

**KNOWLEDGE, ATTITUDES AND PRACTICES AMONG PARENTS TOWARDS HUMAN
IMMUNO- DEFICIENCY VIRUS (HIV) TESTING AND TREATMENT FOR CHILDREN:
THE CASE OF ADDIS ABABA, ETHIOPIA.**

by

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submitted in accordance with the requirements for
the degree of

MASTER OF PUBLIC HEALTH

at the

UNIVERSITY OF SOUTH AFRICA

SUPERVISOR: Prof B L Dolamo

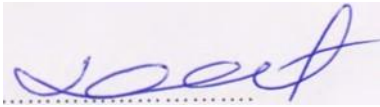
JUNE 2013

DEDICATION

To my only daughter, Chiedza-the model!

DECLARATION

I declare that, KNOWLEDGE, ATTITUDES AND PRACTICES AMONG PARENTS TOWARDS HUMAN IMMUNO-DEFICIENCY VIRUS (HIV) TESTING AND TREATMENT FOR CHILDREN: THE CASE OF ADDIS ABABA, ETHIOPIA, is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.



Nelia Matinhure

JUNE 2013

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- The Ethiopia Addis Ababa Regional City Health Department for giving me permission to conduct the study

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ABSTRACT

Despite the availability of services, parents on antiretroviral treatment do not routinely get their children HIV tested and treated. The study aimed to document knowledge, attitudes and practices of parents towards HIV testing and treatment among children aged 0-14 years. A quantitative cross-sectional analytic study design was applied and a structured questionnaire used to collect data from 192 respondents.

Findings show that 71.4% of respondents had correct knowledge of HIV transmission in children. Negative attitudes towards HIV testing of children were expressed by 42.2% of respondents while practices were reported by 16.7%. Practices were associated with self-efficacy, stigma, number of children and marital status. Knowledge and attitudes did not affect parental practices of HIV testing of children. Parents with low self-efficacy felt stigmatised, had negative attitudes, poor perception of availability of services and were unlikely to get children HIV tested.

Recommendations to increase HIV testing among children included provision of skills and support to parents for HIV disclosure; localized care models to reduce stigma and identify children in need; and improving quality of services.

KEY CONCEPTS

Attitudes, feasibility, HIV testing of children, knowledge, practice, self-efficacy; stigma

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LIST OF ABBREVIATIONS

AIDS	Acquired Immuno Deficiency Syndrome
ANECCA	African Network for the Care of Children Affected by AIDS
ART	Anti-retroviral therapy
ARV	Antiretroviral
EDHS	Ethiopia Demographic and Health Survey
EFHAPCO/FMOH	Ethiopia Federal HIV/AIDS Prevention and Control Office
FMOH	Federal Ministry of Health
HIV	Human immuno-deficiency virus
KMO	Kaiser-Meyer-Oklin`
PCA	Principal Component Analysis
PMTCT	Prevention of mother to child transmission
SPSS	Statistical Package for Social Sciences
UNAIDS	Joint United Nations Program on HIV/AIDS
UNFPA	United Nations Population Fund
UNHCH	United Nations High Commissioner for Human Rights
UNICEF	United Nations Children Fund
UNISA	University of South Africa
VIF	Variation Inflation Factor
WHO	World Health Organization

CHAPTER 1

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

This chapter provides the orientation of the study as well as background information about the research problem. The chapter briefly discusses the aim and significance of the study. The chapter also briefly defines terms before considering the foundations of the research and study design and method. Lastly, the chapter outlines the scope of the study and the structure of the dissertation.

1.2 BACKGROUND INFORMATION ABOUT THE RESEARCH PROBLEM

Articles 6 and 24 of the United Nations Convention of the Rights of the Child stress the right of children to “survival, life and development” and the need for governments to ensure that no child is denied the right to access health services that will ensure their survival. The duties of member states to ensure that confidential human immunodeficiency virus (HIV) counseling and testing services are made available to every child to reduce their risk of HIV transmission, infection and increase their access to care and treatment are stressed (United Nations High Commissioner for Human Rights (UNHCH) 2003:6). As asserted by the World Health Organization (WHO) (2010:1), it is crucial to identify and test all infants who have been exposed to HIV as early as possible, to ensure access to care and anti-retroviral therapy (ART).

Statistics show that mother to child transmission of HIV accounts for 90% of HIV infection in infants and young children (UNHCH 2003:7; UNAIDS and WHO 2008:5). Consistent with protecting the rights of the child in the context of HIV and AIDS, the prevention of mother to child transmission (PMTCT) of HIV programs become essential for prevention, care, treatment and support to those infected women and their children. However, the provision for member states to meet children’s rights to survival has not translated into increased access to HIV testing and treatment among children. There is an underlying assumption that parents, as duty bearers, know what to do to get their children tested and initiated on treatment. Although PMTCT programs have been successful in enrolling pregnant women, they have recorded little success in enrolling HIV positive children for

care (Kellerman and Essajee 2010:4; Leeper, Montague, Friedman and Flannigan 2010:4; UNICEF/UNAIDS/WHO/UNFPA 2009:2; WHO 2010:1). Out of an estimated 730 000 children infected by HIV globally, only 38% had been initiated on ART by 2008 (United Nations Children's Fund (UNICEF) 2009:10). In Ethiopia, only 5% of the 92 000 children aged 0-14 years estimated to be living with HIV are receiving treatment. Similarly, only 6.6% of the 74 000 pregnant women living with HIV are receiving antiretroviral to prevent mother to child transmission (Joint United Nations Program on HIV/AIDS (UNAIDS)/ World Health Organisation (WHO) 2008:5). Low antenatal coverage (29%) and high loss to follow up of HIV positive pregnant mothers and diagnosed infants exacerbates the problem (UNICEF/UNAIDS/WHO/United Nations Population Fund (UNFPA) 2009:2). These statistics paint a bleak picture about the majority of children born in Ethiopia who are exposed and at risk of contracting HIV/AIDS. HIV related stigma, lack of skilled manpower and poorly resourced health facilities have been cited as major barriers to increase HIV testing and access to treatment among children (Chaturvedi and Vijay 2009: 22; Leeper et al 2010:10; Rwemisisi, Wolff, Coutinho, Grosskurth and Withworth 2008:39; WHO 2006:1).

1.3 RESEARCH PROBLEM

While policy guidance and implementation guidelines on the HIV testing, diagnosis, counseling and treatment of infant and young children in health facilities and treatment guidelines exist, the majority of children remain at the periphery of prevention, treatment, care and support programs (WHO 2010; Ethiopia Federal HIV/AIDS Prevention and Control Office (EFHAPCO) and Federal Ministry of Health (FMOH) (2008). The existing practices focus on pregnant women with the intention of preventing mother to child transmission. However, PMTCT programs have only managed to capture 18% of the pregnant women in Ethiopia (UNICEF et al 2009:40).

The researcher observed that despite the availability of services for HIV testing and treatment for children, parents on HIV treatment do not routinely get their children tested or started on treatment. While the focus has been on unraveling the barriers to HIV testing and treatment among children from the supply point of view, there is not much information on why HIV infected parents on treatment do not voluntarily take their children for testing and treatment despite the availability of services. Moreover, the contributory effect of

socio-demographic characteristics, knowledge and attitudes of parents towards practices of HIV testing and treatment of children is not well documented.

