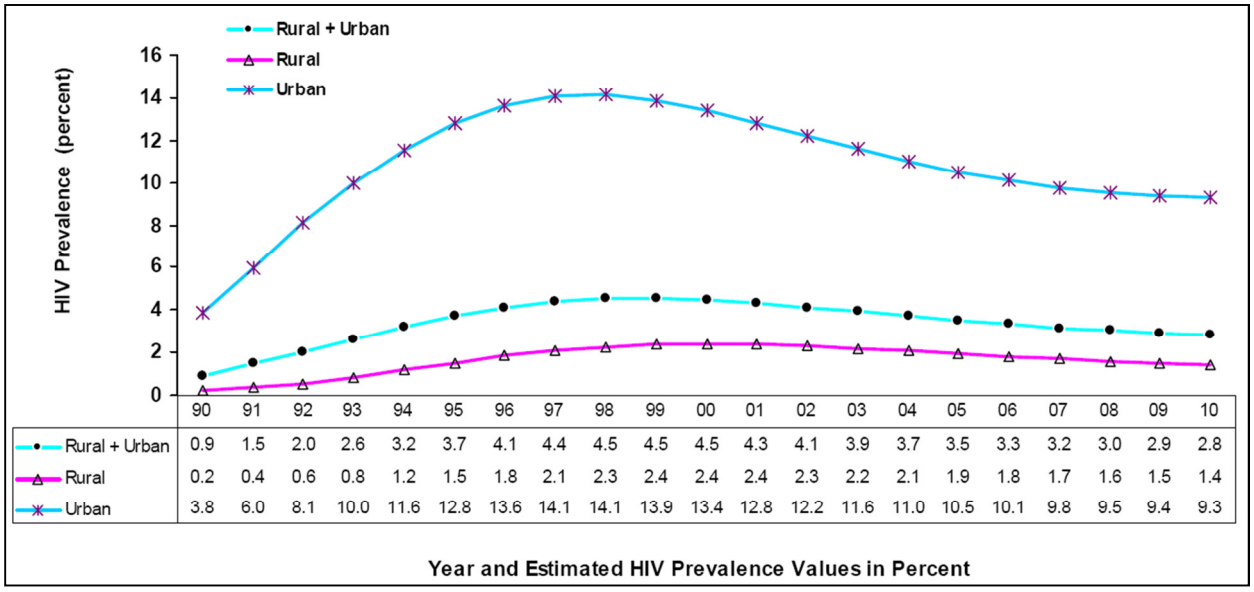
Section 2.1 will examine the epidemiology of HIV in Ethiopia looking at when HIV was first identified, prevalence and incidence of HIV, how HIV is primarily transmitted, who is most at risk for infection, and finally the geographic distribution of HIV.

When: Epidemic curve, prevalence, and incidence of HIV

HIV was first identified in Ethiopia in 1984 in stored blood sera. The first AIDS cases in individuals were diagnosed in the capital city, Addis Ababa, in 1986 (Lester, Ayehunie, & Zewdie, 1988; Federal HIV/AIDS Prevention and Control Office, 2007a).

Since these first diagnoses in the late 1980s, the total number of HIV cases or prevalence of HIV among adults (ages 15-49) has been on the rise; spreading quickly initially through traffic routes and commercial sex networks (Sanders, Araya, Kebede, Schaap, Nagelkerke, & Coutinho, 2003).

According to the Federal HIV/AIDS Prevention and Control Office (FHAPCO) urban prevalence peaked at 14.1% in 1997 and 1998. Rural prevalence peaked at 2.4% in 1999 through 2001. National prevalence was at its highest in 1999 and 2000 at 4.5% (2006).



	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10
Rural + Urban	0.9	1.5	2.0	2.6	3.2	3.7	4.1	4.4	4.5	4.5	4.5	4.3	4.1	3.9	3.7	3.5	3.3	3.2	3.0	2.9	2.8
Rural	0.2	0.4	0.6	0.8	1.2	1.5	1.8	2.1	2.3	2.4	2.4	2.4	2.3	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4
Urban	3.8	6.0	8.1	10.0	11.6	12.8	13.6	14.1	14.1	13.9	13.4	12.8	12.2	11.6	11.0	10.5	10.1	9.8	9.5	9.4	9.3

Figure 1: Estimated HIV Prevalence (FHAPCO 2006).

The national incidence of HIV or number of new HIV cases during a period of time, reached its peak in the early 1990s at .06% from 1992-1996. Urban incidence rate was at its highest in 1991, 1992, and 1993 when incidence rates were 2.2%, 2.3%, and 2.2% respectively (FHAPCO, 2006).

The current data shows that urban and rural prevalence has declined and stabilized from the high levels of 1996-2000 (see Figure 1). However, the stabilization of

prevalence is mostly as a result of the equalization of the rate of new infections and deaths due to HIV per year (FHAPCO, 2006).

Despite the recent stabilization of HIV incidence and prevalence, HIV remains a problem, as demonstrated by higher prevalence in urban areas compared to rural prevalence and higher prevalence among women regardless of where they live. The implementation of educational campaigns or improvement structural factors have not had as much of an effect on HIV rates as the crude calculation of higher number of deaths per year compared with the number of new infections.

Fee-based highly active antiretroviral therapy (HAART) was introduced to Ethiopia in 2003. HAART access increased in 2005 after it was made free to those who met clinical criteria. The number of people on HAART has jumped from 900 people in 2005, to 150, 000 people in 2008 (Assefa, Jerene, Lulseged, Ooms, & Van Damme, 2009).

Although HAART has greatly improved quality of life and reduced number of deaths due to HIV/AIDS it has introduced new challenges. One major challenge is patient adherence, for example, in 2008, 28% of patients on HAART were categorized as either being lost to follow-up or dead (Seyoum et al., 2009). In addition, although the availability of HAART has increased it still does not meet the need. In 2008, 289,734 people needed HAART and the estimated HAART need for 2010 was 397,818 (FHAPCO, 2007b). Lastly, while there are gains from the improved quality of life for individuals on HAART, it does not prevent new infections nor is it a cure of HIV. This demonstrates that there is still much to be done to reduce new infections; including

strategically designed educational messages targeted to particular segments of the society.

HIV/AIDS Surveillance

HIV/AIDS data is collected from a surveillance system based on anonymous HIV testing at antenatal clinics, case reporting, survey of at risk groups, blood donation centers, and clinics certified by foreign embassies that provide HIV testing as part of immigration health evaluations (Hladik et al., 2006; FHAPCO, 2006). There have been other methods used to estimate the impact of HIV. For example, Sanders et al. conducted a retrospective review of burials in Addis Ababa cemeteries to measure the impact of HIV on mortality. Sanders et al. calculated a fivefold increase in burials that they could attribute to HIV related mortality from 1984 to 2001.

In an evaluation of the surveillance methods currently used, Hladik et al. concluded that as a result in a weakness of the HIV surveillance system, prevalence and incidence data are likely to be underestimations. Hladik et al. used statistical modeling techniques to show a rise in HIV prevalence in rural areas and stable prevalence in urban areas. However, Hladik et al. expect the total burden of the disease to rise substantially as a result of population growth (2006).

Since it was first identified in 1984, HIV prevalence and incidence in Ethiopia has been on the increase. Current stabilization in HIV incidence being attributed to the equalization of the ratio of deaths to new infections demonstrates that there is still a lot to be achieved through HIV education initiatives that promote behavior change in terms of preventing HIV infection.

How: Modes of HIV transmission

It has been widely observed that the primary mode of HIV transmission in Ethiopia is unprotected heterosexual sex regardless of age, gender, or social identification. Other modes of transmission are mother-to-child transmission, blood transfusions, unsterile injections, and traditional scaring/tattooing (FHAPCO, 2007a; FHAPCO, 2006; Vaillancourt, Chakraborty, & Taha, 2005). In 2005, 12% of pregnant women seeking care at Addis Ababa antenatal clinics were HIV positive. Among blood donors at the Addis Ababa Red Cross, which receives 63% of blood donations nationwide, 4% were HIV positive in 2005 (FHAPCO, 2006). Lastly, an area where minimal research has been conducted is HIV among men who have sex with men (MSM). A 2009 ethnographic study indicated that most MSM in Addis Ababa also had heterosexual sex and were at risk for HIV infection (Gebreyesus & Haile Mariam).

A 2002 study measured HIV prevalence and risk factors for HIV infection among blood donors. Participants (n=2610) were tested for HIV and responded to a HIV risk assessment questionnaire. The study found statistically significant correlation between being HIV positive and having more than 1 sexual partner ($P < 0.0001$, OR= 2.90), having a history of 1 or more sexually transmitted diseases (STD) ($P < 0.0001$, OR= 3.41), or participating in risky behavior[1] ($P < 0.0001$, OR= 5.79). Of those who were HIV positive, traditional or modern medical procedures was not found to be statistically significant mode of infection (Sentjens, Sisay, Vrielink, Kebede, Ader, Leckie, & Reesnik, 2002).

[1] An aggregate category which included: two or more sex partners, no or irregular condom use, history or one or more STDs, and sexual contact with commercial sex workers.

While additional research is needed to measure and quantify the frequency of transmission modes, current quantitative research and observations indicate that heterosexual transmission is the primary mode of transmission for HIV in Ethiopia.

Who: Urban population

The urban population has been more effected by HIV than the rural population of Ethiopia. The urban-rural differential and its importance will be further discussed later. Addis Ababa, the capital and the largest city in Ethiopia, has a population of at least 3.1 million (United Nations Population Division, 2007). In 2007, the adult HIV prevalence was 7.5% (6% among males and 8.9% among females). The adult incidence in Addis Ababa was 1.52% with 156,577 residents living with HIV in 2001 (FHAPCO, 2007b).

In Dire Dawa, the second largest city with a population of at least 342, 827 (Federal Democratic Republic of Ethiopia: Population Census Commission, 2008), the adult HIV prevalence in 2007 was 4.2%, 3.3% among males and 5% among females. There were 11,000 people living with HIV and an incidence of .65% in 2007 (FHAPCO, 2007b).

While a minority of the population lives in urban Ethiopia; the urban population has been disproportionately affected by HIV. In addition, as will later be demonstrated, urban to rural spread of HIV is a concern. For these reasons, the urban population should be a primary target for HIV prevention and control interventions.

Who: Groups at risk for HIV infection

FHAPCO has conducted two rounds of a behavioral surveillance survey (BSS) which is a quantitative and qualitative survey conducted every three years in all 9 Ethiopian states and 2 city administrations. Probability sampling was used to identify

participants from 10 pre-determined target groups (youth, teachers, antenatal clinic clients, commercial sex workers (CSW), uniformed services (army, air force, and police), long distance drivers, road construction workers, pastoralists, factory workers, and cross-border communities (FHAPCO, 2007a). Table 2 provides a summary of findings for two target groups that often interact with or are made up of members of the target group of interest, youth.

Risk group	Gender	Mean age	Knowledge of HIV	Knows someone with or who has died from HIV	Knows condoms can protect from HIV	Knows where to buy condoms	Access to condoms	Condom use with CSW	Other condom use
CSW	Female	25	94%	81%	89%	94%	76% in ≤ 5 minutes	Consistent use with paying customer: 94%	No use with last nonpaying customer: 22%
Uniformed services	Male & Female	29	98%	95%	100%	97%	91% in ≤ 30 minutes	No consistent use: 86%	Use with regular partner last encounter: 7% Consistent use with regular partner: 4%
Youth (in-school)	Male & Female	17	100%	89%	99%	88%	91% in ≤ 30 minutes	Consistent use: 63%	Use with last non-commercial partner: 53% (Male: 57%; Female: 41%)
Youth (out-of-school)	Male & Female	19	96%	77%	87%	80%	Over half in ≤ 15 minutes	Condom use at last encounter: 63%	Use with last non-commercial partner: 59% (Male: 61%; Female: 50%)

Table 1: Summary KAP-gap among HIV risk groups (FHAPCO, 2007a).

Apart from their defining difference of school enrollment, in-school youth (ISY) and out-of-school youth (OSY) are also differentiated as OSY are more likely to be supporting family members, living outside of their parental home, and are more mobile (FHAPCO, 2006).

These at risk sub-groups of the population are not mutually exclusive. For example, CSW, as whole are a sub-group of the population at significant risk for HIV

infection and have had high HIV prevalence. The HIV prevalence for CSWs nationwide was 17% in 1988 and 73.4% in 1998 in Addis Ababa (Mekonnen, Sanders, Aklilu, Tsegaye, Rink de Wit, & Schaap, 2003). The current HIV prevalence among CSW is unavailable since it has not been measured since 1998 (DKT Ethiopia & FHAPCO, 2009). In 2007, Van Blerk found in a study of CSWs and mobility in Addis Ababa, that the average age of the CSW respondents was 17 years old. Hence, in addition to being a group at higher risk for HIV infection as youth, some youth are more vulnerable since they are also CSWs. This underscores the need to segment the population, research that segment's characteristics, and identify the HIV educational needs in order to design salient messages to that segment. Messages created in this fashion are likely to be more effective in inducing behavior change.

It is to be anticipated that with a widespread epidemic, there are bound to be many segments of the population that are at higher risk for HIV infection. As will be further explicated later this study will focus on youth.

Where: Geographic impact of HIV

A differential in HIV prevalence between urban and rural areas is an occurrence that has been observed throughout many sub-Saharan African countries. An urban-rural differential in the spread of infectious disease is in line with epidemiological theory and the history of infectious diseases. This differential arises because urban areas are often densely populated environments with opportunities for different forms and increased frequency of social interaction, including high risk behaviors such as CSW (Dyson, 2003). This phenomenon has also been observed in the spread of other infectious diseases

in population dense areas faced with competing social issues for example poverty and the spread of cholera (Johnson, 2006).

In Ethiopia, HIV prevalence rates in urban areas have far surpassed rates in rural areas since the beginning of the HIV epidemic indicating an urban-rural differential in prevalence with the urban prevalence usually twice rural prevalence (Taffa, Sundby, Holm-Hansen, & Bjune, 2002). Table 2 shows the HIV burden urban areas carry even though only the minority of the population, 17%, lives in urban centers.

	National (urban and rural)	**Urban only**
HIV positive population	977,394 399,376 (male); 578,018 (female)	602,740 246,175 (male); 356,564 (female)
New HIV infections	125,528 53,494 (male); 72,033 (female)	77,577 33,051 (male); 44,506 (female)
Annual HIV positive births	14,148	Not available
Annual AIDS deaths (all ages)	71,902 31,158 (male); 40,744 (female)	44,424 19,251 (male); 25,175 (female)
Annual AIDS deaths (0-14 years)	10,825 5,478 (male); 5,347 (female)	6,688 3,385 (male); 3,303 (female)
Annual AIDS orphans	898,350	413, 281

Table 2: The urban-national HIV differential (FHAPCO, 2007b).

Different sectors of urban society have borne the brunt of the epidemic and its consequences. In a 2002 study that used mathematical modeling to estimate and project the demographic impact of HIV on Addis Ababa, Mekonnen, Jegou, Coutinho, Nokes, & Fontanet, estimated that HIV prevalence would level off at 11% in 2024. They also projected that the number of people living with HIV may reach a quarter of a million people by 2024. In 2000, 60% of deaths among adults resulted from AIDS and 70% of adults deaths in 2024 were projected to be from AIDS. Finally, adult life expectancy in Addis Ababa was reduced by 14 years in 2004 due to AIDS. This downward trend was

projected to continue with the estimation that life expectancy would be reduced by an additional 17 years in 2024 to 47 years.

Why is the urban/rural differential significant?

As outlined in the above discussion, urban areas are currently where the HIV problem is greatest. Within the urban population, certain sub-groups are at higher risk for infection such as youth. The youth also make up a significant proportion of the population; the youth make up twenty percent of Addis Ababa's population (Cherie et al., 2005). In addition, the urban to rural spread of the disease has been statistically demonstrated through surveillance data (FHAPCO, 2006; Korra, Bejiga, & Tesfaye, 2005; Molla, Åstrøm, & Brehane, 2007). The urban to rural spread of HIV is a concern since the majority, eighty-two percent of the population resides in rural areas (see Appendix A) and it would mean the potential spread of HIV significant proportion of the population.

Understanding where the problem is greatest and who is most affected can guide research and policy to implement effective interventions and comprehend why existing interventions are not effective in curbing new HIV infections, highlighting the importance of HIV interventions targeted to specific segments of urban populations such as youth.

2.2 Social Context of HIV/AIDS in Ethiopia

Understanding the social context of HIV in Ethiopia is important as the individual and institutional decisions made regarding HIV occur in the context of many challenges that are often competing priorities.

Ethiopian society is ethnically, religiously, and linguistically heterogeneous. For example, although there is one national official language, Amharic, approximately 84 additional languages and 200 dialects are spoken in Ethiopia (Vaillancourt, et al., 2005). The heterogeneous nature of the society is a challenge in designing targeted health interventions. However, it can also serve as a reminder of the importance of segmenting the population into target groups and researching their characteristics (demographic, behavioral, media environment) in order to design effective health interventions that address the distinctiveness of the target group in question (Hornik, 2002).

Economic conditions are another competing concern in HIV related decisions made by individuals and institutions. According to the United Nations Development Program (UNDP) 2007/2008 Human Development Report, per capital gross domestic product of Ethiopia is $1055 with 23% and 78% of the population living on below $1 a day and $2 a day, respectively. A great amount of effort and resources are expended in finding ways to alleviate poverty (e.g. reducing levels of child mortality), increase literacy rates, and access to clean water. The prevention and control of HIV competes for individual and institutional resources with the above and other priorities.