As demonstrated from a review of literature over the past ten years, very little is known on the fate of the exposed and infected infants beyond PMTCT programs or about those children whose parents are infected and on treatment that never get a chance of being tested at all. It would be interesting to study the contributory effect of factors related to knowledge attitudes and practices among parents towards the slow expansion of HIV testing and treatment in the Ethiopian context.

1.4 AIM OF THE STUDY

The aim in doing this study was to assess and document knowledge, attitudes and practices among HIV infected parents (fathers and mothers) on ART towards human immuno-deficiency virus (HIV) testing and treatment for their children aged 0-14 years in Addis Ababa, Ethiopia. The study also sought to determine factors that hinder the increased uptake of HIV testing and access to treatment among children aged 0-14 years whose parents are infected and accessing treatment.

1.4.1 Research objectives

Specifically the research addressed the following objectives:

- To investigate the knowledge, attitudes and practices of HIV infected parents towards HIV testing and treatment among children aged 0-14 years
- To determine the relationship between socio demographic variables and knowledge, attitudes and practices of HIV infected parents towards HIV testing and treatment among children aged 0-14 years
- To determine the extent to which knowledge and attitudes influence the parental practices towards HIV testing and treatment among children aged 0-14 years.

1.5 SIGNIFICANCE OF THE STUDY

The study significance lay in the unveiling of factors that acted as barriers to increase access to HIV testing and treatment among children aged 0-14 years. The study findings could also inform strategies and programs aimed at increased uptake of pediatric HIV testing and treating services.

1.6 DEFINITION OF KEY CONCEPTS

Parents' knowledge, their attitudes and practices in relation to HIV testing and treatment among children were key concepts used in this study. These were defined below.

1.6.1 Knowledge

Knowledge of pediatric HIV/AIDS in this study referred to the extent of awareness and familiarity among infected parents who were on treatment about their understanding of HIV infection among children aged 0-14 years. The extent to which parents exhibited knowledge was determined by the way they demonstrated awareness and familiarity concerning the biological and physiological routes of HIV transmission among children. Furthermore, the extent to which parents demonstrated knowledge of ways in which HIV could not be transmitted in children was used to assess their knowledge level.

1.6.2 Attitudes

Attitudes, in the context of this study, referred to the negative or positive feelings toward HIV testing and treatment, including any preconceived ideas on HIV, infected parents had towards this topic because of their lived experiences with HIV and that of their children. Attitudes also referred to the extent of parental agreement to benefits of HIV treatment of children, motivation and perceived confidence and skill set to handle HIV testing and treatment among children.

1.6.3 Practices

Practices referred to the various ways in which HIV infected parents demonstrated, through knowledge and attitudes, their actions towards HIV testing and treatment for children aged 0-14 years. The actions included intentions or actual getting children tested and started on treatment. The actions were viewed at both parental and child level.

1.7 FOUNDATIONS OF THE STUDY

The foundation of this study drew heavily on the post positivist epistemology which recognize the notion of objective reality focusing on how much one can rely on one's findings to predict certain outcomes (Muijs 2004:3).

1.7.1 Meta-theoretical assumptions

The study drew its theoretical foundations from Bandura's (1989:391; Bandura 1990:9) and Bandura (2001:4) social cognitive theory that subscribes to the notion of an evolving

but shared action. The theory postulates that thought processes are intricately linked to activities people do on a day-to-day basis. According to this theory, people can conceive unique events, consequently, consider different course of actions based on observation of others' behaviour, and still deliberately choose to execute one or none of those actions. The theory is further refined through the introduction of the notions of self-efficacy and personal agency where people intentionally exercise control over both their motivation and behavior through actions they take (Bandura.1990:9; Bandura 2001:2).

According to the social cognitive theory, a person's own behavior, their observation of other people in similar circumstances, their socio-economic or demographic characteristics and environment interact such that changes in one component have implications for the others. Therefore, in this study, parents' behavior towards testing their children for HIV and putting them on treatment was a function of their own socio demographic characteristics, knowledge, attitudes and other environmental factors like access to services and the level of stigma related to their own and their child's experiences of living with HIV.

The study set to demonstrate that increased access to HIV testing and treatment is depended not only on knowledge and but also on attitudes (agreement, motivation, perceived self-efficacy and outcome expectancy) towards HIV testing and treatment among children. In other words, parents with infected or exposed children could only take their children for testing and treatment if they were motivated enough and convinced about the benefits of testing children and starting them on treatment. Linked to this agreement was their conviction that the outcome of testing children and putting them on treatment would be positive.

1.7.2 Conceptual framework

A conceptual framework is regarded as a map for understanding the relationships between and among the variables in quantitative studies (Miller 2002:82). The conceptual framework used in this study was an adaptation from Cabana, Rand, Powe, Wu, Wilson, Abboud and Haya (1999:1458) and Roelens, Verstaelen, Egmond and Temmerman (2006:1). In the first instance, Cabana et al (1999:2) use a similar framework to review barriers to physician adherence to clinical guidelines and explain the sequence of behavior

change from knowledge, to attitude and then behavior. Roelens et al (2006:4) further develop Cabana et al's (1999:1458) behavior framework to come up with a predictive model to assess current barriers working through knowledge and attitudes to influence the physicians' practice of screening for intimate partner violence in settings where neither clinical guidelines nor specific recommendations with regards to abuse have been instigated.

The current study built upon the adapted framework to hypothesize that if infected parents feel inadequately equipped as reflected in their knowledge and attitudes, they would not be in favour of HIV testing and treatment of children infected by HIV. The practice, as displayed in their willingness to allow their children to be tested and started on treatment followed a feasibility assessment on whether their actions were sanctioned or supported by significant others, within the family or without.

1.8 THE RESEARCH DESIGN AND METHOD

The study applied a quantitative cross sectional analytic survey design and used a structured questionnaire to collect data from a sample of the population at a specific point in time and determined relationships among variables of interest. The chosen study design allowed for extraction of valuable information about the totality of the process of acquiring knowledge, attitudes and eventually translating these into practice. The quantitative research approach according to Creswell (2003:18), utilizes the positivist claims for developing knowledge that supports the "determination of cause and effect, reduction of specific variables and employs survey methodologies and predetermined instruments" for collecting data that can be analyzed statistically. This approach was suitable for measuring attitudes and rating behaviors (Creswell 2003:20). This study used an interviewer-administered questionnaire to solicit information, from the selected sample of respondents, on their knowledge, attitude and practice about HIV counseling, testing and access to treatment among children. Multistage cluster sampling was used to select respondents for the study.

1.9 SCOPE OF THE STUDY

The target population for this study was all people living with HIV in Addis Ababa and receiving treatment from the 24 health centres providing ART in the city. Using multistage cluster sampling, a representative sample of 192 persons living with HIV and on treatment, with children aged 0-14 years was selected, from an accessible population of at least 3500 receiving other community care and support services through a network of 457 volunteers in the four sub cities of Addis Ababa.