The healthcare infrastructure has had slight improvements over recent years. Initiatives such as the Health Extension Program have been established to increase rural access to preventive health services and health education. However, there are still many challenges such as the amount and equitable distribution of financial resources and the flight of trained medical professionals to opportunities in the private sector or overseas. In addition, there is a high burden of diseases other than HIV such as lower respiratory

infections, perinatal conditions, and diarrheal disease that are all important causes of death (see Appendix B) (Chaya, 2007; WHO, 2002).

An individual's decision making process relating to behaviors that would protect from HIV infection do not occur in a vacuum. There are a variety of health, social, and economic priorities that all require information processing and decision making. For a health message to stand out from other priorities and be processed by the message's recipient, the message needs to be designed taking into account the characteristics of the target audience as well as the HIV informational needs that are most salient.

The final issue that plays a role in the HIV related decision making process for individuals is the gender role and economic status of women. A 2005 World Health Organization (WHO) domestic violence survey of 3,016 women ages 15-49 living in a rural area found that 49% of them had experienced physical violence by a partner at some point in their lives. Fifty-nine percent of women had experienced sexual violence at some point in their lives and 44% during the past year (García-Moreno, Jansen, Ellsberg, Heise, & Watts, 2005). In addition, women have high level of economic dependence on men and face high unemployment with some young women turning to commercial sex work due to economic constraints (Van Blerk, 2008).

Molla, Åstrøm, and Brehane (2007), Mulatu, Adamu, and Haile (2002), Taffa, Sundby, Holm-Hansen, and Bjune (2002) have all found that gender power imbalance has an impact in determining sexual roles, decision making, and negotiation, specifically in regards to condom use decision making. In addition, young women are expected to adhere to many social and religious norms about sexuality, most notably, sex before

marriage, that their male counterparts are not expected to adhere to (Taffa, Klepp, Sundby, & Bjune, 2002).

Economic impact

The macroeconomic impact of HIV on different sectors of the Ethiopian economy has been significant. Mekonnen et al. (2002) estimated that HIV/AIDS would reduce life expectancy in Addis Ababa by 17 years in 2024. In addition, their statistical modeling predicted a decline in rural to urban migration. The combination of these two factors would limit the economic engine of the country, Addis Ababa, in access to a productive workforce. Youth are a critical segment of the society entering or who are about to enter the workforce and if they remain a high risk group for HIV infection, there will be long term economic consequences in terms of poverty alleviation and economic growth (Stover & Bollinger, 2006; Okubagzhi & Singh, 2002).

The impact of HIV at a microeconomic level has dire consequences for individuals and families. In an observational study done of 25 families, Stover and Bollinger found that families incurred a large financial burden in increased expenditure for treatment and funeral costs. A household was economically affected by HIV since it resulted in the loss of at least one income generating member directly or indirectly (by becoming a primary caregiver). They found that the average cost of a funeral was more than the net income and treatment costs that the family incurred (2006).

In a 2008 study of the economic impact of HIV morbidity and mortality, Tekola, Reniers, Haile Mariam, Araya, and Davey, found that families that have a death due to HIV are more likely to be poor prior to the death and suffer additional financial cost since deaths due to HIV have a higher cost than deaths due to other causes ($2,456 and $1,737

respectively). Tekola et al. established that the direct cost of a death (e.g. hospital cost) between a death as a result from HIV/AIDS and one due to another cause to be similar. However, Tekola et al. found a significant difference in indirect costs incurred by the family such as future lifetime earnings, time spent bedridden, and cost of caregivers.

The macroeconomic consequences underline the importance of HIV prevention efforts in order to secure an economic future by averting the continued loss of a productive workforce.

2.3 HIV control and education initiatives

Ethiopian Ministry of Health established a HIV control program in 1987 soon after the first AIDS cases were diagnosed (Vaillancourt et al., 2005). Health education programs designed to reduce the spread of STDs, risky behavior, and increase protective behavior such as condom use have been implemented and maintained since 1987 despite the country's political and economic instability (Mekonnen et al., 2003). Although media is a developing sector that is for the most part under state control, it is a key method of reaching the urban populace with HIV prevention and control messages.

Ninety-four percent of ISY surveyed in the BSS indicated that radio and TV were their primary sources of HIV related information. Posters and billboards were cited as the secondary source of information by 80% of the youth. In another study of 922 high school students in Addis Ababa, the main source of HIV information cited by 94% of students was TV and/or radio. Other sources of HIV information were posters (80%), parents (23%), newspapers/leaflets (33%), school curriculum (25%), and school anti-AIDS clubs (7%) (Cherie et al., 2005).

With the exception of anti-AIDS clubs, school based HIV peer education programs, there isn't a standard sexual education curriculum taught in the national school system (Taffa et al., 2002). Of the students surveyed by the BSS, 25% had an HIV/AIDS education curriculum at school, 24% had seen a condom demonstration in class, 21% had a session on asserting oneself in sexual negotiation. Lastly, only 7% of students were members of anti-Aids clubs at their schools (Cherie et al., 2005).

A more recent development in HIV education initiatives has been the involvement of iddirs, traditional community-based support group, in providing education and care to their members. Iddirs are community organizations that have existed in their current structure in rural and urban Ethiopia since the early 1900s. They have a democratically run membership structure that is based on neighborhoods, extended families, occupation, gender, or religion. In Addis Ababa, most families are a paying member of at least one iddir. To date, their primary function was to provide financial support for funeral expenses and emotional support for their member families during bereavement (Pankhurst, 2000).

As a result of a vastly increased death rate among members, mostly due to HIV, iddirs were nearing bankruptcy. As a result, iddirs modified their missions to include HIV education for members, providing support to people living with HIV (PWLWHA), and HIV orphans (Vaillancourt et al., 2005; Pankhurst, 2000).

Providing HIV education through community-based organizations such as iddirs has the potential to effectively reach societal groups that have been pre-segmented with a salient message that would be reinforced by other messages that the members would encounter elsewhere.

HIV related behavior of adolescents in many African countries has not been adequately studied and are a segment of the population without enough HIV interventions targeted to them (Alene, Wheeler, & Grosskurth, 2004). Ethiopian adolescents face a similar situation where HIV interventions are not meeting their needs. In a survey of high school students in Addis Ababa Cherie et al. found that 46% wanted HIV related life skills training, 25% cited the need for additional education relating to cause and transmission of HIV, and 29% indicated they need additional information on HIV prevention (2005).

I would argue that it is not for lack of interventions that the behavior change in regards to HIV prevention isn't more widespread. Interventions for the most part are not targeted to population segments. Vast majority of interventions are focused on basic HIV education focusing on transmission methods, misconceptions or knowledge or condom brand promotion. These topics are necessary for interventions however there could be better results of HIV interventions in terms of increased behavior change if populations were segmented and served with messages tailored to meet each segment's educational needs.

2.4 Urban youth and effectiveness of condom promotion

Why the focus on urban youth? The focus on the urban population can be justified for several reasons. First, as demonstrated earlier, youth are an at risk group with higher prevalence than other population subgroups. Youth make up a significant proportion of the general population with 45% of the population under 14 years old (UNDP, 2008). HIV/AIDS accounts for 66% of deaths among 15-49 year-olds in urban areas and among the entire population, 35% of deaths of people aged 15-49 were due to HIV. HIV is

having an impact in the demographic makeup of the largest population center, Addis Ababa (Mekonnen et al, 2002).

Urban youth are potentially accessible target audiences for interventions. The advantages of reaching urban youth are that they are a literate segment of the population including OSY have higher literacy levels than other segments of the population. This segment of the population is media literate and is already receiving most of their HIV related information through media sources (Cherie et al., 2005).

A final argument for making this segment of the population a target for HIV interventions is that they are motivated to learn about HIV prevention methods. In their 2007 study of 89 male and female university students aged 20-29, Hadera and Kuiper studied the determinants of motivation to learn about HIV prevention methods. They found that the students had high self-efficacy in motivation to learn about HIV (Odds ratio = 3.07). They also found that motivation to learn about HIV was not significantly correlated with self-efficacy of the students to discuss HIV in class.

To sum up, urban youth are a legitimate focus of research and HIV intervention since they are significantly affected by HIV, they have higher literacy levels and should encounter less hurdles in communication, and have high levels media access as well as having access to influential peer groups most notably through anti-AIDS clubs.

As was demonstrated earlier, the predominant mode of transmission across all social groups is heterosexual sex. Condoms are a cheap, accessible, and an effective protective response to the heterosexual transmission of HIV that does not place additional constraints on the public health system such as the cost of HAART distribution.

Preventing and control HIV in any country is a complex endeavor that requires multi-sectoral action at the population and individual level. No one type of health communication intervention can provide a complete solution. What is being proposed here is that as for this study's population, urban youth, where HIV is primarily transmitted by heterosexual sex, condom use is a strategy worth promoting since most youth are familiar with condoms, condoms are effective in preventing HIV infection, and they are attainable in terms of cost and availability.

2.5 Knowledge-Attitude-Practice (KAP) Gap

Knowledge, attitude, practice or behavior (KAP or KAB) surveys were a common research tool in family planning research in the 1960s. KAP surveys in family planning research extended from the survey, to a method used to generate family planning policy and to support programmatic goals of existing interventions (Cleland, 1973).

The KAP concept has evolved from its use in family planning research to a method to study individual behavioral concepts of knowledge, attitude, and practice. KAP-gap has been a term used to describe a discrepancy between knowledge and attitude regarding a given health behavior and suboptimal levels of adoption of the corresponding behavior outcome (practice). It can be argued that this phenomena at its core is a formulation of one of the basic challenges of public health interventions; the difficulty of achieving behavior change by providing information to individuals. Interventions that seek an individual effect do so with the thought that an individual's exposure to information results in behavior at the individual level (Hornik, 2002). If a given intervention is solely providing information there are a number of behavioral change models and theories that would explain that there isn't a direct link between information

and achieving behavioral change similar to the hypodermic needle or magic bullet direct effect models of early mass communication theory (Lowery & DeFleur, 1995).

This formulation of the KAP-gap concept has been used to study discrepancies between knowledge and practice across health behaviors. Westoff (1988), Bongarts (1991), and Shirmeen (2007) use KAP-gap in studying uptake of contraceptives as a family planning tool. KAP-gap has also been used to study knowledge of TB and healthcare system response (Chakaya, 2005), diarrhea treatment interventions (Anita, 2003), and use of insecticide treated nets to prevent malaria (Ongore, 1989).

There isn't a standard conceptual definition of KAP-gap however, in the context of this paper the concept refers to a situation where an individual's practice regarding a particular health behavior is not congruous with the same individual's knowledge and attitude regarding the health behavior in question.

Closer to the topic at hand, KAP-gap has been widely used to study the inconsistency between knowledge of condoms as a method to prevent HIV and condom use behavior. Agha, Kusanthan, Longfield, Klein, and Berman (2002) document a KAP-gap in condom use in eight African countries, Boer and Mashamba (2005) studied KAP-gap in condom use among South African youth, and Bosompra (2001) examined the KAP-gap in condom use among youth in Ghana. Giles, Liddell, and Bydawell (2005) found a KAP-gap in condom use among South African youth. In addition, Gilles et al. found that of the variables that determine intent to perform condom use behavior, ones with the strongest correlations with condom use intention were self-efficacy, subjective norm, attitude, and perceived control respectively.

2.6 KAP-gap in condom use among youth

The presence of a KAP-gap in condom use behavior among Ethiopian youth has been documented through two rounds of a national behavioral surveillance survey (BSS) which was most representative national sample of youth. In addition, several studies have studied this question in specific segments of youth and have drawn similar conclusions regarding the existence of a gap between condom knowledge and use. Table 3 presents a summary of studies that demonstrate a condom use KAP-gap.

Author	Sample (sample size, age, setting)	Knowledge of HIV as a disease	Knowledge of HIV transmission	Knowledge of condoms as a preventative tool	Condom use	Condom availability
Alene, Wheeler, & Grosskurth, 2004	N=260; 14-25 year olds; rural	99%	Sexual: 97%	88% cited condom use as a preventive tool	16% of sample ever used a condom	73% condoms are easily available
BSS Round 1 (FHAPCO, 2002)	N= 6210 (ISY) 14,224 (OSY); age: 15-24, urban & rural	99.9% (ISY) 95% (OSY)	N/A	ISY: 98%, OSY: 94%	OSY: 45% of males and 31% of females. ISY: 79% of males and 64% of females used condoms consistently	95% of ISY and 84% of OSY knew where to get condoms, 90% can access condoms in < 30 minutes
BSS Round 2 (FHAPCO, 2007b)	N= 16,253 (ISY) 1,275 (OSY); Mean age: 17 (ISY), 19 (OSY), urban & rural	99.8% (ISY) 96.4% (OSY)	N/A	ISY: 79% (males), 64% (females) OSY: 45% (males), 31% (females)	ISY: 43% (males), 37% (females)	94% knew where to access condoms, >50% could access condoms in <15 minutes
Fitaw & Worku 2002	N=383; mean age = 22; urban college students	N/A	N/A	73%	37% ever used condoms, 6% regular use, 5% use condoms 50% of the time, and 62% condom use with CSW	N/A
Korra, Bejiga, & Tesfaye, 2005	N= 6,599; average age: 27.4; urban clients to VCT clinic	N/A	N/A	66% identified sex without a condom as the most important HIV risk behavior	75% no condom use in last 3 months, Always: 17.8% 71% no condom use at last sexual encounter	N/A
Negash, Gebre, & Gejiga, 2003	N=359; 15-45 urban	95%	80% cited unprotected sex as a mode of HIV transmission	76% identified condom use as a preventative tool	40% did not use condoms with a non-regular partner within last year.	N/A
Witte, Girma, & Girgre, 2003	N=800;15-30; urban	99%	97% had unprompted recall of methods to avoid HIV infection	76% agreed or strongly agreed that condom use was a HIV preventative tool	Use condoms to prevent HIV infection: 49.5%	N/A

Table 3: Condom use KAP-gap

The purpose of this chapter was to understand the problem and the context in which it occurs. It is true that the picture presented is a sobering one; however, without a clear identification of the problem and its context, finding appropriate and effective solutions is not possible. It has been established that HIV and its effects is challenging many segments of Ethiopian society. Urban residents are disproportionally affected, one group at particular risk are the youth. While youth acknowledge the severity of HIV and the effectiveness of condoms as a tool to reduce the risk of HIV infection, as demonstrated above, actual condom use among youth is very low. The next chapter will analyze how behavioral theories might explain this discrepancy.

Chapter 3: Literature Review, Theoretical Framework, and Hypothesis

As demonstrated in the previous chapter, despite having knowledge and positive attitude regarding condoms and condom use, the level of actual condom use among urban youth in Ethiopia is at suboptimal levels. What explains this knowledge-behavior gap? Specifically, the gap between knowledge of condoms and their effectiveness in preventing HIV infection and lack of condom use behavior among the youth? This chapter will look at what explanations behavioral theories have for this gap.

First, is a descriptive overview of five behavioral theories including the role and sufficiency of knowledge and self-efficacy in explaining presence or absence of behavioral intent. This will be followed by a discussion of the linkages between the theories and possible explanations of the disparity between knowledge and behavior. The final section of this chapter will layout the hypothesis and research question to be examined in this thesis.

3.1 Behavioral theory literature review

Behavioral theories provide a predictive framework to explain condom use behavior. In this paper's context, behavioral theories will be studied to see how they explain the KAP-Gap in condom use behavior. While there are differences in how each theory explains and predicts behavior, they have commonalities that can be pulled together to build a stronger explanatory model for the lack of condom use. In the review of behavioral models to follow, it will be demonstrated that the models have a common perspective that information or knowledge is a necessary construct but not sufficient by itself to elicit behavioral change.

The explanation for the condom KAP-gap will be argued as follows: urban youth in Ethiopia have basic HIV knowledge and knowledge of condoms as a HIV preventative tool

since that is the primary focus of HIV interventions they are exposed to. However, they have low condom use self-efficacy and have difficulty in either initiating and/or persisting in condom use behavior. Interventions are general by topic and are not aimed to the target population's characteristics. The specific informational needs of urban youth (condom use self-efficacy) are not being met (Cherie et al., 2005), hence the KAP-gap and sub-optimal levels condom use. There are additional variables (e.g.: environmental constraints, social norms) that may also explain the KAP-gap in condom use.

However, my argument will be that first, condom use self-efficacy is what is most lacking in the target population and will the main explanation for the KAP-gap. Secondly, environmental constraints such as the social and economic status of women require societal change and economic development and the role of behavioral interventions is limited.

The ultimate goal in a theoretical analysis of such a problem for the purposes of health communication is to develop messages based on behavioral research that has an increased likelihood in changing behavioral intention.

Social Cognitive Theory

Derived from social learning theory, Albert Bandura's social cognitive theory (SCT) examines how people acquire and maintain behavioral patterns. SCT explains behavior as a dynamic interaction between an individual's environment, situation, and behavior. Environment includes objective elements external to the individual that may affect behavior such as the social and physical environment. Situation is the person's subjective evaluation of the environment that may affect behavior such as a person's beliefs, self-perception, or expectation. The constructs of SCT interact through triadic reciprocal causation; meaning that the three constructs are interdependent where changes in one affecting the other

constructs. Depending on the behavior and its context the strength and level of influence of constructs varies (Bandura, 1997; Bandura, 1999; Baranowski, Perry, & Parcel, 2002). I will next briefly discuss environment, situation, behavioral capability, outcome expectations and elaborate on self-efficacy.

As was just introduced, the environment in SCT refers to objective factors that are external to the individual that affect behavior. The individual's (accurate or inaccurate) perception of the environment and their perceived role in the environment makeup the situation construct in SCT. Knowledge's equivalent in SCT is behavioral capability a construct that combines knowledge and skill. Behavioral capability is the objective evaluation that the individual knows a specific behavior (knowledge) and knows how to perform the behavior (skill). Behavior change will occur only if the individual has the behavioral capability (objective evaluation of skill and knowledge). Self-efficacy differs from this construct as it is the subjective evaluation of an individual's capacity to perform a given behavior. An individual may have behavioral capability however; if the person harbors doubts on their capacity to perform, the behavior is unlikely to occur (Bandura, 1977; Bandura, 1990; Wulfert & Wan, 1993).

A concept that seems similar to self-efficacy but is needed to function along with self-efficacy in order to have behavior change is outcome expectation. Outcome expectations are positive or negative values placed by an individual to the outcome of performing a behavior. According to SCT, individuals are motivated to perform behaviors that have positive outcomes or that reduce negative outcomes (Bandura, 1977). An individual with positive outcome expectations but without behavior change may lack an adequate level of self-efficacy to perform the behavior (Maibach & Murphy, 1995). Applied to condom use

behavior, having the belief that condoms are a tool that prevents HIV infection (outcome expectation) but not using condoms (actual behavior) can be argued results from not having condom use self-efficacy.

Self-efficacy

Self-efficacy is the mechanism that explains the cognitive process in which psychological change occurs (Bandura, 1977). Self-efficacy has a key role in many models of health behavior change and has been applied to a range of health behaviors. Defined, self-efficacy is the belief that an individual has in his or her capacity to successfully perform a behavior. Self-efficacy determines whether or not a behavior will be initiated, the level of effort to be expended in performing the behavior, and the amount of effort spent in sustaining, maintaining, and persisting in the face of barriers to performing the behavior (Bandura, 1977).

Sources of Self-efficacy

Bandura (1977) identifies four sources of self-efficacy: performance accomplishment or past experience, vicarious experience or modeling, verbal persuasion, and physiological states. Performance accomplishment or past experience is the most effective source of self-efficacy since an individual develops self-efficacy based on direct learning or personal experiences. Behavioral successes based on performance accomplishments will increase self-efficacy. If behavioral failures occur prior to the establishment of strong efficacy beliefs then existing self-efficacy decreases. Once self-efficacy is established in the performance of a particular behavior it may be generalized to other behaviors especially if the new behavior is similar to the initial behavior.

Vicarious experience or modeling develops self-efficacy through the observation of other people's success and failure in performing a behavior. Vicarious experience will be successful in developing self-efficacy if the modeled behavior has clear outcomes and the greater the person modeling the behavior is viewed as similar to oneself. Also, observing performance failure by someone modeling a behavior will have minimal effect in an individual with strong initial self-efficacy, but might decrease existing self-efficacy in an individual with initial weak self-efficacy. This is a weaker method of developing self-efficacy since it is based on social comparison and not direct experience.

The third source of self-efficacy, verbal persuasion, functions as individuals are encouraged by others who are similar to themselves that they have the ability to perform a behavior. The sources of verbal persuasion along with their suggestions need to be viewed as credible for the desired effect on self-efficacy to occur. Behavioral failures will decrease the individual's self-efficacy and discredit the source of the verbal persuasion. Self-efficacy induced via verbal persuasion is weaker since the individual has not experienced the behavior and can be easily decreased by failures and disconfirming expectations.

Physiological states sources self-efficacy from a person's emotional state (e.g.: stress, anxiety, fears, or mood) and perceived physiological states (e.g.: condoms decrease pleasure). Individuals with high level of self-efficacy are more likely to perceive their emotional state as a facilitator to perform a behavior. In addition, behaviors that are performed by overcoming fears, in turn increase the level of self-efficacy. Individuals with lower levels of self-efficacy will have their emotional state be a hindrance as it decreases the perception of their ability to perform the behavior. Performance accomplishment decreases

anxiety arousals to threats as past experiences develop coping skills and decrease avoidance behavior.

Bandura delineates three dimensions of self-efficacy: magnitude, generality, and strength. The level of self-efficacy needed to perform a behavior increases or decreases depending on the difficulty or magnitude of the particular behavior. Self-efficacy is behavior and situation specific. Self-efficacy is defined at the behavior-situation unit of analysis since an individual's sense of efficacy is linked with particular behaviors and the situations or context in which they are performed (Maibach & Murphy, 1995). For example, self-efficacy needed to use a condom with a regular partner maybe different from the self-efficacy needed to use a condom with a casual sex partner. Having said this, some experiences may create a generalized sense of self-efficacy that can be applied to different behaviors. This is more likely if the behaviors and the skills required to perform the behavior are similar. Finally, the stronger the level of self-efficacy the more likely one will persist and maintain the behavior. The opposite is also true, where an individual with lower level of self-efficacy will succumb to disconfirming experiences and will be weakened in their perceived ability to maintain and persist in performing the behavior.

Knowledge & Self-efficacy

A misperception across health behaviors, including HIV risk reduction, is that equipped with the right knowledge about a behavior, people will act on it and modify their behavior accordingly. However, we need to keep in mind that the impact of information on behavior depends on its availability and how it is cognitively processed by the recipient (Bandura, 1990). According to Bandura, behavior change results from a person having a reason to change his/her behavior and possessing the means and resources to implement the

change. Furthermore, having behavioral skills alone does not equate to being able to implement correctly and consistently. In sum, according self-efficacy theory, knowledge relating to a health behavior is necessary but not sufficient on its own to elicit behavior change in an individual. Similarly, having behavioral skills is not sufficient either for behavior change (Bandura, 1990; Wulfert & Wan, 1993).

Self-efficacy mediates the relationship between knowledge and behavior. It is the translating mechanism for knowledge to lead to behavioral intent (Maibach & Murphy, 1995; Rimal, 2000; Wulfert & Wan, 1993). Rimal posits that behavior change is a function of two components of self-efficacy, a person's perceived ability and perceived barriers. Increasing knowledge will not lead to behavior change so long as there is a negative perception of ability and barriers to performing the behavior. Rimal found that the correlation between knowledge and behavioral intent is stronger among people who have high self-efficacy compared to those with low self-efficacy (2000). Perceived low self-efficacy impairs behavior performance since it creates gap between knowledge and action (Bandura, 1990).

Bandura summarizes the elements needed in HIV prevention interventions in order to have successful behavior change as the following. First, information that is specific to the behavior being targeted. Second, self-regulatory skills necessary to translate knowledge into action need to be promoted. Third, self-efficacy needs to be enhanced using the sources of self-efficacy. Lastly, effective implementation and maintenance of the new behavior needs social support (1990).

Condom use self-efficacy

As is the case for other constructs in this field, condom use self-efficacy is not consistently conceptualized and operationalized in the literature. However, generally,

condom use self-efficacy is a multi-dimensional concept that addresses global and specific aspects of condom use. The most valid and predictive measure of condom use intent is a combination of global and specific measures. Condom use self-efficacy is a key predictor of both intended and actual use (Baele, Dusseldorp, & Maes, 2001). In their study of adolescent condom use, Baele et al. identified the components of specific condom use self-efficacy measures as technical skills, image confidence, emotion, condom purchase & carrying ability, communication skills, assertiveness, sexual control, and ability to cope with difficulties or failure. Global measure of condom use self-efficacy is the perceived ability to use condoms in the future with a new partner. Baele et al. found that among adult or sexually experienced individuals, condom use will be predicted by specific self-efficacy; measures whereas in youth or less sexually experienced individuals, self-efficacy was predicted by global measures.

Individuals with adequate levels of self-efficacy in general or relating to condom use specifically are more likely to consistently perform the behavior and rebound from failures in performing the behavior (Bandura, 1977; Bandura 1990; Maibach & Murphy, 1995).

Rimal proposes that behaviors can be classified as knowledge driven, self-efficacy driven, or driven through a combination of knowledge and self-efficacy. Behaviors that are knowledge driven are objective and simpler to change. An example is the successful interventions to prevent child deaths from Reye's syndrome by educating parents and healthcare providers on the risks of aspirin use to children. The problem as well as the behavior needed to solve it was simple; this in addition to governmental and industry support led to a decrease in the incidence of Reye's syndrome (Soumerai, Ross-Degnan, & Spira Kahn, 2002). Self-efficacy driven behaviors are complex behaviors that require subjective

decision-making (Rimal, 2000). I argue that implementing HIV preventive behaviors are complex and fall under a class of behaviors that are primarily driven by self-efficacy. This is because HIV preventive behaviors involves sexual decision making, social context, not an individual behavior. This does not eliminate the role of knowledge Bandura says that expectancy is not the sole determinant of behavior and that expectancy needs to be accompanied with skills over sexual situation, communication skills, and incentives are needed (1977 & 1990).

Behavioral change is the conclusion of a complex process which requires more than one tool, knowledge. However much knowledge is needed for behavior change to occur it is not sufficient on its own to have behavior change. Self-efficacy is a key variable in this process and needs knowledge to function as the mediator between knowledge and behavior.

Theory of Planned Behavior

The theory of planned behavior (TPB) is an extension of the theory of reasoned action (TRA) that provides a model for behaviors that are not under volitional control. TPB posits that the intention to perform a behavior is determined by a person's behavioral beliefs (attitude), normative beliefs (subjective norm), and control beliefs (perceived behavioral control) (Ajzen, 1985 & 1991).

Ajzen (2002) presents perceived behavioral control (PBC) as a two part hierarchical model with PBC having two sub-constructs: self-efficacy and controllability. Although Ajzen makes a distinction between the constructs he also suggests that depending on the area of research, PBC, self-efficacy, and controllability can be collapsed and studied as one concept of control. Ajzen distinguishes PBC as a concept different from self-efficacy; however, it can be argued that the two concepts are describing the same phenomenon; an individual's

perceived capability to perform a behavior. It can be contended that PBC is a formulation of self-efficacy which for the most part corresponds to self-efficacy. Hence, for the purposes of this project, the concept of control will be referred to as self-efficacy from this point forward.

According to TRA and TPB, the primary determinant of actual behavior is intention. However, not all intentions are carried out to behaviors because of environmental constraints or because the behavior is not under volitional control. The stronger the intent to perform the behavior the more likely it is the behavior will be performed (Ajzen, 1991; Fishbein et al., 2003).

Depending on the behavior and population the behavior is occurring in, the weights and predictive value of TPB constructs will differ. In general, the more attitude (appraisal of behavior) and social norms (social evaluation of behavior) are positive, the higher the self-efficacy towards performing the behavior (Ajzen, 1991).

Prediction of behavior is a joint function of self-efficacy and intention. The accuracy of the prediction is higher with the following three factors. First, the measures for perceived self-efficacy and behavioral intention (including the behavioral context) need to be specific to the behavior being studied. Second, the levels of self-efficacy and behavioral intention are the same at time measurement and at the time the behavior is performed. Finally, perceived self-efficacy accurately reflects actual self-efficacy. The accuracy of perceived self-efficacy depends on how knowledgeable a person is in terms of quality of information, resources available, and clarification of new or unfamiliar aspects about the specific behavior (Ajzen, 1991).

TPB & condom use

How does TPB explain condom use decision making process? According to a meta-analysis by Albarracín, Johnson, Fishbein, & Muellerleile, (2001) individuals are more likely to have a positive attitude towards using condoms if they belief that the outcome or response efficacy of using condoms is positive.

A 2004 meta-analysis conducted by Albarracín, Kumkale, and Johnson of TPB constructs and condom use across 58 studies provides additional perspective on this issue. Albarracín et al. found that control perceptions correlated more among people with reduced social power or influence such as: women, young, ethnic minorities, and those with low levels of education. Hence, people without external control over their behavior will need higher self-efficacy since they will need to expend more effort to overcome barriers, initiate and maintain the behavior. People with social power such as males, youth, those with access to information and a support network, ethnic majorities, those who attained higher level of education, in turn, were influenced by social norms. In addition, their findings showed a higher correlation between self-efficacy and behavior among youth.

The findings of Albarracín et al. in their meta-analysis are very useful in explaining condom use decision making among Ethiopian youth. As discussed in the previous chapter, urban youth are among the populations most at risk for HIV infection and they also have little to no social power or influence. Even among Ethiopian urban youth there would be differences in social power (e.g. male vs. female, literate vs. illiterate youth, or ISY vs. OSY) however, when compared to the population at large, this observation would hold true for urban youth.

Another finding that is applicable to the context of this paper is the importance of the specificity of measures as the more specific they are to the behavior and the populations the better the associations and correlations observed. A continuation of this is the health messages also need to specific to the behavior. This means the behavioral category of condom use would need to be defined further; an example would be the following action (using), target (condom), context (with a main partner), and time (always) (Fishbein, 2000).

Lastly, Albarracín et al. indicated that structural factors (availability of condoms, price, and sexual negotiation skills) would need to be addressed since health messages on their own would not be sufficient to induce behavior change. As was demonstrated in Table 2, condoms are available and financially accessible to youth and other at risk groups hence, I do not believe that these are structural factors that are of major concern. However, sexual negotiation skills among female youth who as mentioned earlier, also make up a large proportion of CSWs is a critical structural factor that needs to be addressed. This can be done if the target population properly segmented and understood through specific measures that would enable the development of specific measures. In addition, secular change in the empowerment of women, education, and economic development of the population of large would eventually increase condom use behavioral change.

Sufficiency of knowledge in TPB

According to TPB actual behavior is the conclusion of a cognitive process a process that starts from distal variables such as knowledge that feed into the formation of attitude, social norms, and self-efficacy. Which, in turn, are the determinants of behavioral intention. Hence, knowledge is a precursor needed to form attitude, social norms, and self-efficacy regarding a specific behavior. An individual would not progress to formation of behavioral

intent without knowledge; however knowledge alone wouldn't suffice to form behavioral intent.

While attitude and social norms are determinants to the formation of intention to perform a behavior they are not sufficient in themselves. If attitude and social norms are held constant then, a person's level of self-efficacy determines behavioral intention (Yzer, 2007).

AIDS Risk Reduction Model

AIDS Risk Reduction Model (ARRM) is a stage theory which looks at the decision making process of HIV preventative behaviors. It incorporates elements from the Health belief model and SCT to derive a stage model that explains HIV risk reduction behavior. Catania, Kegeles, and Coates present a three stage process where first an individual identifies and labels a behavior as risky or problematic; the individual then commits to changing the risk behavior; and in the final stage the individual seeks tools and support and performs the needed behavior change. Catania et al. indicate that depending on individual context of the decision making process, a stage may be skipped or combined (1990).

In the first stage of ARRM, labeling, three factors influence the labeling of a given health behavior as risky; knowledge of HIV transmission methods, perceived susceptibility, and perceived severity. At the end of this stage an individual will have recognized a behavior as one that is puts him/her at high risk for HIV infection.

The second stage of ARRM, committing to change, deals with the complexity of sexual behavior decision making. These decisions are not based solely individual considerations they also have to take into account partners, type of relationship, and social networks. In addition, an individual's perceived cost and benefit evaluation depends on the social context in which the behavior is occurring.

The third stage of ARRM requires the individual to seek out tools and support needed to initiate and maintain the identified behavior change. Catania et al. indicate that this is the most difficult stage and the point where the process is most likely to fail to achieve the ultimate goal of behavior change. The final stage has three steps which involve seeking information (active and passive). Health messages would be considered an active form of information in this stage. Seeking support from others or turning to self-help and performing the needed behavior change are the final two steps of this last stage.

According to ARRM, health communication interventions would have different goals at each stage of the model. Communication interventions at the initial labeling stage would focus on information relating to behavior that would put one at risk for HIV transmission. Health education in stage two of ARRM would focus on emphasizing the health utility and enjoyment that will be attained as a result of behavior change. Finally, messages in stage three of ARRM would focus on increasing self-efficacy needed to make the behavior change (Catania et al., 1990).

ARRM suggests that messages need to be targeted to specific groups and the stage of the theory they are currently in. Possibility of time lags between stages also emphasizes the need to understate the target population and target messages that are for the appropriate stage.

In sum, ARRM, a stage theory where behavior change is accomplished through a process that requires knowledge of HIV, transmission methods, perceived susceptibility and perceived severity. Knowledge is a key element of ARRM in order for individuals to correctly evaluate their risk and susceptibility. However, knowledge by itself is not predictive of intent to perform a behavior (Catania et al, 1990). In addition, individuals may possess

necessary knowledge but not perceive their behavior as risky behavior, or acknowledge their risky behavior but lack the tools and support (self-efficacy) to change the behavior.

Information Motivation Behavior

Fisher and Fisher's Information motivation behavior model (IMB) posits that AIDS risk reduction behavior is likely to occur if individuals have information regarding their behavior, motivation to reduce their risk, and behavioral skills to perform risk reducing behavior (1992). In the majority of HIV preventive behaviors, behavioral skills are the moderator between information/motivation and behavior change and/or maintenance. However, if the HIV preventive behavior is simple (e.g. abstinence vs. consistence condom use) information or motivation may have a direct effect on behavior change. For the IMB to accurately predict behavior, the constructs need to be specific to the target population. This underscores the importance of studying the target population and designing messages that are salient to them in order to have effective interventions.