1.10 STRUCTURE OF THE DISSERTATION

Chapter 1 provided the orientation of the study. This included background information about the research problem, the statement, significance of the research problem. The research problem was discussed together with the aim and significance of the study. The chapter briefly defined terms before considering the foundations of the research and research design and method. Lastly, the chapter outlined the scope of the study and the structure of the dissertation.

Chapter 2 developed a conceptual framework of *knowledge, attitudes and practices among parents towards HIV testing and treatment for children*. A brief overview of literature was presented on the social cognitive theory thereby setting the context of the conceptual framework to be used in the study.

Chapter 3 focused on the actual study research design and methodology paying particular attention to design choice, study population, sampling procedures, the research instrument, data collection methods and analysis. The chapter also looked at the ethical issues covered in the study as well issues of reliability and validity.

Chapter 4 focused on data analysis, presentation and description of research findings. Data management issues and analysis were described briefly, highlighting the actual procedures engaged during the research process. Research results were presented starting with sample characteristics, moving on to descriptive and inferential statistics. Lastly, the chapter gave an overview of the research findings.

Chapter 5 interpreted the research findings concerning knowledge, attitudes and practices among parents towards HIV testing and treatment for children aged 0-14 years in Addis Ababa, Ethiopia. Using a revised conceptual framework, the chapter presented the relationship among socio demographic variables, knowledge, attitudes and practices of HIV infected parents towards HIV testing, and treatment among children. Also presented in chapter 5 are factors that affected uptake of HIV testing and access to treatment among children aged 0-14 years whose parents were infected and accessing treatment. The chapter ended by drawing conclusions, outlining limitations of the study and making recommendations based on research results.

1.11 CONCLUSION

This chapter outlined the orientation of the study. Background information about the research problem was presented, highlighting the source of the problem related to HIV testing and treatment of children. The chapter delineated the research problem together with aim and significance of the study as it related to knowledge attitudes and practice of parents towards HIV testing and treatment among children. The chapter then succinctly defined knowledge, attitude and practices as they related to this study. The foundations of the research, research design and method were discussed briefly setting the context of the research. Lastly, the chapter outlined the scope of the study and the structure of the dissertation.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter gave an overview of the study. This chapter develops a conceptual framework of knowledge, attitudes and practices among parents towards HIV testing and treatment for children (figure 2.1). The conceptual framework serves as a lens through which the study reviewed the ability of parents living with HIV and on ART to exercise control over both their motivation towards and behavior leading to HIV testing and treatment among their own children. This conceptual framework draws its theoretical foundations from Bandura's (1986:391 and 1990:9) social cognitive theory and self-efficacy model (Bandura 2001:1). A brief overview of literature is presented on the social cognitive theory thereby setting the context of the conceptual framework to be used in the study.

2.2 SOCIAL COGNITIVE THEORY

Social cognitive theory subscribes to the notion of an evolving but shared action in which thought processes are intricately linked to activities people do on a day-to-day basis. According to this theory, people can conceive unique events and consider different course of actions based on their observation of others' behaviour, and still deliberately choose to execute one or none of them (Bandura, 1986:391; 2001:4). The theory is further refined through the introduction of the notions of self-efficacy and personal agency where people intentionally exercise control over both their motivation and behavior through actions they take (Bandura 1990:9; 2001:4).

Along the lines of the social cognitive theory, a person's own behavior, their observation of other people in similar circumstances, their socio-economic and demographic characteristics and environment interact such that changes in one component have implications for the others. Therefore, in this study, parents' behavior towards testing their children for HIV and getting them on treatment was a function of their own socio-economic and demographic characteristics, knowledge, attitude and other environmental factors like

access to services and the level of stigma related to their own and their child's experiences of living with HIV.

Maintaining similar reasoning, parental knowledge of HIV testing and treatment in children on its own did not necessarily exert much influence on their behavior to have their children tested and initiated on treatment. It followed that parents should be motivated enough and feel able to handle the actions and consequences associated with HIV testing and treatment among children. As Bandura (2001:5) contends, people are "sentiment, purposive beings" who mindfully, proactively and in a self-regulatory manner, choose desired actions to happen when faced with prescribed tasks. Personal goals are set either to please self or others, the outcomes are accordingly evaluated, and appropriate motivational behavior is embarked upon.

In the context of this study, parents evaluated the benefits to self or their children before they took any action towards HIV testing and treatment. When anticipated outcomes were not necessarily pleasing, parents chose to act contrary to expected behaviours. In other words, parents constructed models of appropriate behavior, formed expectations and judgments of the likely outcomes of any course of action based on their evaluation of either their own lived experience or that of others in similar situations. The perceived benefits or lack of, determined the level of motivation that either hampered or facilitated HIV testing and treatment among children (Bandura, 1986:391; Bandura, 2001:4; Zimmerman and Schunk 2001:131).

Nevertheless, critics of the social cognitive theory such as Schunk and Zimmerman cited in Redmond (2012:4) note that the motivational and self-regulatory factors that govern the manner and extent of personal engagement in prescribed actions have been taken for granted and are not always included in causal pathways of explaining behavior. These factors, interrelated and affecting motivation and goal attainment, include self-observation, self-evaluation, self-reaction and self-efficacy.

The conceptual framework presented in this study countered this criticism by considering in the pathway analysis from knowledge, attitude to practice of HIV testing and treatment

of children, three of the four motivational and self-regulatory factors espoused in the cognitive theory. The three factors under consideration were self-evaluation, self-reaction and self-efficacy (Redmond 2012). In this framework, the motivational and regulatory factors were respectively illustrated through agreement and outcome expectancy; and motivation and self-efficacy.

In self-observation, a person had to assess their own progress towards goal achievement as well as motivate behavioral changes. The study did not consider any constructs that reflected self-observation in the analysis as this would have required that parents observe their behavior towards their own treatment and gauge progress towards attaining the goal of getting their children tested for HIV. In self-evaluation, a person compared an individual's current performance with a desired performance or goal and this was affected by the standards set and the importance of the goals. This self-evaluation was likely to be normative as parents compared their own behavior with that of others or absolute if they conformed, for example to set standards of what parents need to do to get children tested according to WHO guidelines. The notion of self-evaluation was also embodied in the way parents made decisions based on their level of knowledge and awareness of HIV testing in children. As Zimmerman and Schunk (2001:131) maintain, people gain satisfaction when they achieve goals that they value and subsequently likely to continue to do better. In this study, the goals and standards were linked to how parents subscribed to the benefits of getting their children tested and kept on treatment.

In self-reaction, individuals were motivated by the progress they had made or lack of, towards achieving their goals. If they achieved their own goals, parents would have the self-efficacy to extend the testing towards their children (Redmond 2012). Self-efficacy refers to "people's judgments and beliefs about their capabilities to perform particular tasks and manage prospective situations (Bandura 1995:2). Task related self-efficacy increases the effort and persistence towards challenging tasks. In the current study setting, parents were likely to engage in activities they had high self-efficacy for, like their own testing and treatment and less likely to engage in those they did not, such as getting their children tested for HIV. High levels of self-efficacy tended to motivate parents towards achieving set goals.

The study considered socio-demographic factors that influenced HIV positive parents' knowledge, attitudes and practice to get their children tested for HIV or started on treatment.

2.3 PREVENTION OF MOTHER TO CHILD TRANSMISSION (PMTCT) OF HIV

Mother to child transmission of HIV accounts for over 90% of HIV infections in children in Sub Saharan Africa (African Network for the Care of Children Affected by AIDS (ANECCA) 2006:34; UNICEF et al 2009:40; UNHCH 2003:7). PMTCT programs provide opportunities to not only prevent infection but also identify and provide care for children infected by and exposed to HIV.

Along the lines of protecting the rights of the child in the context of HIV and AIDS, the PMTCT of HIV programs become essential to prevent infants from being infected and provide care, treatment and support to those women who are infected and their children. However, Leeper et al (2010:4) observe that although PMTCT programs have been successful in enrolling pregnant women as index cases who are then encouraged to bring other family members for testing, they have recorded little success in enrolling HIV positive children for treatment.

According to UNICEF et al (2009:4), only 21% of the estimated number of pregnant women living in low and middle income countries in 2008 were tested for HIV, compared with 15 % in 2007 and 13 % in 2006. Similarly, statistics show that the proportion of infants receiving ARV medications for PMTCT only increased from 18% in 2006 to 32% in 2008. Contrary to expectations, adults on care, whether male or female, do not refer their children for HIV testing and treatment. Lack of trained health care workers and understanding of paediatric HIV, inadequate follow up of HIV pregnant mothers and HIV exposed and infected children act as barriers to treatment among children with HIV. These barriers are compounded by lack of disclosure and poor community support, poor coverage of PMTCT programs, poor linkages of children to testing programs and provider uncertainty regarding testing and treating children (Kellerman and Essajee 2010:2; WHO 2006:1). Additionally, health workers reportedly regard care for children with HIV as an

added burden in addition to dealing with logistical and infrastructural requirements required for pediatric care (ANECCA 2006:46; Leeper et al 2010:8; UNICEF 2009:11; UNICEF/UNAIDS/WHO/ UNFPA 2009:2).

2.4 HIV IN CHILDREN

Deacon and Stephney (2007:27) perceive that most studies on children and HIV tend to view children as affected by HIV, thereby ignoring the fact that these children could be themselves infected. In addition, organizations working with children mostly concern themselves with assessing and addressing the needs of HIV affected children, initially focusing on material needs that would no longer be met in conditions of increasing poverty and absence of parental protection.

The approach of considering children as HIV affected fails to take cognisance of the inherent effects of HIV on children like stigma and discrimination which can prevent access to their wellbeing including HIV testing, care and treatment (Loudon, Bhaskar, Bhutia, Deshpande, Ganesh, Mohanraj, Prakasam, Royal and Saoor 2007:6). While it can be debated that viewing children as HIV affected is protective to them, Feinstein, Yotebieng, Moultrie, Meyers and Van Rie (2012:1), maintain that children infected with HIV, if left untreated, experience negative consequences of infection through increased morbidity stunted growth, disability and premature death. Given the fast rate of HIV progression and high morbidity and mortality among infants and children with prenatally acquired HIV infection, the need to identify these children and enrolling them in care cannot be underscored.

While few people dispute children's rights to HIV care and treatment, there are no concerted efforts to ensure that all children actually benefit from available services. A comprehensive approach to treating HIV in children involves treating the parents and other siblings to preserve the family unit and ensure a stable environment to promote children's growth (ANECCA 2006:11). Despite the existence of policy guidance and implementation guidelines on HIV testing, diagnosis, counseling and treatment of infant and young children in health facilities (WHO 2010; Ethiopia Federal HIV/AIDS Prevention and Control Office and Federal Ministry of Health 2008), the majority of children in Ethiopia remain at the

periphery of prevention, treatment, care and support programs. In recognition of this, the Government of Ethiopia introduced free antiretroviral treatment in 2005 resulting in 4800 children and 97 000 adults accessing treatment in 2008. The children on treatment represent only 7% of all children below 15 years of age in need (EFHAPCO/FMOH 2008:8, Leeper et al 2010:8).

2.5 HIV CHILD SERVICES FOR TESTING AND TREATMENT

Although significant progress has been reported on expanding access to early diagnosis among infants, this has not been matched in term of access to treatment (UNICEF et al 2009:2). Out of an estimated 730 000 children infected by HIV globally, only 38% had been initiated on ART by 2008 (UNICEF et al 2009:10). Only 5% of the 92 000 children aged 0-14 years estimated to be living with HIV in Ethiopia are receiving treatment. Similarly, only 6.6% of the 74 000 pregnant women living with HIV are receiving antiretroviral to prevent mother to child transmission (UNAIDS/WHO 2008: 5).

Despite efforts to recruit children for HIV treatment through other maternal and child health programs, HIV testing and uptake of treatment among children aged 0-14 years has remained low. According to the World Health Organization guidelines on Antiretroviral therapy of HIV infection in infants and children in resource- limited settings (2010:1), it is crucial to identify and test all infants who have been exposed to HIV as early as possible, to ensure access to care and ART. Although opportunities to detect, diagnose and provide treatment to exposed infants are potentially present in the health systems through antenatal care services, immunization and nutrition programs, these opportunities are often missed (WHO 2010:1). Moreover, parental knowledge, attitudes and practices towards HIV testing and treatment of children are not considered in the opportunities to enroll children into HIV treatment programs.

It stands without reason that HIV treatment of children should be preceded by a complete knowledge of their status. However, the complicated process of confirming their HIV status is a critical barrier for treating HIV in children. Absence of timely testing and diagnostic services imply that most children get lost before appropriate treatment is initiated. Arguments have been put forward in support of HIV disclosure to children in order to

capture these children. However, a study in India on HIV testing and disclosure for children and adolescents, reveal that stigma and discrimination associated with HIV and AIDS created psychological fear and prevents many children and adolescents from getting tested (Chaturvedi and Vijay 2009:7). In addition, poor parental awareness of HIV and AIDS in children, low motivational levels and negative provider attitudes prevented parents from taking those children aged 0-6 years for HIV testing. Ultimately, this resulted in fewer children getting HIV tested and initiated on treatment.

2.6 THE WHO GUIDELINES AND WHO/UNAIDS POLICY ON HIV TESTING AND TREATMENT OF CHILDREN

Articles 6 and 24 of the Convention of the Rights of the Child maintain that children have a right to survival, life and development. Consequently as duty bearers, governments must ensure that no child is deprived of her or his right of access to necessary health services including HIV counseling and testing as a pathway to access appropriate treatment and care (UNAIDS/WHO 2010:2). Analysis of international cohorts estimate that only 8% of HIV infected children are started on antiretroviral therapy and those who receive it are started when they are already very sick (WHO/UNICEF 2010: 3).

The World Health Organization (WHO 2010) issued revised guidance calling for infants and children to be tested to identify their HIV-exposure status at 4-6 weeks for all HIV exposed infants and again at 18 months as appropriate. PMTCT programs present such opportunities to test children.