One of IMB's key constructs is information where it is an essential construct for the for HIV preventive behavior to occur. However, the information needs to match the informational needs of the target behavior and the behavior being targeted. According to Fisher and Fisher, general information on HIV is unlikely to lead to specific behavior change. For example, knowledge HIV transmission will not lead to the specific behavior of condom use. Therefore, the target population's information level including gaps in their knowledge about a specific HIV preventive behavior needs to be established and addressed in the intervention in order for it to be effective. This information collection process done through belief elicitation also needs to include an evaluation stage that looks at whether the information was received and how the information has been retained.

The second determinant of HIV protective behavior in the IMB model is motivation. An individual equipped with knowledge of a specific protective behavior still need motivation to act on their knowledge. Motivation to practice HIV preventive behavior are determined by social norms, perceived vulnerability to HIV and, perceived costs and benefits of HIV prevention.

IMB & self-efficacy

The last determinant of HIV protective behavior is behavioral skills or self-efficacy. A person needs to have the self-efficacy specific to a preventative action (e.g. condom use) in order to perform the behavior. In addition to self-efficacy being specific to a behavior it also needs to be specific to the health message's target population.

IMB model emphasizes that all three determinants need to be present and be population and behavior specific for the model to accurately predict HIV preventive behavior. Preventive behavior will occur only if an individual has the behavioral skills in addition to knowledge and motivation. Hence, knowledge and motivation are necessary constructs in predicting HIV preventive behavior but are not sufficient alone requiring behavioral skills to elicit the behavior change.

Protection Motivation Theory/Extended Parallel Process Model

According to protection motivation theory (PMT) behavioral intention results from a cognitive process of threat or coping appraisal. PMT posits that cognitive processing of information initiates a process whose outcome is protection motivation behavior equivalent to behavioral intent. Information from verbal persuasion, observational learning, personality variables, or prior experiences set off a cognitive mediation process. PMT predicts that

individuals will initiate behavior based on a motivation to protect oneself and not based on fear of the health threat (Maddux & Rogers, 1983; Rogers, 1975).

A theory that has been derived from PMT is the extended parallel process model (EPPM). According to EPPM, an individual's evaluation of perceived threat and efficacy determines health protective behavior taken (no response, danger control/self-protective action, or fear control/denial). EPPM proposes that there is a threat threshold that needs to be met in order for an individual to undertake a protective response (Witte, Girma, & Girgre, 2003). For the purposes of this project the focus will be on PMT as the two models are similar and since PMT is the more tested theory.

The cognitive mediating process that results in the intent to perform the protective behavior is based on four factors: perceived severity, perceived vulnerability, perceived response efficacy, and self-efficacy. The combination of perceived severity and vulnerability makes up threat appraisal. The coping appraisal in turn, is made up of response and self-efficacy. Protection motivation results from the assessment of coping and threat appraisals (Maddux & Rogers, 1983; Rogers, 1975). Risk perception is not sufficient to form intention for protection motivation; a person also needs to have adequate self-efficacy to perform the behavior (Yzer, Fisher, Bakker, Siero, & Misovich, 1998)

Applied to the current context, behavioral intent to use a condom to protect from HIV infection would be based on: the perceived severity of being infected with HIV, perceived vulnerability to HIV infection, the perceived response efficacy of condoms in preventing HIV infection, and lastly, the belief that the individual has in themselves in their ability to put into practice the recommended protective behavior, condom use self-efficacy.

PMT and self-efficacy

PMT predicts that if self-efficacy and response efficacy are high, then perceived severity and perceived susceptibility will have a main effect on protection motivation (behavioral intention). Also, if self-efficacy and response efficacy are low, then perceived severity and perceived susceptibility will either have no effect or a boomerang effect on protection motivation (behavioral intention). According to PMT there are two scenarios where an individual would conclude that mounting protective behavior is not possible. The first scenario is if the response efficacy is low or viewed as ineffective. The second scenario arises if self-efficacy to act on the recommended behavior is low (Maddux & Rogers 1983; Rogers, 1975; Yzer, et al., 1998).

As was demonstrated previously, among urban youth in Ethiopia, perceived severity of HIV infection is high however; perceived susceptibility or vulnerability to HIV infection is low. Moreover, the perception of condom effectiveness in providing protection from HIV infection, response efficacy, is high. However, since condom use self-efficacy is low among urban youth they do not have the tool (self-efficacy) to translate their condom knowledge into behavioral intent to use condoms.

Knowledge is needed in PMT to initiate the cognitive process to the behavior however on its own knowledge is not sufficient in order to have behavior change. Once the cognitive process has been initiated by information, an individual still needs to perceive that the health threat is severe to which they are vulnerable. According to PMT, knowledge or information is critical it is what initiates the entire cognitive process. Knowledge initiates the process but there are other pieces that are critical to getting an individual to the stage of protection motivation.

3.2 Theoretical Framework

HIV is an individual and a public health problem among all segments of the population in Ethiopia. Youth living in urban areas are a particular sub-group of the population that is at high risk for HIV infection. Youth acknowledge that HIV is a serious disease to them as individuals and their peers. They possess reasonable levels of knowledge on how HIV is transmitted. Their attitude towards HIV recognizes the severity of the disease. Knowledge of protective behaviors in general and knowledge of condoms as a specific protective behavior is high among this population. Youth have a positive attitude towards condom use and view the impact of social norms towards condom use to either have a positive or negligible influence in their decision making process to use condoms. Lastly, practice of HIV protective behavior by using condoms is very low among youth.

Behavioral theories provide explanatory models for a range of health behaviors and HIV related behaviors (Fishbein, 2000) including presence of the condom use KAP-gap that is currently observed. While there are some differences in how the models explain behavior, the crossover between the theories mean that their common elements can be combined to derive a wider and stronger explanatory model for behavior.

The five theories being used in this paper are all cognitive models of behavioral decision making. These models have a common presupposition in that the accuracy of the behavior prediction is improved if a specific target population and specific behavior is selected (Fishbein, 2000). Formative research that would identify and understand the target population and specify the problem behavior improves the predictive power of the theories. This would increase the effectiveness of final health intervention as it would have theory driven content and message design targeted to a specific population.

The next key element that the theories have in common is knowledge. Knowledge is a necessary construct for behavior change. In order for knowledge to contribute to behavior change it needs to be specific information regarding a specific behavior. Despite its critical role all the theories agree that that it is not sufficient in order to have intent to perform a behavior or actual behavior. The BSS and other surveys have found that urban youth have general knowledge regarding HIV and knowledge specific condoms as a tool to prevent HIV infection as was discussed in Chapter 2.

The theories are in agreement on the need and role of self-efficacy. Individuals with an adequate level of self-efficacy would be more likely to initiate condom use, maintain the behavior. Self-efficacy is the mechanism to translate the knowledge into behavioral intent.

Lastly, while providing different explanatory models, all precise that while knowledge is necessary for behavioral change, knowledge alone is not sufficient to elicit change. In sum, the models have a role for knowledge and self-efficacy. They also explain the interaction between knowledge and self-efficacy as one where knowledge is necessary but not sufficient for behavioral intent. Self-efficacy is the mechanism to translate knowledge to have higher likelihood of behavioral intent. Hence, I would posit that an explanation for the KAP-gap in condom use among youth in Ethiopia.

This population has low self-efficacy toward initiating and maintaining condom use behavior. Low levels of self-efficacy in the performance of this behavior (condom use) could explain the KAP-gap and the low levels of actual behavior (condom use).

In the current context, urban youth in Ethiopia have positive attitudes regarding condom use and view social norms towards condom use to either have a positive or negligible influence in their decision making process to use condoms. At the same time, this

population has low self-efficacy toward initiating and maintaining condom use behavior. Low self-efficacy in the performance of this behavior (condom use) could explain the KAP-gap and the low levels of actual behavior (condom use).

In order to increase intention to perform the desired behavior (condom use) self-efficacy needs to be addressed in interventions targeted at this population. While health promotion activities need to address knowledge (the knowledge base needs to be kept current). I posit that if messages and other interventions were designed to increase self-efficacy there would be a gradual increase in condom use which in turn would reduce KAP-gap in regards to condom use among urban youth.

3.3 Hypotheses

From an analysis of the problem and behavioral theories the following hypotheses and research question have been derived and will be tested.

Hypothesis 1 (H_1): KAP-gap in condom use among Ethiopian youth results from sub-optimal condom use self-efficacy.

Hypothesis 2 (H_2): Minimal self-efficacy frames are present in health messages available to Ethiopian youth.

Chapter 4: Methodology

4.1 Analytical Strategy

A mixed method design was used to analyze the hypotheses of this study. This design is a way to examine a research problem using quantitative and qualitative methods in a manner that minimizes their weaknesses and capitalizes on their common strengths (Brewer & Hunter, 1989). The problem at hand is complex with different data types and sources that address each facet of the problem. In addition, the hypotheses of this study are exploratory as they have not been studied in this population. Hence, a mixed method design will allow for an analytical approach that addresses the complexity and novelty of the phenomena.

What are mixed methods?

Johnson, Onwuegbuzie, and Turner (2007) surveyed the literature for the definitions of mixed methods used by different researchers. While researchers slightly differ in how they define mixed methods, the definition provided by Creswell as "A research design (or methodology) in which the researcher collects, analyzes, and mixes (integrates or connects) both quantitative and qualitative data in a single study or a multiphase program of inquiry" (p. 119) address core elements shared across the definitions. Another key characteristic of mixed methods is that the integration of qualitative and quantitative data is done in a planned and systematic way (Andrew & Halcomb, 2009).

Triangulation

Originating from the work of Campbell and Fiske (1959), triangulation is a type of mixed method design that uses several data points to analyze a problem. Denzin further developed and defined triangulation as "the combination of methodologies in the study of the

same phenomenon" (as cited in Jick, 1979, p. 602). He categorized triangulation into three types[2]: investigator, data, and methodological.

Investigator triangulation uses multiple investigators in one research project. In data triangulation, data from different sources, time, and space contexts are used together. Data triangulation improves explanatory power by collecting and analyzing different data referring to a singular issue possibly that may result in different perspectives to understand an issue (Mathison, 1988). The focus here is the variety of data types and not on the quantity of data (Andrew & Halcomb, 2009).

Lastly, methodological triangulation, involves the use of multiple methods in the study of one research problem. Methodological triangulation that is between-method has two or more independent methods which are used to study the same phenomenon. This type of triangulation tests external-validity when two or more yield convergent findings. Within-method triangulation is the use of different techniques within a method, for example, the use of multiple scales to measure a construct. Within-methods triangulation tests for internal consistency or internal-validity (Jick, 1979; Mathison, 1988).

Outcomes of mixed methods research

Morgan classifies the possible outcomes of mixing methods as corroboration, elaboration, complementary, and contradiction. Results that are corroborated are ones where the quantitative and qualitative results are the same. Elaboration refers to qualitative results providing further explanation to quantitative ones. Results that are complementary are from quantitative and qualitative results differ in their findings but when combined provide new

[2] Denzin (1978) initially categorized triangulation into four groups however; he questioned the validity of the fourth category, theoretical triangulation.

insights. Finally, contradictory results are when quantitative and qualitative findings do not agree (as cited in Brannen, 2005, p. 176).

Complementary findings increase confidence in the strength and validity of the methods and results (Brewer & Hunter, 1989; Jick, 1979). On the other hand, contradictory findings indicate that there is limited confidence in the findings and research problem and methods need to be re-evaluated (Brewer & Hunter, 1998; Mathison, 1988).

Advantages and disadvantages of mixed method research

The main advantage garnered from triangulation is a wider range of methodological tools for analysis and data to analyze. This is done to improve the probability that the results provide a more complex understanding of the phenomena being studied (Jick, 1979; Mathison, 1988).The chief drawback of this type of research design is its difficulty to replicate.

Why mixed methods are applicable in this context.

This study used a triangulation research design because its topic is part of a complex social phenomenon for which there are different sources of data available that address different facets of the phenomenon. A mixed method analytical approach was one that had the capacity to capitalize on the different data sources and study all of the facets of the issue. Mixed method design specifically, triangulation is an appropriate method of analysis in this context because it can provide a more complete analysis of the issue. Between-method triangulation was conducted using two data sources; analysis of published research and extant media materials. As a single data source that addressed the hypothesis was unavailable for analysis, a mixed method approach enabled a more complete analysis.

Specifically, the review of published research provided data that confirmed the correlation of condom use self-efficacy with behavioral intent among urban Ethiopian youth in addition to data on the levels of condom use self-efficacy among this population. The second data source, qualitative analysis of print health communication material, allowed the examination of the issue from a different aspect; the sources of condom use self-efficacy information available to youth.

The intention in the use of qualitative and quantitative methods was to get a fuller understanding of KAP-gap in condom use among urban Ethiopian youth. This was done by answering two questions: Was low self-efficacy an explanation for the KAP-gap in condom use among Ethiopian youth? And do health educational materials include self-efficacy information? This approach make possible a more complex analysis that not only suggests that the condom use KAP-gap is due to low self-efficacy and that self-efficacy is correlated with behavioral intent but also can posit that a reason for low condom use self-efficacy is the inclusion of insufficient self-efficacy messaging in health communication materials available to urban youth in Ethiopia.

The methodology of this study could be replicated. However, in this case, as this is preliminary research, the expectation that further research would utilize other research designs to examine this question using the results of this study.

4.2 Research design

Concurrent design was used where data from the quantitative research review and qualitative analysis collected at the same time and compared for congruent findings. Purpose of the quantitative research review was to determine the levels of condom use self-efficacy and the correlation of self-efficacy with behavioral intent in existing research among urban

youth in Ethiopia. This approach supposes that studies that examine similar research questions using similar methods and variables will have similar results that are in the same direction.

The qualitative analysis was the qualitative method used to answer the second hypothesis and determine the frequency of self-efficacy frames used in Ethiopian health messages available to youth. The qualitative analysis also enabled an understanding of the health content areas and HIV frames used in health messages available to youth.

4.3 Quantitative research review

Methodology

Identification and Selection of studies

The first set of studies was located by a key word search of topic applicable databases: Digital Dissertations, Global Health, POPLINE, PsycINFO, and PubMed. The keywords HIV, condom, self-efficacy, behavioral control, and Ethiopia were searched in all of the databases in following order (See Appendix C):

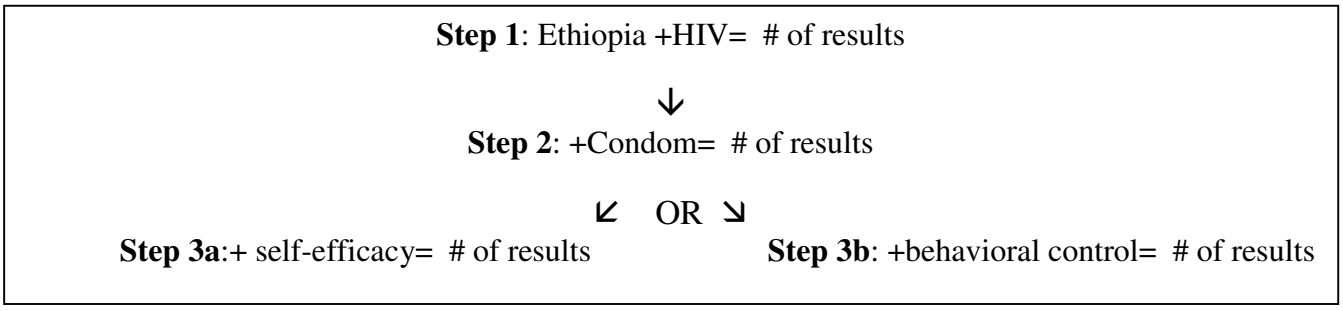


Figure 2: **Sequence of database search for quantitative research review articles.**

The next phase of the search for studies was conducted using the African Journals Online (AJOL) web based database (www.ajol.info). This was to ensure the inclusion of

articles published in Ethiopian and African journals that might not be included in the first set of databases. The same steps in Figure 3 were followed to search for articles.

Lastly, topic relevant journals (AIDS Care, African Journal of AIDS Research, and AIDS Education and Prevention) were searched using Advanced Google Scholar using the keywords "Ethiopia" and "HIV" while restricting the search to articles from the specific journal. This search of key journals yielded either no articles or articles already identified in the initial database searches. After a pool of relevant publications was identified, an ancestry approach was utilized to identify additional studies by searching reference lists of each of the articles. The searches of applicable databases and other possible sources yielded 190 articles to which eligibility criteria was applied in order to obtain the final study sample.

Eligibility criteria

A uniform eligibility or exclusion criteria (see Table 4) was applied first to the study's title, if any of the inclusion criteria were met, abstract was then reviewed using the inclusion/exclusion criteria.

Study population	1. non-Ethiopian (exclusion), 2. Ethiopians living outside of Ethiopia (exclusion), or 3. Outside the 15-30 age range (exclusion)
Study topic	1. Clinical/medical aspects of HIV (exclusion), 2. epidemiological reviews (exclusion), or 3. descriptive studies (exclusion)
Measures	1. condom/contraceptive use (inclusion), 2. self-efficacy measures (inclusion), and 3. attitude measures (inclusion)

Table 4: **Article inclusion/exclusion criteria**

The application of the eligibility criteria resulted in a final sample of seven studies published in peer reviewed journals[3]. The majority of studies were excluded because of the

[3]AIDS Care, AIDS Education and Prevention, Ethiopian Journal of Health Development, International Journal of STD & AIDS, International Quarterly of Community Health Education, Journal of Health Psychology, Northeast African Studies, and Psychology and Health.

study topic (most studies were on the clinical aspects of HIV or epidemiological reviews) or for not including self-efficacy measures. This demonstrates the lack of research in the area of the behavioral determinants of HIV behaviors. The selected studies were then read and coded into a table according to the dimensions of the study including: study type, sample size, target behavior, hypothesis tested, and findings.

Results

The studies that were a part of the research review had large samples sizes ranging from 200 to 802 participants who were randomly selected using sampling frames (e.g. population logs, school student lists, or administrative region logs). Five of the studies had male and female participants while the samples of two studies were all female. Age range of the samples across the studies was 13-30 years old. Five of the studies sampled from an urban population and the samples of two studies were made up of rural youth. Lastly, three of the studies examined condom use intention and two studied intended and actual condom use. The last two studies examined past and intended condom use and contraceptive use intention (See Table 5).

Four studies provided self-efficacy level data as shown on Table 5. These studies all found that the mean levels of self-efficacy in their samples were low. The studies also looked at the relationship between self-efficacy with the intention for condom use. While some studies found moderate to high positive correlation of self-efficacy with condom use intent, there were other studies that found a low correlation and a negative correlation.

	Source	Study type	Sample Size	Sample Population	Target Behavior	Hypothesis tested	Level of self-efficacy	Self-efficacy & condom use behavioral intent
1	Bogale, Boer, & Seydel, 2010	Structured questionnaire	200	Rural, female, 13-24 years old	Intended and actual condom use	Determinants of intended and actual condom use	Low Condom users: 3.42; Condom non-users: 1.66[4]	r=0.92; p<0.001
2	Fekadu & Kraft, 2001	Structured questionnaire	354	Urban, female, 15-19 years old	Contraceptive (Oral pills, condoms, and behavioral methods) use intention	Predictive power of group and descriptive norms when social norm are held constant.	Low 17.18 (Range= 7-35)	r=0.28; p<0.01
3	Girma, Assefa, & Tushunie, 2004	Structured questionnaire	363	Urban , male & female, 14-26 years old	Condom use intention	Determinants of condom use intention	N/A	Significant association
4	Molla, Åstrøm, & Brehane, 2007	Structured personal interviews	802	Rural, male & female, 15-24 years old	Intended & self-reported actual condom use	Testing TPB applicability in predicting condom use intention.	Low 19.3 (Range=6-30)	r= -0.52; p<0.001
5	Mulatu, Adamu, & Haile, 2002	Structured questionnaire	367	Urban, male & female, high school students ages 14-24.	Past & intended condom use	Determinants of past and intended condom use	N/A	r= 0.44; p<0.001
6	Taffa, Klepp, Sundby, & Bjune, 2002	Questionnaire	561	Urban, male & female 15-24 years old	Condom use intention	Determinants of condom use	Low Male: 16.4; Female: 18.8[5]	r= 0.35; p<0.01
7	Witte, Girma & Girgre, 2003	Survey	800	Urban, male & female, 15-30 years old	Condom use intention	Perceived susceptibility, severity , response & self-efficacy influence on condom use intention	N/A	b= 0.83; p<0.0001

Table 5: Quantitative research review summary of articles.

[4] Range not provided.
[5] Range not provided.

1. *Bogale, Boer, and Seydel, 2010*

A sample of 200 women living in rural Ethiopia aged 13 to 24 years were surveyed about their intended and actual condom use. Fifty-six percent of the sample (n=112) used condoms whereas forty-four percent (n=88) did not use condoms. Bogale et al. found more condom use among younger segment of their sample as well as more condom use among unmarried women and less condom use among women with low literacy levels. Bogale et al. found low self-efficacy means in both condom users (3.42) and non-users (1.66). In addition, self-efficacy had a very high correlation with intention to use condoms ($r=0.92$; $p<0.001$).

2. *Fekadu and Kraft, 2001*

A sample of 354 sexually active urban women aged 15 to 19 years responded to a survey regarding their intention to use contraceptives (oral pills, condoms, or behavioral methods). The results found self-efficacy to be low among the sample with a mean of 17.18 within a range of 7-35. In addition, there was a low correlation of self-efficacy and attitude with intention to use contraceptives ($r =0.28$ and 0.32 respectively at $p< 0.01$). Social norms were moderately correlated with intention to use contraceptives ($r=0.46$, $p<0.01$). There was also a moderate correlation found between contraceptive use intention and past behavior ($r=0.43$, $p<0.01$). Fifty-two percent of respondents perceived social disapproval for contraceptive use.

3. *Girma, Assefa, and Tushunie, 2004*

This study's sample was made up of 360 male and female high school students majority of whom (79%) lived in urban areas. The participants responded to a survey that

tested the determinants of condom use intention. Twenty-five percent of students indicated that they had sexual intercourse. Of the respondents that were sexually active, 54% of those had used a condom at least once, and 47% had always used condoms.

Girma et al. found a strong association between self-efficacy and condom use intention but did not provide quantification of the association. The mean level of self-efficacy in this sample was not provided in the study.

Girma et al. found that the determinants for condom non-use in their sample were self-efficacy (OR=1.94 (male); 0.64 (female)), normative beliefs (OR=2.82, $p<0.001$ (male); 2.08 (female)), and being less than 18 years old (OR=2.25, $p=0.05$ (male); 0.74 (female)). Normative beliefs were the principle variable associated with condom use.

4. *Molla, Åstrøm, and Brehane, 2007*

Molla et al. conducted a two part survey to study condom use intention. The initial survey had a sample of 802 people with an average age of 21 and 75% of which were women. A follow-up survey was conducted after three months and had a sample of 743 participants with an average age of 21 and 76% were women. The entire sample self-reported that they were sexually active with 85% of the sample reported no experience with condom use. Molla et al. found self-efficacy to be low with a mean of 19.3 within a range of 6-30. This study found strong negative correlation of self-efficacy with condom use intention ($r= -0.52$; $p<0.001$).

5. *Mulatu, Adamu, Haile, 2000*

A study of past and intended condom use using TPB was conducted by Mulatu, Adamu, and Haile. Their sample consisted of 367 male and female sexually active urban high school students who were aged 14 to 20 years old.

Mulatu et al. found that attitude had the strongest correlation to intended condom use (0.67; $p < 0.01$) followed by self-efficacy (0.44, $p<0.001$), and negative attitude/perceived barriers: (-0.16, $p < 0.01$). There was a moderate correlation between health information/knowledge and positive attitude (0.32, $p < 0.01$). The correlation between health information/knowledge and self-efficacy (0.38, $p < 0.01$) was also moderate.

6. Taffa, Klepp, Sundby, & Bjune, 2002

A sample of 561 in and out of school youth was surveyed for their intention to use condoms. Thirty-six percent (168) were sexually active and were primarily out-of-school youth and 51% of those who were sexually active reported condom use at last sexual intercourse. Those who were younger (male and female) and females of any age had lower self-efficacy and skills and indicated a greater sensitivity to social norms. Attitude toward condom use also differed based on the level of sexually experience and whether they were in-school or out-of school youth.

Mean level of self-efficacy was found to be low as indicated in Table 5. Condom use intention was moderately correlated with self-efficacy (0.35, $p<0.01$) and skills (0.28, $p<0.01$). Self-efficacy, skills, and barriers explained more of the variance in condom use among males (27%) than females (11%). Self-efficacy also influenced condom use decision at last sexual intercourse for males (0.34, $p<0.01$) and females (0.44, $p<0.01$).

7. Witte, Girma, Girgre, 2003

In the final study of the quantitative research review, Witte et al. sampled 800 male and female urban youth aged 15 to 30 to examine if there was a gap between condom use behaviors and knowledge/attitude s toward HIV and condoms.

As described in Table 3 Witte et al. found KAP-gap in condom use in their young, urban Ethiopians. They found self-efficacy was highly correlated with condom use intention ($b=0.83$; $P<0.0001$).

In sum, the level of self-efficacy among samples was consistently low. The findings relating to the correlation of self-efficacy to condom use intention was less consistent across the studies. The results ranged from strong to moderate positive correlation, low correlation, a negative correlation of self-efficacy with condom use intention. While further research is needed, these results imply that the condom use KAP-gap is due to low self-efficacy.

Discussion

The review of quantitative studies found that the level of self-efficacy among urban youth in Ethiopia was low. Moreover, several studies indicated that there was a correlation between condom use self-efficacy and condom use intention among urban Ethiopian youth. These results point to an explanation for the condom use KAP-gap among this population.

Low self-efficacy means youth would be less likely to initiate and maintain consistent condom use behavior. Low condom use self-efficacy explains the KAP-gap in condom use among youth because individuals with low self-efficacy will have difficulty in initiating, maintaining, and recovering from setbacks in performing a behavior. Self-efficacy is needed to translate the knowledge that youth have about the protection

condoms give from HIV infection into behavioral intention to use condoms. Without adequate condom self-efficacy youth are unlikely to initiate and maintain consistent condom use despite having knowledge that HIV can be transmitted sexually and that condoms can protect from HIV infection.

Furthermore, the correlation of self-efficacy with the intention to use condoms confirms the critical role of self-efficacy. However, it is important to note that these results can only serve as a preliminary explanation for the condom use KAP-gap due to the small number of studies in the sample as well as the mixed correlation results. The dearth of research about condom use self-efficacy among youth in Ethiopia highlights the need for further research in this area.

4.5 Qualitative analysis

Methods

To study the research question, a qualitative analysis was conducted surveying the content areas and HIV message frames of print health messages. A codebook was developed to aide in the systematic analysis of the images. The first section of the codebook addressed broad questions to classify the health message by health topic and target audience. The categories in the first section were the following:

- material type,
- year published,
- location of publication,
- language of publication,
- target gender,
- target age group, and
- health topic.

The second section of the codebook looked at the frames in which HIV content was presented. Measures used by Beaudoin (2007) and Hingson, Strunin, Berlin, and Heeren (1990) were adapted to include concepts specific to the Ethiopian context such as transmission through traditional practices (e.g. female genital mutilation and scarring) and unsterilized injections as was discussed in Chapter 2. The categories for the social issues frame was developed based on the social context also discussed in Chapter 2. Each health message was analyzed and categorized according to the presence or absence of HIV related variables in the text and/or image using the following six frames:

- condom use self-efficacy
- knowledge of HIV as a disease,
- knowledge of HIV transmission methods,
- knowledge of preventive methods,
- social issues relating to HIV, and
- consequences/severity of HIV.

Coding

Two native Amharic speakers coded all of the images. Images were first reviewed and text was translated into English. For images containing text in languages other than Amharic, the translations provided by the Media/Material Clearinghouse (M/MC) was used. Text that was translated by the coders was compared with the M/MC description.

Coding was done in two phases using a codebook[6] (see Appendix D) and data was entered into a spreadsheet. After the questions in the first section of the codebook were answered, the coders coded the images for HIV frames used. The categories were not mutually exclusive hence; the number of occurrences of all applicable frames was recorded for each health message.

Data sources

Material for analysis was collected from four sources. The Media/Material Clearinghouse (M/MC) online database was the primary source of images for analysis. The M/MC online database, established in 1996, is a partnership between Johns Hopkins University's Bloomberg School of Public Health/Center for Communication Programs, Academy for Educational Development, Save the Children, The International HIV/AIDS Alliance, and Tulane University's School of Public Health and Tropical Medicine. The Health Communication Materials database is housed at Johns Hopkins University with an online version of the database accessible at http://www.m-mc.org/mmc (P. D'Adamo, email communication, March, 28, 2008). Material was searched on the MM/C website

[6] The coding process involved the two coders discussing each question and reaching a consensus on the applicable answer option for the image in question. Once the coders coded all the questions in Section 1 of the Codebook questions in Section 2 were answered with the questions directing the order. In other words, each question was answered of the sample of images. This was to ensure that each question was answered consistently across each image in the sample.

database for material originating from Ethiopia resulting in 135[7] images published from 1977 to 2008.

The second source of images was the Ethiopian AIDS Resource Center (ETHARC) which is a clearinghouse for multimedia material on HIV/AIDS, STDs, and tuberculosis. ETHARC was established in 2002 with a partnership of Centers for Disease Control, Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs, and the Ethiopian HIV/AIDS Prevention and Control Office. The fourteen images obtained from ETHARC's website were of material produced from 2002-2009 (www.etharc.org).

The next source of images was five personal photos taken of billboards in Addis Ababa, Ethiopia from May 2006 to June 2006. Lastly, twelve images were obtained from online searches.

A sample of 227 images were obtained from the sources and copied into Microsoft PowerPoint along with any available descriptive information that the initial image source had. All of the images were assigned image numbers at this time.

Images were first reviewed for material type and duplicates. Fifty-five images were excluded because they were not standalone health educational material (e.g. images of training material, health workbooks, or awards). Another 10 images were excluded as they were duplicates. The qualitative analysis was conducted on a final sample of 162 images [8](See Appendix E).

[7] Initial search using the search term "Ethiopia" generated 251 images, however 116 images were not included in the study as the target population was non-Ethiopian or the material was not produced to be a standalone health educational material (e.g. images of report covers, training material, or PowerPoint slides).

[8] M/MC: 131, ETHARC: 14, Online: 12, Photos: 5

Results

Section One

The final sample consisted of 162 print health communication materials. The majority (161) of the material was designed for an Ethiopian audience as it was produced in an Ethiopian language, used photos of Ethiopians, and/or used traditional Ethiopian art or graphics. The sample consisted of posters (65%), billboards (10%), novelty items (16%), and pamphlets (8%). Materials were produced in the main Ethiopian languages Amharic (63%), Oromiffa (5%), and Tigrinya (2%). The rest of the sample utilized a combination of the above languages and English. The materials in the sample date from 1977 to 2009.

Seventeen percent of the materials were distributed in urban areas and less than 1% of the material was distributed in a rural setting. However, it is important to note that the majority of the materials (82%) did not indicate in which setting they were distributed.

Target gender was defined as the gender of primary person pictured or the gender of the primary person directly addressed by the text. Images where both genders were pictured or addressed were coded as not having a target gender. Target gender was not indicated in the majority of the sample (70%). In the remaining images, 24% were targeted to women and 6% were targeted to men. Tables 6 and 7 provide a breakdown of target age by health topic and medium respectively.

Target age group was coded according to the age of primary person pictured or the age of the primary person directly addressed by the text. Images that pictured groups of people of mixed ages were coded as not having a target age. Twenty-one percent of the

images were targeted at youth (15-30 years) and 41% of the images targeted adults over 30. Images that did not target their message by age made up 38% of the sample.

As Table 6 shows, the images in the sample covered a range of health topics with the majority covering HIV and family planning issues. When health topics were categorized by age and gender, 14% of images were HIV messages targeted at youth. In addition, 20% of the HIV images did not have a specified target age group. In terms of gender targeting, 30% of the images that had HIV as a topic were not targeted to a specific gender. Finally, 5% and 6% of the images that had HIV as a topic were targeted to males and females respectively.

Health Topic	Percentage (n)	Age[9] (n)	Gender (n)
Family planning	27% (43)	None: 7% (11) 15-30: 3% (5) >30: 17% (27)	None: 16% (26) Male: 1% (2) Female: 9% (15)
HIV	41% (66)	None: 20% (32) 15-30: 14% (23) >30: 7% (11)	None: 30% (49) Male: 5% (8) Female: 6% (9)
Child & maternal health (e.g. immunization, breast feeding, child abuse)	10% (17)	None: 2% (4) 15-30: (0) >30: 8% (13)	None: 6% (9) Male: (0) Female: 5% (8)
Environmental health (e.g. sanitation practices, hand washing)	5% (8)	None: 0.6% (1) 15-30: (0) >30: 4% (7)	None: 3% (5) Male: (0) Female: 2% (3)
Other (e.g. traditional practices, female genital mutilation, scarring)	3% (5)	None: 2% (4) 15-30: (0) >30: 0.6% (1)	None: 3% (5) Male: (0) Female: (0)
Family planning and HIV	12% (19)	None: 6% (10) 15-30: 3% (5) >30: 2% (4)	None: 12% (19) Male: (0) Female: (0)
Other (HIV & female genital mutilation)	3% (4)	None: (0) 15-30: 0.6% (1) >30: 2% (3)	None: (0) Male: (0) Female: 2% (4)
Total	100% (162)	99% (162)	100% (162)

Table 6: Topics of health messages by age and gender

The majority of the health messages were on posters (65%) followed by billboards (10%), novelty items (16%), and pamphlets (8%) to make up the rest of the

[9] Age and gender percentages are based on the total number of health messages (162).

sample. Thirty-two percent of posters were targeted to the over 30 age group. As indicated in Table 7, the other media did not target specific age or gender.

Medium	Percentage (n)	Age[10] (n)	Gender (n)
Poster	65% (106)	None: 20% (33) 15-30: 13% (21) >30: 32% (52)	None: 44% (72) Male: 3% (5) Female: 18% (29)
Billboard	10% (17)	None: 6% (9) 15-30: 5% (8) >30: (0)	None: 8% (13) Male: 2% (3) Female: 0.6% (1)
Novelty item (calendar, sticker, t-shirt)	16% (26)	None: 9% (15) 15-30: 2% (4) >30: 4% (7)	None: 12% (19) Male: 1% (2) Female: 3% (5)
Pamphlet	8% (13)	None: 3% (5) 15-30: 0.6% (1) >30: 4% (7)	None: 6% (9) Male: (0) Female: 2% (4)
Total	99% (162)	99% (162)	100% (162)

Table 7: Health message medium by age and gender

Section Two

The analysis of the frames used to present HIV concepts was conducted on the health messages that had HIV, family planning and HIV, and HIV and female genital mutilation as health topics.