The guidelines also make provision for the purpose of individual diagnosis in a child who is presenting with an HIV-associated illness, or has been abused or whose siblings or parent is HIV positive. The guidelines underscore the need to identify and test HIV exposed infants as early as possible to allow for saving of lives through early diagnosis and timely access to treatment (WHO 2010).

Although mother to child transmission accounts for 90% of new infections among children, PMTCT programs have only managed to capture 18% of the pregnant women in Ethiopia (UNICEF et al 2009:40). Consequently, revised WHO guidelines emphasize expanded

access to HIV testing and counseling for infants and children through; early identification of HIV- infected infants and children, identification of HIV exposed but uninfected children for follow-up with prevention services, life planning for parents and children who are HIV infected and increasing access to care and antiretroviral therapy for parents.

To assist in the operationalization of the 2010 WHO guidelines on Antiretroviral therapy of HIV infection in infants and children in resource- limited settings, the WHO/UNICEF (2010:2) policy statement makes provision for two types of testing, namely client initiated testing and counseling; and provider initiated testing and counseling. The provider initiated counseling and testing allows for early diagnosis and linkages to services for infants and children presenting at health centres including those children born to HIV positive women. The guidelines, however, assume that parents will inevitably and routinely request for testing of their children. Applying social cognitive reasoning (Bandura 2001:5) to this situation, would imply that parents would embark on desired actions (getting children tested and treated) when faced with prescribed tasks as outlined in the WHO guidelines. However, this approach does not explain why some infected parents on treatment do not voluntarily and routinely take their children for testing and treatment despite the availability of services. The guidelines and policy statement also reinforce the importance of regular follow up of HIV exposed children while ensuring optimal health care and psychosocial support to the family. However, many PMTCT programs lack mechanisms for follow up of HIV exposed infants, let alone support to the affected families.

Emerging information shows that the application of WHO guidelines for ART in children does not necessarily increase the number of children who end up on treatment. Irrespective of the criteria followed, only half of eligible children get ever started on ART. Additional efforts are needed to ensure infants and young children are initiated on treatment in a timely manner. However, lack of services for early infant diagnosis is likely to remain the largest obstacle to ART access (Penazzato, Franceschetto, Nannyonga, Morelli, Bilardi, Massavon, Mazza, Crowley and Giaquinto 2010:1).

2.7 PARENTAL KNOWLEDGE, ATTITUDE AND PRACTICES TOWARDS HIV TESTING AND TREATMENT AMONG CHILDREN

Most knowledge, attitudes, and behavior studies on children and HIV/AIDS focus on prevention of high risk behaviors rather than on stigma reduction as factors affecting their access to care and treatment (Deacon and Stephney 2007:10; Tan, Pan, Zhou, Wang and Xie 2007: 248). Other studies which focus on knowledge, attitude and practices of health providers towards people living with HIV reveal poor attitude towards people living with HIV (Abejabo, Bamgbala and Oyediran 2003:103). By extension, this negative attitude exemplified by the perception that people living with HIV are a risk to health workers and other community members lead to poor access of children to HIV testing and treatment.

Loudon, Bhaskar, Bhutia, Deshpande, Abhay, Ganesh, Mohanraj, Prakasam, Royal and Saoor (2007:19) demonstrate that in India, HIV affected children and caregivers experienced social exclusion because of stigma and discrimination. The stigma directed towards children with HIV parents arises from a common belief that these children are likely to be positive themselves. It is not surprising therefore, that parents with HIV who are subjected to social exclusion themselves are less likely to disclose their status to their children, let alone get them tested for HIV.

Other studies have focused on identifying level of awareness and knowledge of PMTCT services among community gatekeepers to improve access to prevention, treatment and care of both women and children (Arulogun, Adewole, Olayinka-Alli, Olubukola and Adesina 2007:67). Services to PMTCT are important entry points for HIV/AIDS prevention, treatment and care and services for women and children. As a result, some researchers like Peltzer, Mosala, Shisana, Nqueko and Mngqudaniso (2007:57) go beyond assessing knowledge of PMTCT to describe potential barriers that affect acceptability of PMTCT intervention thereby limiting access to testing and treatment for children born to HIV positive mothers.

2.8 THE CONCEPTUAL FRAMEWORK APPLIED IN THE STUDY

A conceptual framework is regarded as a map for understanding the relationships between and among the variables in quantitative studies (Miller 2002:82). The conceptual

framework (figure 2.1) used in this study was an adaptation from Cabana et al (1999:2) and Roelens et al (2006:4). In the first instance, Cabana et al (1999:1458) use a similar framework to review barriers to physician adherence to clinical guidelines and explain the sequence of behavior change from knowledge, to attitudes and then behavior. Although Cabana et al (1999:1458) do not explicitly define knowledge, attitudes and behavior, they reason that factors limiting adherence through cognitive processes act as barriers affecting knowledge. Likewise, those factors restricting adherence through an emotional component present as obstacles affecting attitudes while those operating through a restriction on the physician's ability are linked to behavior change. Lack of familiarity and awareness of the subject matter, the volume of information available and the time required to stay informed are identified as external barriers to knowledge. The factors that affect physicians' knowledge included lack of agreement, lack of self-efficacy and lack of outcome expectancy while the inertia of previous practices tended to affect behavior. Cabana et al (1999:1458) reveal that the barriers to adherence varied with the context and type of guidelines under study and that despite adequate knowledge and attitudes, external barriers affect the physician's ability to perform guideline recommendations.

Roelens et al (2006:1-10) build upon Cabana et al's (1999:1458) behavior framework to come up with a predictive model to assess current barriers to screening for intimate partner violence in settings where neither clinical guidelines nor specific recommendation with regards to abuse have been instigated. Roelens et al (2006:2) further affirm that barriers fit into one of the three major categories depending on whether they affect physician' knowledge, behavior or practice.

The current study used the framework (figure 2.1) as applied in the context described by both Cabana et al (1999:1458) and Roelens et al (2006:4) to explore pathways which may or may not result in increased access to HIV testing and treatment. Not only did HIV testing and /or treatment among children depend on parental knowledge but also on their attitudes (agreement and outcome expectancy, motivation, perceived self-efficacy). The study characterized barriers to the practice of HIV testing and treatment among children that operated at the knowledge, attitudes and practice levels of parents living with HIV.

Consequently, the study applied analogous reasoning to review barriers to HIV testing and treatment in children, explained the sequence of behavior change from knowledge, to attitude and then practice in a setting where existence of policies and guidelines are yet to yield expected results. The conceptual framework (figure 2.1) explained how infected parents, whose attitudes typifies their feelings of inadequacy, did not initiate or favor HIV testing and treatment among their children.