Condom use self-efficacy

As Figure 3 shows, the majority of health messages with HIV as a health topic did not address condom use self-efficacy. Instead, the health messages addressed the response efficacy of condoms. Health messages that promoted self-efficacy in regards to other behaviors such as HIV testing, accessing HIV counseling services, taking HAART, or preventing mother-to-child transmission were also found.

[10] Age and gender percentages are based on the total number of health messages (162).

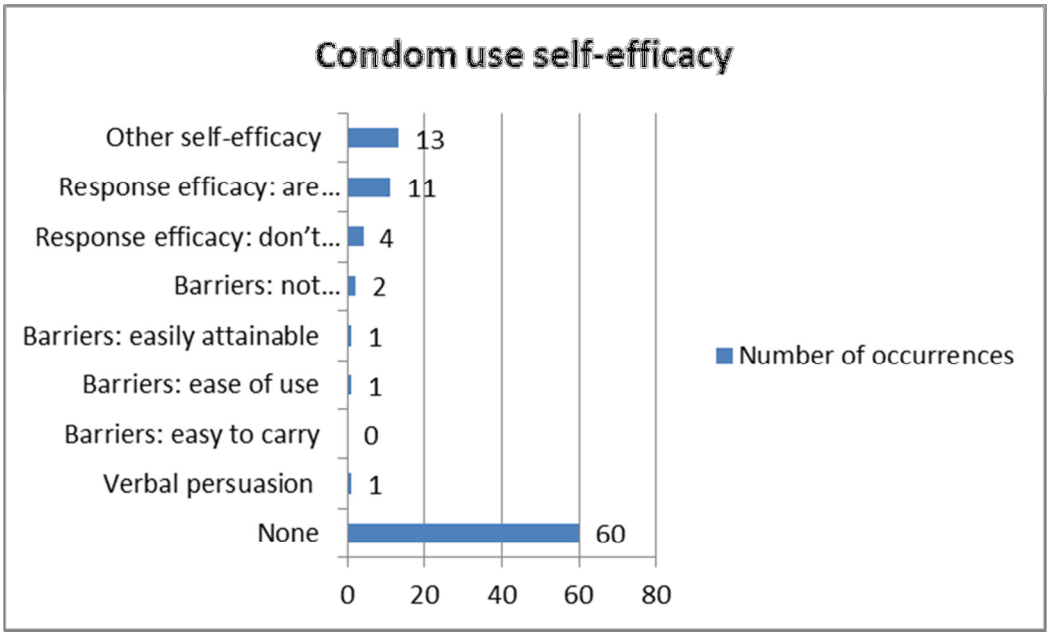


Figure 3: Condom use self-efficacy frame

The next analysis looked at self-efficacy messaging in health messages that promoted condom use to prevent HIV infection. The rationale being a health message that was promoting condom use had the potential to include condom use self-efficacy messaging as well. This is more specific than the previous analysis which looked for the presence of self-efficacy messaging in the entire set of health messages that had HIV as their topic. The majority (13) of the health messages that promoted condom use did not discuss condom use self-efficacy. Most of the health messages focused on the response efficacy of condoms by indicating that condoms did not reduce pleasure, were effective, and are quality tested.

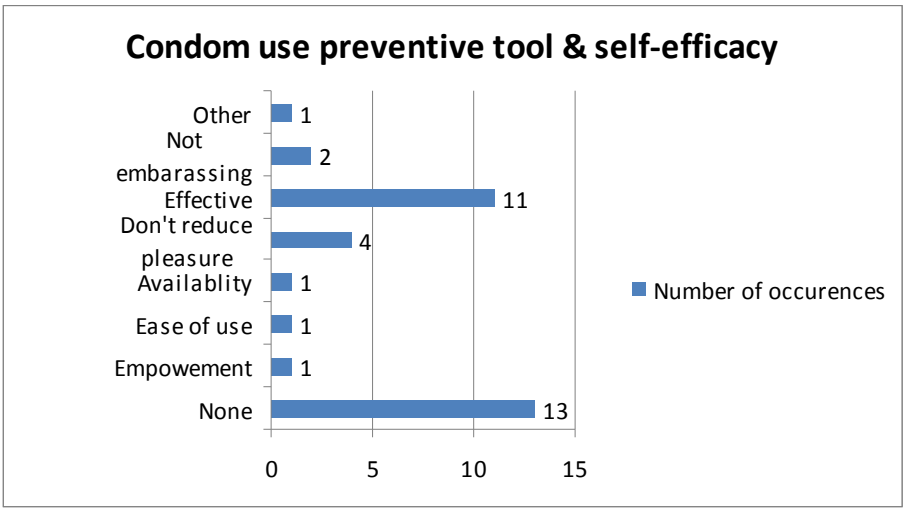
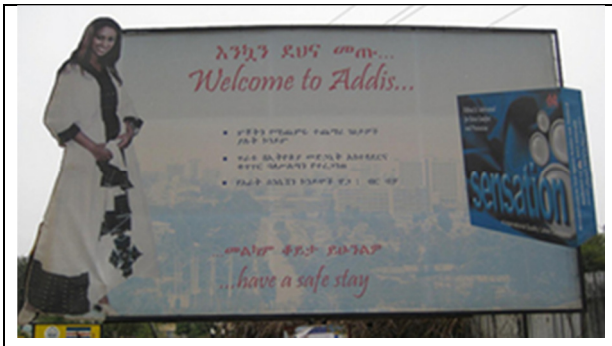


Figure 4: Health messages using condom use and condom use self-efficacy frames

Figure 5 shows two examples of condom messages. The first message is a billboard addresses the comfort, quality, and price of Sensation brand condoms. The second message, a poster for Hiwot brand condoms, focuses on the response efficacy of condoms by informing that condoms protect from sexually transmitted infections (STIs) and HIV but do not reduce pleasure.



Headline: Welcome to Addis… • A condom that has natural comfort • Quality proven by the Ethiopian Drug Administration • 4 Sensation condoms sell for only 1 Birr Have a safe stay	Man: Using condoms does not reduce pleasure Woman: Yes, condoms protect from STIs and HIV but don't reduce pleasure

Figure 5: Message example: Self-efficacy and response efficacy.

Knowledge of HIV as a disease

The purpose of this question was to examine whether there were elements in the message that explicitly educate the audience in HIV as a disease. Only two out of the eighty-nine messages that had HIV as their topic also had text that informed the audience general HIV basic facts.

HIV transmission methods

This question looked at if HIV transmission was expressed in the image or text of the message. This included text or images that expressed the presence of any of the following HIV transmission methods: heterosexual sex, homosexual sex, mother-to-child transmission, injection drug use/shared needles, blood transfusion, transmission via instruments of traditional practices, no transmission through casual contact, heterosexual sex-CSW, and heterosexual-multiple partners.

Images with male and female figures were coded as indicating heterosexual transmission of HIV. Images that specified HIV transmission by casual or multiple partners and CSW were coded separately. There were no health messages that indicated HIV transmission as a result of homosexual intercourse.

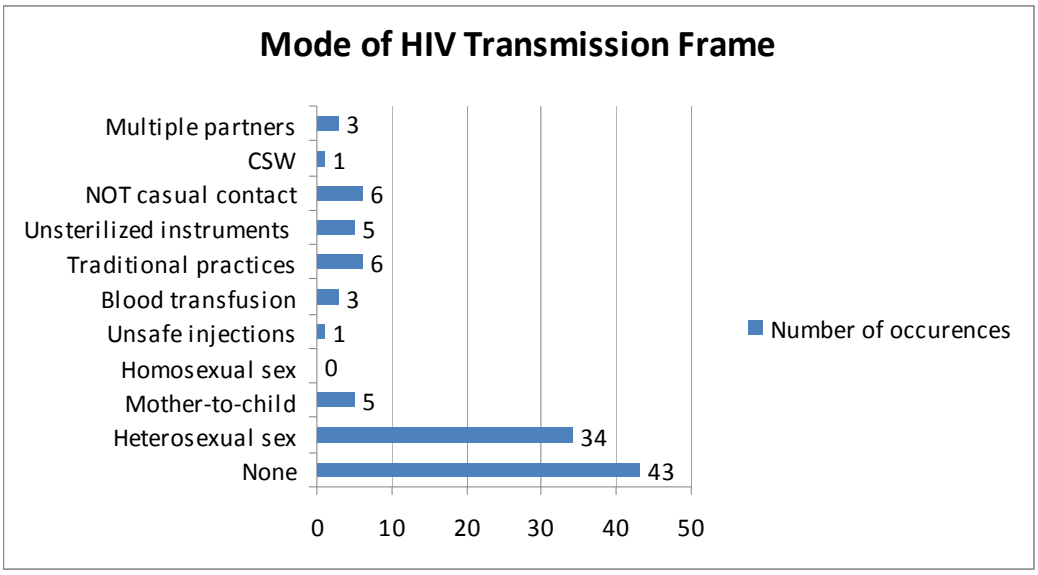


Figure 6: Mode of HIV transmission frames.

The majority of health messages (43) did not address HIV transmission. Heterosexual sex was the HIV mode of transmission that was most used in the health messages. Older images were text heavy and listed the modes of HIV transmission in the text (see Figure 7).

Headline: Do you know how AIDS is transmitted? • Having sex with more than one partner • Unsterile medical instruments, contaminated blood transfusions, unsafe medical practices with unsterile equipment • Transmission from mother to unborn child	Headline: Ways that AIDS is transmitted Body: Mother to child, casual sex, unsterilized equipment, blood transfusion Let's prevent AIDS together.

Figure 7: Examples of posters that used the HIV transmission frame.

Knowledge of HIV prevention methods

Images or text of methods that can prevent transmission of HIV infection were coded for this question.

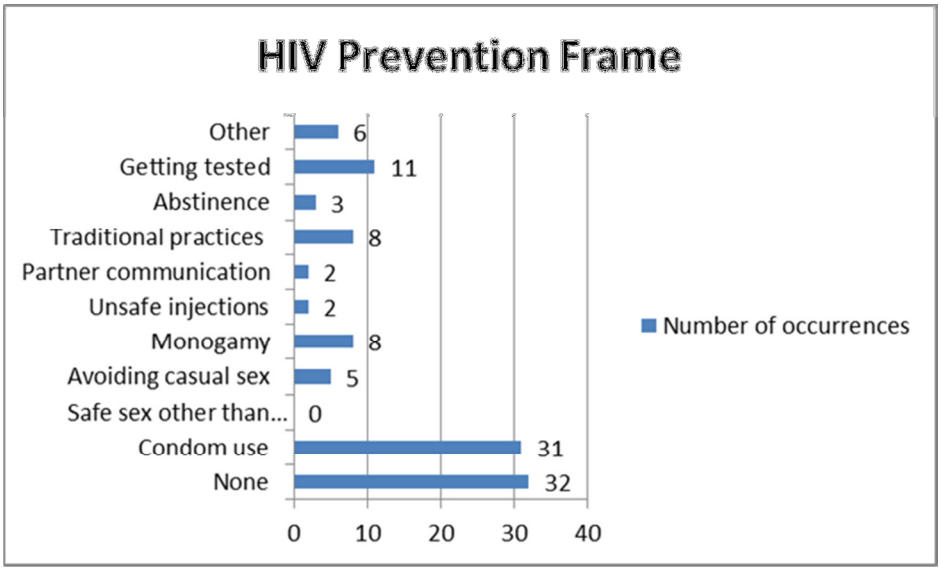


Figure 8: HIV prevention frames.

The most commonly cited prevention method in the messages was condom use. Other types of prevention methods indicated in the messages were: not getting pregnant if HIV positive, taking HAART while pregnant, avoiding instruments of traditional practices, and avoiding unsafe blood transfusions. Only one type of prevention frame, "Safe sex other than condom use" was not used in the health messages analyzed. Thirty-two messages did not specify a prevention method.

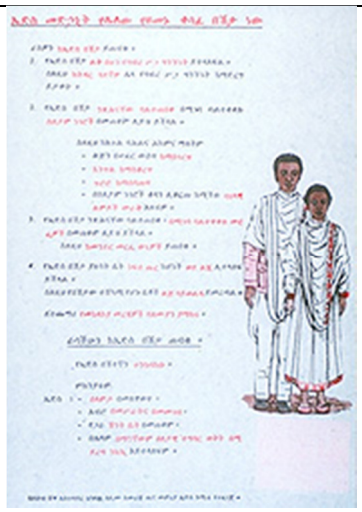
	
Headline: AIDS this generation's scourge that doesn't have a cure. Body: Text emphasizes that HIV is not transmitted through casual contact but by casual sex so be monogamous.	*Headline*: Let's Keep the promise *Body*: I abstain (woman), I am faithful (man in the middle), I use condoms (man on right) Let's Stop AIDS

Figure 9: Examples of health messages that used the HIV prevention frame.

Social issues frame

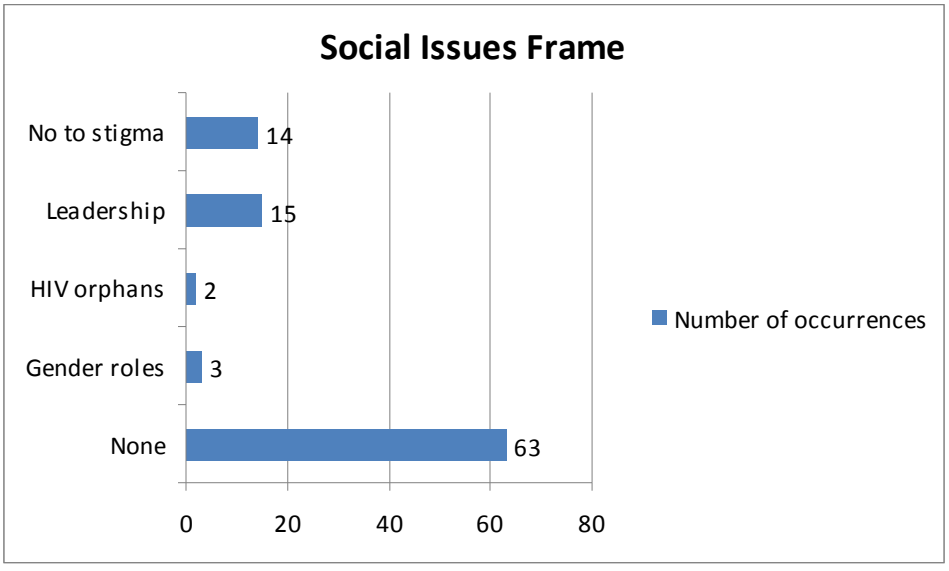


Figure 10: Social issue frames

Fifteen of the messages that used a social issues frame focused on the need for leadership to address HIV. Leadership was often portrayed by using prominent figures such as the Prime Minister of Ethiopia (Figure 11), Olympic and world record holding runners[11], and Miss Ethiopia[12] to endorse messages addressing the need fighting HIV stigma, getting tested, caring for children orphaned due to HIV, or taking leadership to fight HIV in general.

Three messages were targeted to a female audience encouraging women to take ownership of their right or protect women against practices that put them at risk for HIV infection such as female genital mutilation (FGM), forced marriage, rape, and underage marriage.

Headline: New millennium new hope. Body: FGM, forced marriage, rape, and underage marriage put us at risk for AIDS. Let's put a stop to them.	Headline: With strong leadership we can stop AIDS! Body: It is expected that the actions that leaders take on AIDS brings about results. Image: Ethiopian Prime Minister Melse Zenawi	Headline: Knowing is beneficial. I benefited from taking an HIV test. New year, new life. Image (left to right) elite runners: Tirunesh Dibaba, Sileshi Sihen, and Meseret Defar.

Figure 11: Examples of health messages that used the social issues frame.

[11] Appendix E images 88, 89, 129, 154, 191
[12] Appendix E image 181

Consequence or severity of HIV

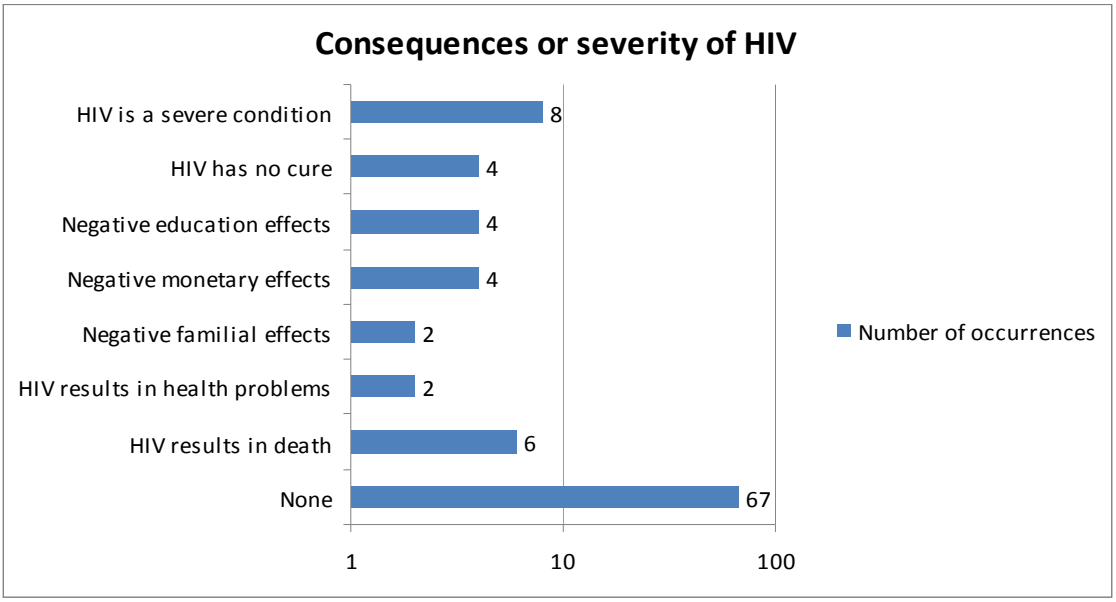


Figure 12: Consequence or severity of HIV frame

While the majority of health messages did not frame the message in terms of the severity or consequences of HIV infection or AIDS there were 8 instances where health messages referred to an unspecified severity or danger of the disease using dark clouds, sad faces. Moreover, 6 messages indicated that HIV was a deadly disease in their text or image (see Figure 13).

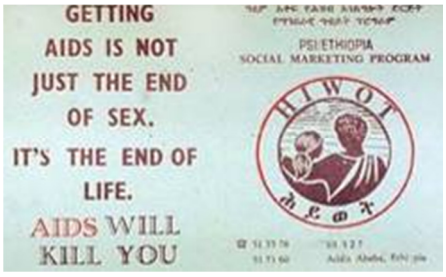
	
Poster addressing the severity of AIDS with Hiwot condom logo on the right.	Poster with an image depicting monogamy as an umbrella that protects couples from the rain of deaths due to AIDS. Skulls have "AIDS" written on their forehead.

Figure 13: Examples of posters addressing the severity of AIDS

Health messages with unspecified content

The qualitative analysis found that each HIV frame was used in the health messages coded. However, among the response options for each of the frames, the majority of the results indicated the absence of the particular frame. This led to the question that if the messages were not addressing condom use self-efficacy, HIV prevention, HIV transmission, severity of HIV, or social issues relating HIV what message were they sending to the audience? These health messages clearly had HIV as a primary topic but did not include specific HIV information. In other words, these messages were addressing very general awareness without additional information that would inform the reader. The posters in Figures 14 and 15 are examples of this message type without specified content.

The poster in Figure 14 leads with the headline "What do you know about AIDS?" and shows a female student asking a male student nine questions about AIDS. While they are good questions, the poster does not include any responses or direction as to where to obtain additional information.

Headline: "What do you know about AIDS?"

Body: "What is AIDS?; What can we do for people with AIDS?; Can one be cured from AIDS?; What does someone sick with AIDS look like?; Which one of us has AIDS?; How can we protect ourselves from it?; Who can get AIDS?; What are the causes for AIDS?"

Conclusion: "Don't guess the answers. Learn correct information about AIDS."

Figure 14: Unspecified content, Example 1.

In the next example, Figure 15, two posters with the same text and images of a smiling woman and man carrying books. The poster headline reads "I will not expose myself to AIDS" and concludes "I have bright hope for the future." Other than the sense of a positive outlook from not being infected with HIV, the posters do not specify in the image or text how exposure to HIV is avoided

I will not expose myself to AIDS.
I have bright hope for the future.

Figure 15: Unspecified content, Example 2.

In this group of messages only the topic to be addressed (HIV) was clear and identifiable. These messages did not articulate a message or action for the reader to take. It can be argued that this lack of content is due to poor research and targeting of the audience.

In sum, the qualitative analysis found that there was very minimal use of self-efficacy frames in HIV health messages. In addition, youth were not targeted as the primary audience for HIV health messages. Lack of health messages targeting was not unique to youth and was observed across age, gender, and other categories. Lastly, the qualitative analysis identified health messages that conveyed nothing other than basic HIV awareness or identifying HIV as a topic without providing additional information for the audience.

Discussion

The qualitative analysis found minimal use of self-efficacy frames in messages where condoms or HIV were the primary topics. In addition, regardless of the health topic, few health messages were directly targeted at youth. These findings support the second hypothesis of this thesis. Moreover, the findings indicated that other HIV frames were not frequently used to specify an HIV message. Instead, most HIV health messages were vague and did not transmit a specific HIV message to their audience.

Self-efficacy

As previously stated, there was nominal self-efficacy messaging in material that had HIV as the primary topic or that promoted condom use. In messages that promoted condom use, the focus was on the response efficacy of condoms rather than on self-efficacy. As was previously discussed, condom use self-efficacy is low among urban youth in Ethiopia and provides a possible explanation for the KAP-gap in condom use. Furthermore, FHAPCO (2002 & 2007b) found that youth think that condoms are effective in preventing HIV infection, viewing the response efficacy of condoms positively. Hence, if health messages are to play a role in increasing condom use among youth and decreasing the condom use KAP-gap, health messages need to incorporate self-efficacy messaging.

Additional HIV frames and unspecified content

The qualitative analysis identified the frames used to convey HIV information showing that the health messages covered areas important in HIV education (e.g.: prevention, transmission, and testing). However, the qualitative analysis identified health more messages that did not have any specified content other than identifying the topic of

the health message as HIV. These health messages did not make clear what about HIV they were trying to communicate or to whom the message was targeted.

Targeting

Another observation that resulted from the qualitative analysis is that the majority of messages were not targeted by the age or gender of the audience. The goal of most of the messages in the sample seems to be to transmit information to the population as a uniform group. As a consequence, youth have minimal number of general or HIV health messages targeted to them. There were some exceptions such as a campaign to increase HIV testing; "Efoy" [13] that was designed to reach 18-30 year old males and females separately. Youth need messages directly targeted to them. As there are differences among youth in terms of their age, gender, sexual experience, or school status, they need to be further segmented. Doing so would mean that messages that address a segment's specific behavioral determinants for condom use would be used to design a salient and effective message.

Lastly, as indicated in the results of the qualitative analysis, there were several messages that used spokespersons to express HIV messages. While using prominent endorsers may initially draw an audience, the link between the message and the endorser needs to be clear for the message to be effective.

In a focus group conducted by Petros (2008) examining the portrayal of women in billboard advertising in Addis Ababa, participants expressed confusion as to why Miss Ethiopia figured in a series of advertisements for Sensation brand condoms.

Participant 1: "…I never understood the relationship between Hayat [Miss Ethiopia] and the condom. What kind of message it wanted to pass for me is a mystery" (p. 48).

[13] Appendix E images 147, 148, 149, 150, and 152

Participant 2: "…I think she [Miss Ethiopia] was used to attract attention without any relation to the product" (p. 48)

As the specific HIV related content and target demographic the health message were not specified, the association of the message with the spokesperson was unclear.

The use of spokespersons or celebrity endorsers is a common practice in advertising. However, for it to be effective in terms of speaking to the target audience and associating the message or product with the attribute or credibility of the endorser, the link between the endorser and the message needs to be established.

In conclusion, these messages are not an adequate source of condom use self-efficacy because they do not incorporate condom use self-efficacy messaging and there aren't a sufficient number that are targeted to youth. In order to reduce and eventually eliminate the condom use KAP-gap, condom use self-efficacy needs to be increased. However, for these messages to be effective, HIV content area (condom use), target age and gender need to be specified. Most importantly, messaging that would enhance condom use self-efficacy would need to be incorporated into the health message.

Chapter 5: General discussion

5.1 Compiled Discussion

As was discussed in Chapter 2, HIV is a problem across all segments of Ethiopian society especially among youth. The HIV problem in Ethiopia is made up of several challenges; ones that can be changed through interventions (e.g. learned behaviors) and other elements that are structural (e.g. status of women in Ethiopia, economic situation/ development of the country, or health care infrastructure) and that would require secular change. This thesis proposed a focused examination of a particular segment of the population and a prevention tool, condoms, to make this overwhelming problem slightly approachable.

Despite condoms being a cheap, effective, and widely distributed HIV prevention tool, they are not widely used among urban youth. KAP-gap in condom use behavior among urban youth is a learned behavior that can be changed through interventions. For an intervention to be effective it needs to be strategically designed based on elements that are salient to the target audience and their behavioral determinants of condom use behavior.

Quantitative research review

Although further research is needed this thesis found evidence that the levels of condom use self-efficacy among youth were low. As was demonstrated in Chapter 3 there is a strong theoretical basis for the sufficiency argument that knowledge (information) is necessary but not sufficient for behavior change. Self-efficacy is a tool that mediates and translates information into behavior (Maibach & Murphy, 1995; Rimal, 2000; Wulfert &

Wan, 1993). For interventions to be effective, they need to be targeted to a specific population and address the determinants of behavior that is unique to that target population.

Self-efficacy needs to be incorporated in messages targeted to youth. Information transmitted need to be specific to consistent condom use including self-efficacy information. The self-efficacy skills necessary to translate knowledge into action need to be promoted as part of individual messages and larger interventions. Self-efficacy needs to be enhanced using the sources of self-efficacy discussed in Chapter 3. Not all the elements of condom use self-efficacy can be addressed using media interventions. For example modeling behavior maybe better implemented in group sessions led by peer educators. A well designed intervention could integrate the sources of condom use self-efficacy in the message vehicle that is most effective.

Qualitative analysis

A variety of health topics were covered by the health messages in the sample with 55% of the sample that had HIV content. A minority of these health messages included self-efficacy components in their messages. Moreover, the health messages were not targeted to specific audiences. Lastly, several messages did not provide specific content beyond having HIV as a topic. These issues are reflection of message design done without adequate audience research. In order to see behavioral change from health communication interventions messages need to be grounded in behavioral theory and strategically designed.

Message content research and design

To increase condom use among youth messages need to be targeted to them and incorporate self-efficacy messaging. Although youth are a sub-group of the population, there are differences such as gender, age, sexual experience, or school status requiring further segmentation (Taffa et al., 2003). The informational needs of these segments would be different which would determine the message content and vehicle used to transmit the message. These differences can be quite significant due to the important role of culture in Ethiopian society. For example, further researching gender roles could clarify condom use KAP-gap and the role of self-efficacy. Instead of messages that support existing social gender roles (e.g. women being encouraged to abstain while men use condoms) messages should address the segment's specific informational need.

How can this be implemented?

Even the best designed intervention that was based urban youth's behavioral determinants of condom use of the target would not address all the social and distal variables. According to Bandura (1990) the effective implementation and maintenance of the new behavior needs social support. Meaning, intervention with two components; health messages and community based support/education.

Hence, to curb the HIV epidemic in Ethiopia by specifically increasing condom use among urban youth, a comprehensive HIV education and social support program is needed. An example of such a program is loveLife, a comprehensive HIV education and support program targeted at South African youth. loveLife program provides health education using mass media as its primary component but also includes other elements to provide support and build self-efficacy (Stadler & Hlongwa , 2002). A similar initiative

would enable urban Ethiopian youth to initiate, maintain, and persist at condom use behavior to protect from HIV infection.

5.2 Limitations and Future Research

The purpose of this study was to get a theoretical explanation for the condom use KAP-gap among youth in Ethiopia as well as to survey health information available to youth for self-efficacy messaging. The combination of the two elements was expected give a fuller picture to the barriers to adopting condom use behavior. This study did find that condom use self-efficacy was low among this population. However, primary data on the level of self-efficacy among urban youth in Ethiopia is needed to confirm the role of low self-efficacy in explaining why high levels of condom use knowledge does not translate to optimal levels of condom use to prevent HIV infection. The qualitative analysis found that self-efficacy messaging was lacking in HIV print health messages available to youth. Future research should include health messages transmitted using other media such as radio, television, and internet in order to have a representative sample of heath messages available to Ethiopian youth.

5.3 Conclusion

There is a strong theoretical argument that knowledge is necessary but not sufficient for behavioral change. Youth in Ethiopia know that HIV is a sexually transmitted disease and condoms can protect them from HIV infection. Despite their knowledge condom use among youth is low; creating a condom use KAP-gap. This thesis found preliminary evidence that self-efficacy is correlated with intention to use condoms as well as low levels of self-efficacy in this population. These findings confirm that knowledge is not enough to elicit behavior change and provide an explanation for the presence of the condom use KAP-gap.

Next, the qualitative analysis found that health messages incorporate very minimal self-efficacy messages. Moreover, youth are not the primary target in most health messages. For health messages to be effective in increasing condom use behavior among this population, the salient predictors of condom use behavior identified using behavioral theory along with messages that increase condom use self-efficacy need to be incorporated into educational interventions. To effectively curb the HIV epidemic in Ethiopia, well-researched and designed educational interventions in conjunction with a program to provide social support to adolescents is critical.

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Appendices

Appendix A: Ethiopia country development indicators

Indicators	Estimate	Year
Total population (in millions)	83 million	2009
Population ages 0-14 (% of total)	44%	2009
Population ages 15-64 (% of total)	53%	2009
Population ages 65+ (% of total)	3%	2009
Urban population (% of total)	17%	2009
Rural population (% of total)	83%	2009
Annual population growth rate	2.6%	2009
Urban population growth (annual %)	4.3%	2009
Gross National Income per Capita (USD)	$330	2009
Adult literacy rate (% of people >15)	36%	2008
Youth literacy rate (15-24)	50%	2008
Youth male literacy rate	62%	2008
Youth female literacy rate	39%	2008
Male secondary school enrollment ratio	39%	2008
Female secondary school enrollment ratio	28%	2008
Crude birth rate (birth per 1,000 pop)	38.23	2008
Crude death rate (deaths per 1,000 pop)	11.82	2008
Life expectancy at birth	55	2008
Fertility rate, total (births per woman)	5.3	2008
Mortality rate, infant (per 1,000 live births)	67.1	2009
Mortality rate, under-5 (per 1,000)	104.4	2009

Source: World Bank

Appendix B: Top ten causes of death, all ages Ethiopia , 2002

Causes	Deaths (000)	Deaths %	Years of Life Lost %
Lower respiratory infections	124	12	14
HIV/AIDS	121	12	12
Perinatal conditions	82	8	10
Diarrheal diseases	63	6	7
Tuberculosis	41	4	4
Measles	39	4	5
Cerebrovascular disease	35	3	1
Ischemic heart disease	32	3	1
Malaria	31	3	4
Syphilis	21	2	2
All causes	105	100	100

Source: World Health Organization, Death and DALY estimates by cause, 2002

Appendix C: Quantitative Research Review Database Article Search

1. Digital dissertations
    a. Ethiopia +HIV= 15 results
    b. +Condom= 4 results
    c. + self-efficacy=1 results
    d. (-self-efficacy)+behavioral control= 0 results
    Total articles: 1

2. Global Health
    a. Ethiopia + HIV= 3 results
    b. +Condom= 0 results
    c. + self-efficacy= Not done
    d. (-self-efficacy)+behavioral control= Not done
    Total articles: 0

3. Popline
    a. Ethiopia + HIV= 414 results
    b. +Condom= 21 results
    c. + self-efficacy=0 results
    d. (-self-efficacy)+behavioral control= 0 results
    Total articles: 21

4. PsycInfo
    a. Ethiopia + HIV= 24,941 results
    b. +Condom= 1,079 results
    c. + self-efficacy=152 results
    d. (-self-efficacy)+behavioral control= 12 results
    Total articles: 164

5. PubMed
    a. Ethiopia + HIV= 604 results
    b. +Condom= 44 results
    c. + self-efficacy= 4 results
    d. (-self-efficacy)+behavioral control= 26 results
    Total articles: 2

6. African Journals Online
    a. Ethiopia + HIV=4 results
    b. +Condom= 2 results
    c. + self-efficacy=0 results

d. (-self-efficacy)+behavioral control= 0 results
Total articles: 2

Appendix D: Qualitative analysis Codebook

Section 1

A. Image number

B. Material type
    1. Poster:
    2. Billboard
    3. Novelty item (e.g.: calendar, sticker, t-shirt)
    4. Pamphlet

C. Year published
    1. Not available
    2. Available: _____ (specify)

D. Location of publication
    1. Not available
    2. Urban
    3. Rural
    4. Other: _____(specify)

E. Language of publication
    1. Amharic
    2. Oromiffa
    3. Tigrinya
    4. English
    5. English and Amharic
    6. English and Oromiffa
    7. English and Tigrinya
    8. Other_____ specify

F. Target Gender
    1. None (including both genders targeted)
    2. Male
    3. Female

G. Target Age group
    1. None
    2. Youth (15-30)
    3. Adult (>30)
    4. Other:_____(specify)

H. Health topic
    1. Family planning (e.g. child spacing, limiting number of children, oral contraceptives)
    2. HIV
    3. Child & maternal health (e.g. immunization, breast feeding, vaccination, child abuse)
    4. Environmental health (e.g. sanitation practices, hand washing)
    5. Other (e.g. traditional practices, female genital mutation, scarring)
    6. Family planning and HIV

Section 2

I. Knowledge of HIV/AIDS as a disease (explicit explanation of HIV as a disease)
    1. No
    2. Yes

J. Knowledge of transmission methods
    1. None: No transmission methods specified in text or image
    2. Heterosexual sex: text and/or image indicates heterosexual transmission of HIV
    3. Mother-to-child transmission: text and/or image indicates mother-to-child transmission of HIV
    4. Homosexual sex: text and/or image indicates homosexual transmission of HIV
    5. Injection drug use or shared needles: text and/or image indicates transmission of HIV by injection drug use, unsafe injections, or shared needles
    6. Blood transfusion: text and/or image indicates transmission of HIV by blood transfusion
    7. Transmission via instruments of traditional practices: text and/or image indicate transmission of HIV by instruments used for female genital mutilation, scarring, or procedures conducted by traditional healers
    8. Transmission via unsterile medical instruments: text and/or image indicates transmission of HIV by use of unsterile medical instruments
    9. Not transmitted through casual contact: text and/or image indicates that HIV is not transmitted through casual contact
    10. Heterosexual sex-CSW: text and/or image indicates that HIV is transmitted through heterosexual sex with CSW
    11. Heterosexual-Casual/multiple partners: text and/or image indicates that HIV is transmitted through heterosexual sex with casual or multiple partners