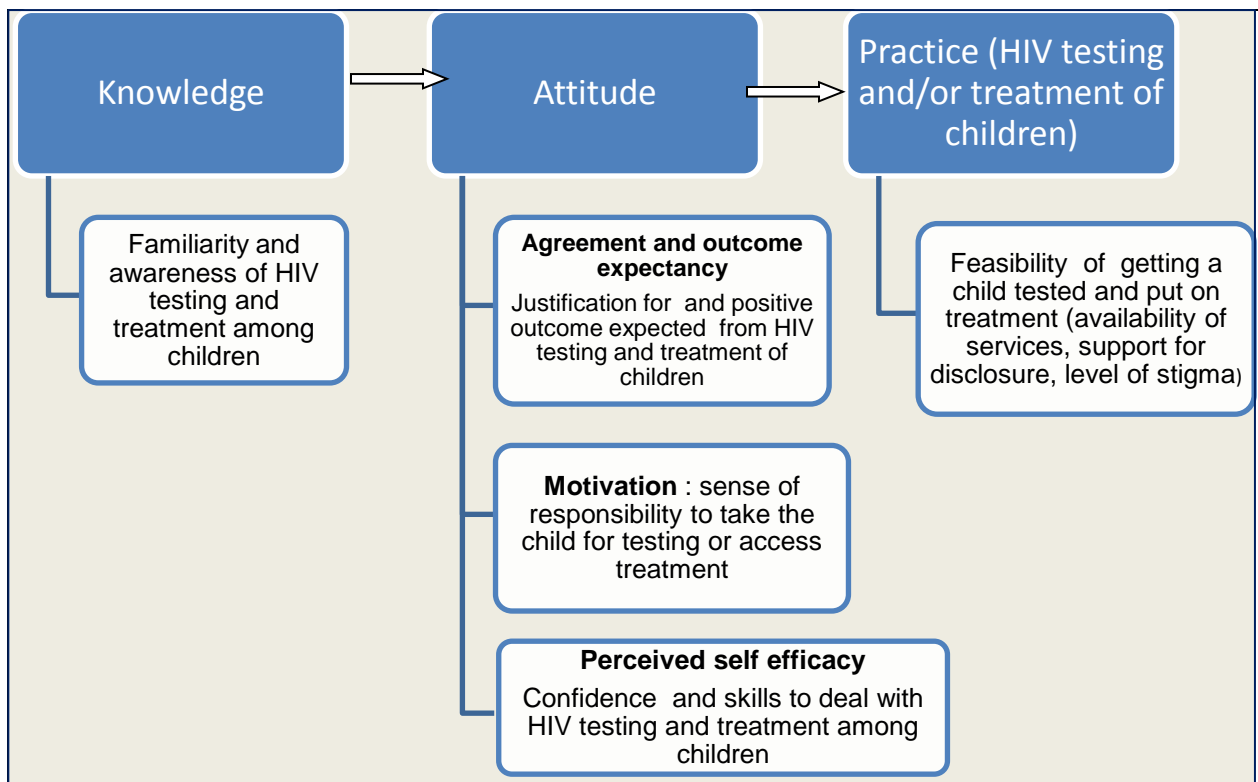


Figure 2.1 Knowledge, attitude and practices towards HIV testing and treatment for children: A conceptual framework

Source: Adapted from Cabana, Rand, Powe, Wu, Wilson, Abboud and Rubin (1999:1459) and Roelens, Verstaelen, Egmond and Temmerman (2006:4)

The practice, as reflected in parents' willingness to allow their children to be tested and started on treatment followed a feasibility self-assessment on whether their actions were sanctioned or supported by significant others, within the family or without. Accordingly, experience for caring for infected children was enhanced by what Bandura (1990:13) calls "social modeling". As they learnt from others in the same situation as themselves and shared experiences, parents acquired both knowledge and skills for dealing with and caring for HIV infected children. This became more important when dealing with children

over five years old who are now removed from the PMTCT programs and subsequent follow-up.

Lack of familiarity and awareness of HIV testing and treatment among children, the volume of information available and the costs, real or perceived, of getting children tested were identified as external barriers to knowledge. In a study on social determinants of HIV testing in Botswana, Rajaraman and Heymann (2007:13) show that related costs associated with transport, lived experiences of caring for a person living with HIV, information about existence of programs like PMTCT were key determinants to HIV testing among adults. Applying the same reasoning in this study, parents with infected or exposed children could only take their children for testing and treatment if they were motivated enough and convinced about the benefits of testing children and starting them on treatment. Linked to this, was their conviction that the outcome of testing children and putting them on treatment would be positive.

In consequence, parents would only move towards the anticipated course of action concerning access to treatment for children if they felt well equipped (self-efficacy and feasibility) to deal with concomitant issues relating to disclosure, stigma and adherence to treatment among other issues. Both qualitative and quantitative research studies carried out in Botswana point to a high level of acceptability of routine testing if ART is available and there is community support for those who disclose their HIV status (Rajaraman and Heymann 2007:18).

In short, the adapted framework identified factors that affect parental attitude to include lack of agreement, lack of self-efficacy and lack of outcome expectancy while their own lived experiences with HIV and perception of availability of services tended to affect their practice toward HIV testing and treatment of children.

2.9 THEORETICAL CONSTRUCTS USED IN THIS STUDY

Knowledge, attitudes and practices were key theoretical concepts used in this study as depicted in the conceptual framework, (figure 2.1). The concept of knowledge embodied parental awareness and familiarity of HIV transmission among children and related myths.

Attitudes were illustrated through the extent of agreement and outcome expectancy parents have towards HIV testing of children, their level of motivation and perceived self-efficacy.

Practices included actual actions geared towards HIV testing of children as well as the feasibility of taking children for testing and treatment. These concepts were further elucidated below.

2.9.1 Knowledge of HIV testing and treatment among children

Knowledge, according to Merriam-Webster on line dictionary (2011,sv “knowledge”), refers to “the fact or condition of knowing something with familiarity gained through experience or “the fact or condition of being aware of something” or “the range of one's information or understanding” or “the sum of what is known: the body of truth, information, and principles acquired by humankind”. Based on this definition, knowledge of HIV testing and treatment among children in this study referred to the extent of awareness and familiarity of issues regarding HIV infection among children aged 0-14 years as reported by infected parents who were themselves on treatment.

Thu, Kyu and Van der Putten (2005:13) studied knowledge, attitudes and practices on HIV/AIDS prevention among Myanmar migrants in Thailand and concluded that knowledge alone did not always translate into behavior change. However, Chaturvedi and Vijay (2009:9) show that in India, parents of children aged 7-14 years referred for HIV testing cited lack of knowledge or awareness on children's HIV status as a limitation for them to explain to their children why they needed to test for HIV.

2.9.2 Attitudes of parents towards HIV testing and treatment among children

The Compact Oxford dictionary and Thesaurus (2006,sv “attitude”) defines attitude as way of thinking, viewpoint, stance, position or approach. In this study, attitudes referred to the feelings, viewpoints or preconceived ideas that parents exhibited regarding HIV testing and treatment for children. Parental experiences of living with HIV largely influenced these attitudes. The concepts measuring attitudes, illustrating self-evaluation, self-reaction and self-efficacy, included the extent of parental agreement and outcome expectancy (positive attitudes), low motivation (negative attitudes) and perceived self- efficacy to HIV testing and treatment among children.