K. Knowledge of methods to preventive HIV
    1. None
    2. Condom use

3. Safe sex other than condom use
4. Avoidance of casual sex
5. Monogamy
6. Avoidance of injection drug use, unsafe injections, shared needles
7. Communication between sex partners
8. Avoidance of sharing instruments of traditional practices
9. Abstinence
10. Getting tested
11. Other (e.g. not getting pregnant if HIV positive, taking ART while pregnant, traditional practices, or blood transfusions)

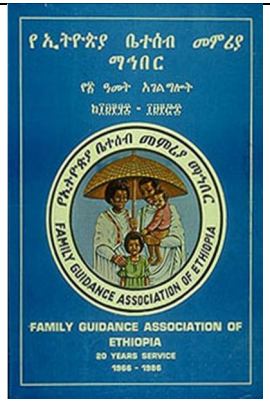
L. Social issues relating to HIV
    1. None
    2. Gender roles
    3. HIV orphans
    4. Leadership
    5. Stigma

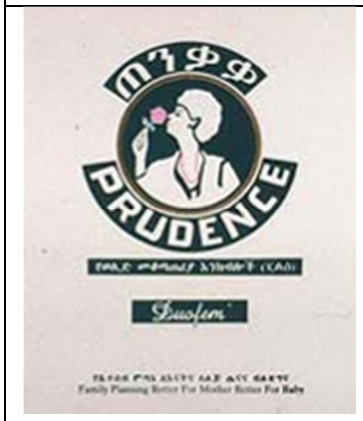
M. Consequences or severity of HIV/AIDS
    1. None
    2. HIV infection can result in death
    3. HIV infection can result in health problems
    4. HIV infection can result in marital and/or familial problems
    5. HIV infection can result in monetary problems
    6. HIV infection can result in educational consequences (not being able to go to school as a result of HIV infection or to take care of a family member with HIV)
    7. Living without a cure
    8. Living with a severe health condition: unspecified danger (e.g. dark clouds, skulls, emaciated persons)

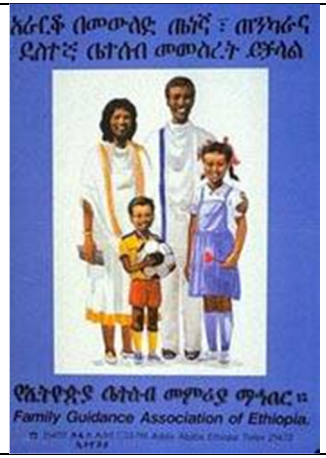
N. Condom use self-efficacy
    1. None
    2. Verbal persuasion: “You can use a condom”; “Protect others, use a condom”
    3. Barriers: condoms are easy to carry
    4. Barriers: condoms or other means of safe sex are easy to use or implement
    5. Barriers: condoms are available [at location X]/condoms are easily attainable
    6. Barriers: condoms or other means of safe sex are not embarrassing
    7. Response efficacy: condoms don’t reduce pleasure
    8. Response efficacy: condoms are an effective and quality tested product
    9. Other self-efficacy for other behaviors (e.g.: getting tested, counseling services, taking ART, or mother-to-child transmission)

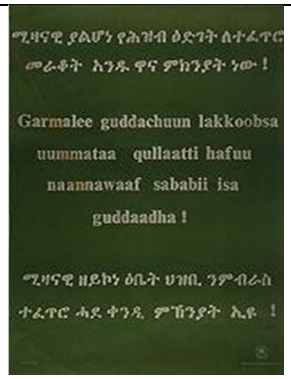
Appendix E: Qualitative analysis images

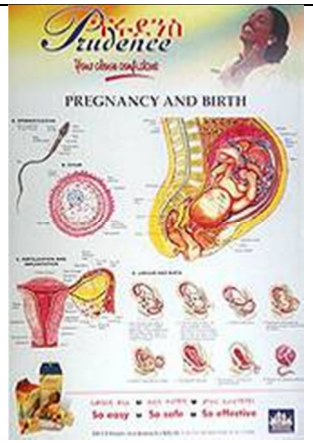
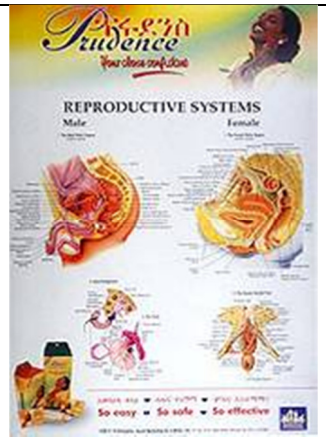
1. Family planning (e.g. child spacing, limiting number of children, oral contraceptives)

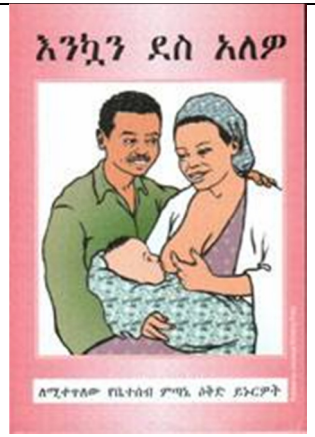
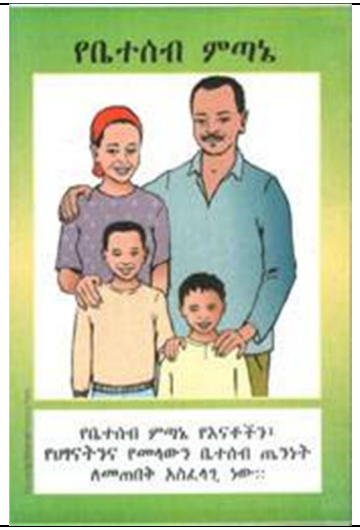
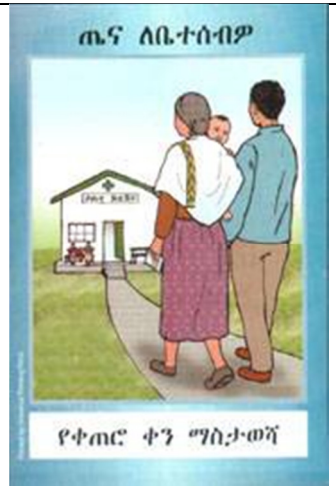
3	7	8	10
			
11	12	13	20

18	19	33	29
			
41	45	47	50

			
51	52	53	54
56	57	60	61

			
76	77	79	90
93	94	96	97

			
104	105	110	111

112	127	131	132
			
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2. HIV

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			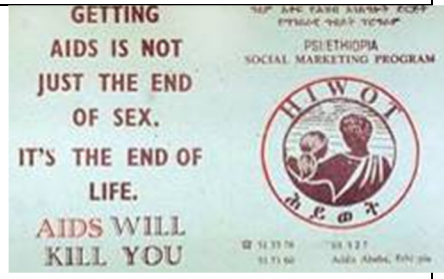
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	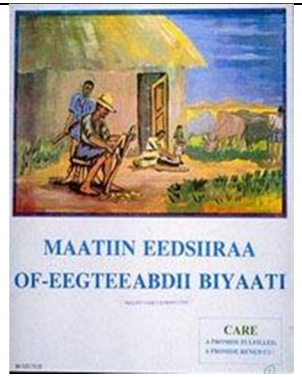	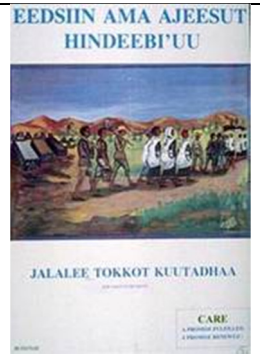	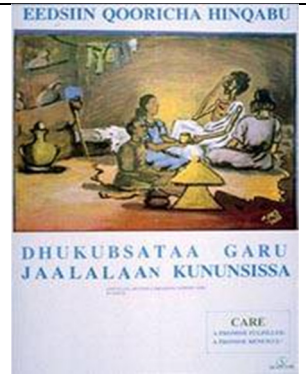
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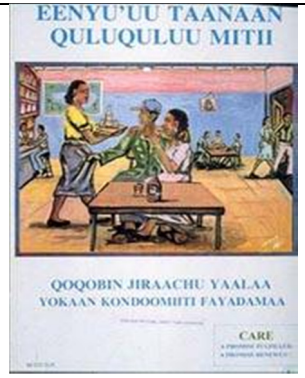			
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	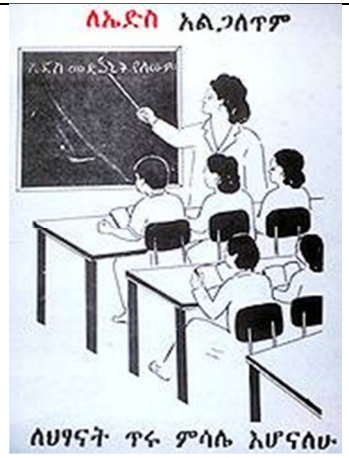	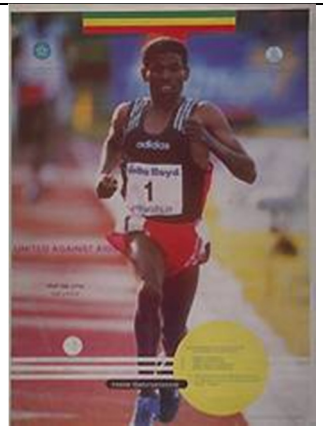	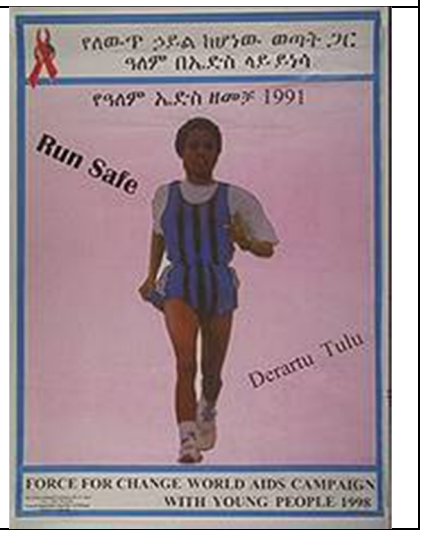

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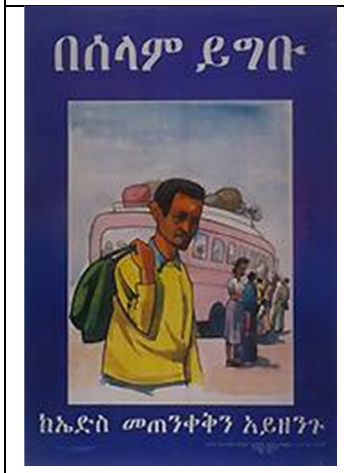			
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	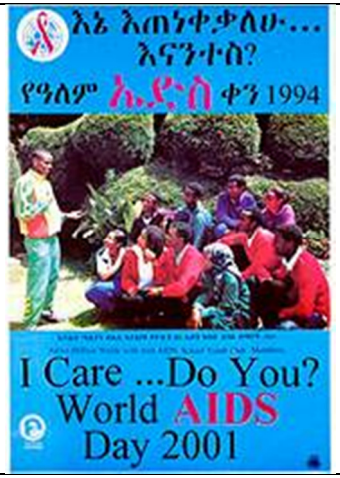		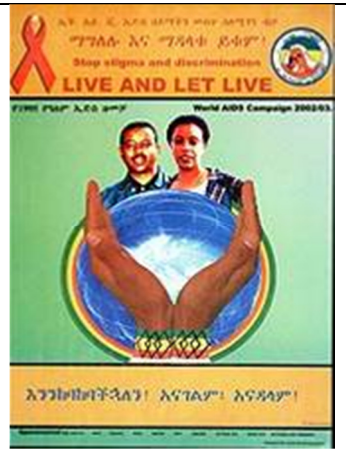
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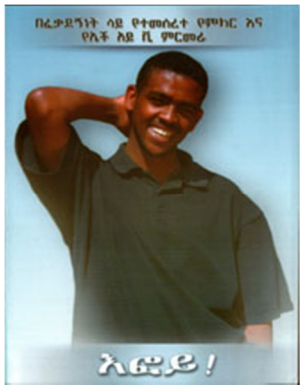	
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			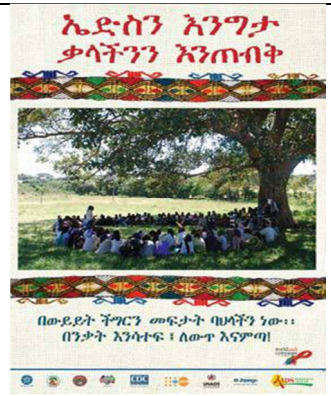
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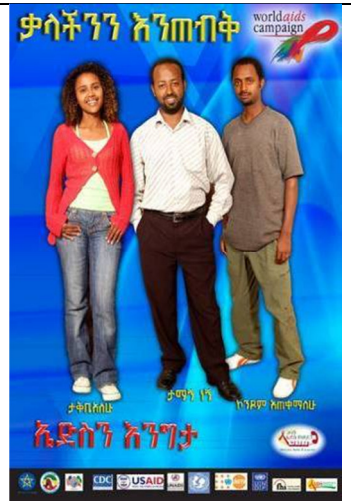
</td><td> 
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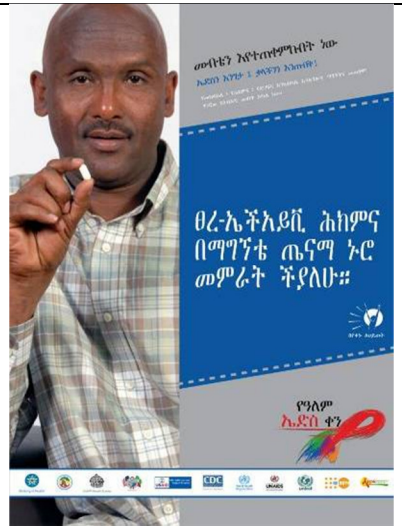
</td><td> 
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እንኳን ደህና መጡ...
Welcome to Addis...
sensation
...መልካም ቆይታ ይሁንልዎ
...have a safe stay

188

የተግባር ሰው እንሁን!
Tel: 011 270 01 55
011 270 21 08

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CDC
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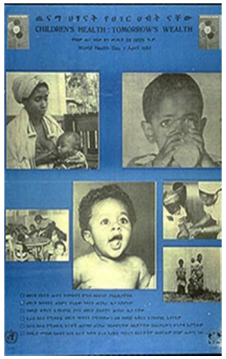
ወላጆቻቸውን ያጡና ለችግር የተጋለጡ ህፃናት የነገ አሸናፊዎች እንዲሆኑ እንንከባከባቸው! Let's care for Orphans and Vulnerable Children, tomorrow's winners! Save the Children World Vision	ስትሮበሪ STRAWBERRY French Feelings
191	192

3. Child & maternal health (e.g. immunization, breast feeding, vaccination, child abuse)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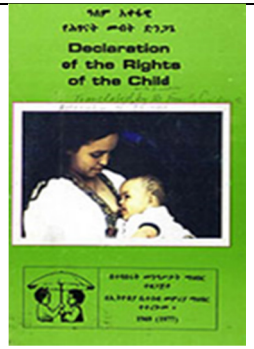			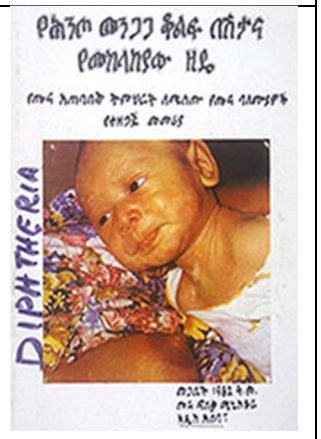
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4. Environmental health (e.g. sanitation practices, hand washing)

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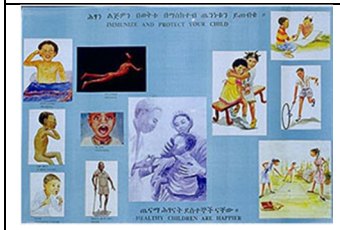			
26	28	55	78

139

5. Other (e.g. traditional practices, female genital mutation, scarring)

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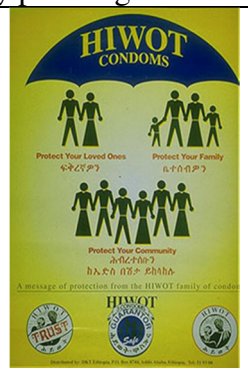
6. Family planning and HIV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	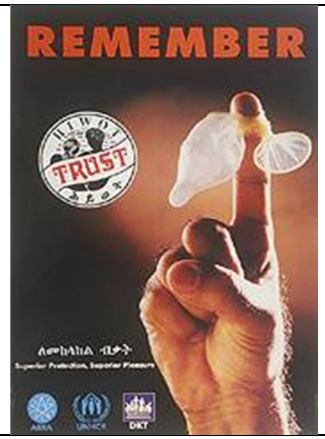		
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