The confidence parents felt and the skills they thought they possessed to deal with HIV testing and treatment among children influenced the extent to which they believed they could actually complete the expected action. This perceived self-efficacy (confidence and skills) was partly derived from their own experience of HIV testing and being on treatment. Based on their level of self-efficacy, parents went through a process of self-evaluation motivating them to get their children tested.

Once parents in this study demonstrated some familiarity and awareness of HIV testing and treatment for children (knowledge), they had to show some level of agreement and outcome expectancy, self-efficacy and high motivation to get their children tested for HIV. In addition, parents who were in agreement with the current evidence supporting HIV testing and treatment among children, had also to agree that this applied to them and would be beneficial to their children before they committed to any action. In this regard, high self-efficacy level reflected an optimistic self-belief that one could perform a difficult task and cope with adversity in various spheres of life.

In a study in KwaZulu-Natal, South Africa, Phakathi, Van Rooyen, Fritz, and Richter (2011:173) found that access to ART appeared to increase HIV testing uptake in settings, which, historically, had been characterized, with low uptake. One of their key findings is the belief that ART brings hope and prolong life among people living with HIV and therefore encourages testing. The fact that other people witness recovery of people they know to be on ART is justification for testing and uptake of ART treatment. While Phakathi et al (2011:173) reveal motivational factors that push adults to test for HIV and subsequently take up treatment, it still remains unclear if the same anticipated positive outcomes will increase HIV testing and treatment among children. Atkinson, Phiri, Mulwafu and Graham (2001:12) found that the majority of parents and care givers of chronically ill children in Malawi believe that knowing a child's status enable them and the clinical providers to provide adequate care to the child. These parents, therefore, have justification for knowing their children's status and have positive outcome expectancies linked to their decisions to have the children under their care tested for HIV. One could claim that these parents are already faced with sick children and hence their readiness for testing is anticipated.

Motivation is defined as the reason for one's action or behavior (Compact Oxford Dictionary and Thesaurus 2006,sv"motivation"). In this study, motivation was exemplified by the sense of responsibility parents exhibited towards knowing their child's HIV status and initiated them on treatment if necessary. If parental motivation was low, this was construed as negative attitudes towards HIV testing of children. Chaturvedi and Vijay (2009:9) note that apart from inadequate knowledge about HIV/AIDS, low motivational levels among parents coupled with attitudinal issues among service providers were barriers to access HIV testing and treatment for children in India. Some of the factors that de-motivated parents were their inability to overcome the shock and grief of their own positive status, fear of finding their own children positive and/or financial barriers. Additionally, the disillusionment that if found positive, ART would just extend life but not cure HIV in children could have acted as a hurdle to initiate testing for children.

The level of confidence felt by parents and the skills they thought they possessed to deal with HIV testing and treatment among children (self-efficacy) were likely to determine whether they would take their child for HIV testing. Bandura (1990:9; 1995:2) note that perceived self-efficacy relates to people's beliefs and the confidence they feel to exert control over their own circumstances, motivation and behavior. In this study, perceived self-efficacy encompassed the confidence and skills parents who were themselves HIV positive had to deal with HIV testing and treatment among their own children. The higher the level of self-efficacy, the more likely parents would get their children tested for HIV and initiated on treatment.

Corresponding to Bandura's (1990:9) contention, in this study, parents' beliefs about their capabilities to deal with their own HIV status affected what they chose to do with regards to HIV testing and treatment of their children. How much effort they exerted and for how long they persevered in the face of their own challenges of living with HIV also influenced what course of action they eventually took. When parents exhibited low self- efficacy levels, they did not necessarily manage situations effectively even if they knew what to do or possess the requisite skills to deal with HIV in children. This created a gap between knowledge and action. This is despite the fact that parents on ART were no strangers to communications

at health centers and through various media urging them to get their children tested or prevent HIV transmission through PMTCT programs.

2.9.3 Practice: HIV testing and/or treatment among children

Practices, in the current study, referred to the various ways in which HIV infected parents demonstrated, through their actions, knowledge and attitudes towards HIV testing and treatment for children aged 0-14 years. These positive actions related to membership to associations of people living with HIV, getting children tested and keeping them on treatment and disclosing parental and child HIV statuses. These specific actions were dependent upon the feasibility of getting a child tested for HIV and started on treatment. Feasibility was demonstrated through perception of availability of services and perceived or actual levels of community and self-stigma experienced by parents and their children.

Despite efforts to recruit children for HIV testing through adult treatment programs, PMTCT and other maternal and child health programs, HIV testing and uptake of treatment among children aged 0-14 years has remained low. HIV related stigma, lack of skilled labor and poorly resourced health facilities have been cited as major barriers to increase HIV testing and access to treatment among children (Leeper et al 2010:4). However, the availability of testing equipment and training of care providers on HIV diagnosis and testing among children does not always result in uptake of these services. An assessment of a program in Thailand which offered free services for HIV testing among infants supported by well trained staff with adequate laboratory support still reported after 12 months, a lower than expected uptake of testing among children, low confirmation rate and a high rate of loss to follow up (Collins, Leechanachai, Sirirungsi, Leusaree, Bhakeecheep, and Ngo-Giang-Huong 2009:1). Some of the possible impediments to accessing HIV testing and treatment services for children operate at the social and informational levels, linked to lack of understanding of HIV issues among children by parents and caregivers. Some parents are not ready to face the results of the test or do not see the need for the test given the healthy appearance of the baby. Similarly, lack of or selective disclosure of the parent's HIV status hampers access to testing and treatment services for children despite the availability of ART services for both parents and children.

Chaturvedi and Vijay (2009:8) carried out an operation research in India to identify factors that prevent community members from seeking HIV testing for their children. The India study also highlighted issues related to disclosure of HIV status to children and the social impact this has on both children and their parents. Stigma and discrimination was the most common obstruction to seeking services for children followed by financial constraints and fear of disclosure in their communities. Chime, Chitembo, Bhat and Manda (2004:1) identified similar barriers in Zambia. Disclosure of and silence about, HIV are embedded in social realities and can affect parents' overall social identify and dictate the labels they and their children have to live with.

Rahangdale, Banandur, Sreenivas, Turan, Washington, and Cohen (2010:841) maintain that feared and experienced stigma by various agents that would normally provide support for HIV infected pregnant women can create barriers to access prevention of mother to child transmission. Similarly, lack of community and family support could render the same effect on accessing HIV testing and treatment for children.

2.10 CONCLUSION

This chapter discussed the theoretical foundations of the study. A review of literature on parental knowledge attitude and practice towards HIV testing and treatment of children was presented. The chapter also presented brief highlights on prevention of mother to child transmission of HIV, HIV treatment services for children and WHO guidelines. In addition, the chapter has defined the various concepts used in the study.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

This chapter focuses on the study research design and methodology paying particular attention to design choice, study population, sampling procedures, the research instrument, data collection methods and analysis. The chapter also lookss at ethical issues covered in the study as well issues of reliability and validity.

3.2 RESEARCH DESIGN

The current study embodied a quantitative research design. Research design refers to the plan which a researcher follows to obtain research respondents, whether individuals or groups and collect relevant data from them with a view of reaching conclusions about the research problem (Welman, Kruger, Mitchell, 2005:52). The purpose of a research design is to provide a plan, structure and strategy for answering research questions while maintaining control of the overall process (LoBiondo-Wood 2002a:187).

Research designs can be quantitative or qualitative. Quantitative research designs are linked to logical positivism that allows a researcher to be objective, apply precise measurement of variables and establish relationships between variables and causal linkages if they exist. In comparison, qualitative research designs are more inclined towards capturing actors' perspectives and subjective and lived experiences through interpretive methodologies rather than on manipulation and control of variables as associated with quantitative research (Denzin and Lincoln 2011:7).

The current study primarily applied a quantitative research approach to explain phenomena through the collection of numeric data that are analysed using mathematically based statistical methods. This, according to Creswell (2003:18), embodies the positivist claims for developing knowledge that involves the "determination of cause and effect and reduction of specific variables". The quantitative research approach also employs survey methodologies and predetermined instruments" for collecting data that can be analyzed

statistically. The approach is suitable for measuring attitudes and rating behaviors through standardized numerical scales (Creswell 2003:20; Stommel and Wills 2004:442). Likewise, the quantitative methodology was suitable for the current study where knowledge, attitudes and practices were conceptually defined and measured in numeric scales suitable for statistical analysis that determine cause and effect. Questionnaires and other measuring devices are preferred methods of data collection in quantitative methods compared to use of mainly interviews and participant observation or similar methods used in qualitative methods (Cohen 2002:130). The current study utilized questionnaires for collecting data, thereby meeting one of the criteria of quantitative research (Taylor, Dlamini, Sathiparsad; Jinabhai, de Vries, 2007:29). As attitudes do not naturally exist in quantitative form, the use of questionnaires allowed the researcher to form numeric scales reflecting the flexibility of quantitative research in studying various phenomena.

Quantitative and qualitative studies also differ concerning the type of sampling approach, the methods of data collection and the type of analysis and interpretation of findings. Typically, quantitative studies select respondents using sampling techniques that ensure representation of the broader population and allow generalization of findings. This study selected subjects to participate in the research using representative multistage cluster sampling ensuring that each subject in the target population had an equal chance of being included.

3.3 PHILOSOPHICAL FOUNDATION OF THE RESEARCH DESIGN

Cohen (2002:126) reasons that the philosophical foundation of research refers to views on how truth regarding phenomena in the natural world is regarded or thought of. Consequently, they are two types of views; the “perceived” view, that relates to the naturalistic or qualitative research and the “received” positivism view that guides empirical analytic or quantitative research. The “perceived” view recognizes the presence of multiple interpretations or realities of the same phenomena and employs subjective observational methods with the researcher assuming an active role in the study. Under the “received view”, one set of reality exists, which, driven by natural laws, can be objectively measured and observations generalized across contexts. In this current study, the received paradigm

allowed the researcher to statistically describe, explain, predict and control phenomena with researcher adopting a neutral role. In other words, truth under “received” paradigm was obtained through objective and replicable procedures focusing on describing, understanding and reconstructing various realities under study (Cohen 2002:128).

3.4 THE EPISTEMOLOGICAL PERSPECTIVE OF THE RESEARCH DESIGN

Epistemology is concerned with the way knowledge is obtained, that is, ensuring that the research goal is attained. The current study was guided by the positivist epistemological perspective whose main tenets are replicable observations and objectivity that can lead to the unveiling of truth regarding the phenomena under study (Cohen, 2002:128). Applying this definition to this study, the use of the same questionnaire administered to different categories of parents met this criterion. The sampling technique and the detachment of the researcher from the research process using trained field workers fitted the positivist’s epistemological perspective to research.

3.5 CROSS-SECTIONAL ANALYTIC SURVEY DESIGN

LoBiondo-Wood and Haber (2002b:222) note that survey designs are non-experimental studies which can be used to collect data to describe variables, explore and explain phenomena or compare relationship among variables. In this regard, a cross sectional analytic design assisted the researcher to collect data from a group of subjects at a specific point in time and compare relationships among variables. As stated by Burns and Grove (2005:252), cross sectional survey designs are suitable for examining groups of subjects who are at various stages of development with the assumption that these stages are a part of a process that can progress over time. For this study, the subjects were selected without reference to their knowledge or attitude and the researcher measured the presence of knowledge and attitudes and practice for each participant in the study at fixed point in time.

The cross sectional survey design further allowed the researcher to determine factors that predict the outcomes of interest by examining associations among them. The study design permitted extraction of valuable information about the totality of the process of parents

acquiring knowledge, attitudes and eventually translating into the practice of getting children tested for HIV and accessing treatment. In addition, factors that influenced parental knowledge, attitude and practices towards HIV testing and treatment among children were examined within the tenets of an analytic cross sectional survey study design which allow for causal inference, screening for new relationships and description of prevailing conditions under study. Accordingly, the study was conducted in the present to determine what already existed in terms of knowledge and consequently, attitude (exposure) and outcome status (practices) were measured simultaneously (Ehrlich and Joubert 2008:225). This approach differs from longitudinal study where data are collected at different points for each research participant.

There are several factors that render cross sectional studies attractive as research designs, with the key ones being the relative ease at which the designs can be applied to collect data at low cost, in short period of time with relatively low non response rates (Polit, Beck and Hungler 2001:184, Stommel and Wills 2004:128). Apart from being useful for evaluating the relationships between exposure and outcomes (Gordis 2004:174), cross sectional studies present an important step in assessing the possibility of a relationship between an exposure and a disease before more difficult or expensive designs such as case control or cohort studies are undertaken (Gordis 2004:174; Stommel and Wills 2004:127). By identifying the factors that influence parental practices around HIV testing and counseling of children, this study paved way for other studies to determine causes of the low rate of HIV testing and treatment of children.

3.6 APPROPRIATENESS OF THE CROSS-SECTIONAL ANALYTIC SURVEY DESIGN TO THE CURRENT STUDY

The cross sectional analytic quantitative design used in the study was appropriate to test relationships between variables directly deriving from the research problem. The literature reviewed provided some justification on the appropriateness of the design used in this study in as far as it indicated what was already known on the subject matter and the gaps in knowledge. The gap in knowledge regarding the determinants of HIV testing and access to treatment among children aged 0-14 years, clear identification of the population at risk and the need for comparison of various subgroups supports the use of design chosen by

the researcher. This is consistent with the purpose of cross sectional study design that can be used to “explore relationships and correlations or difference and comparisons or both” (LoBiondo-Wood 2002b:227).

The use of multistage cluster random sampling in this study not only indicated that the researcher collected data from different persons in different geographic areas simultaneously but also ensured certain controls for minimizing bias in keeping with the attributes of the design chosen. The study also identified the eligible categories of subjects to participate in the study, namely parents of children who are on ART and who have children aged 0-14 years. The design therefore satisfied the feasibility criteria, as it was easy to conduct the study among parents who were openly taking ART at selected health centres.

The study also specified how the subjects were recruited and what instruments were used (LoBiondo-Wood, 2002a:187). An examination of the conceptual framework also provided justification for the choice of study design. The behavior framework used in this study as adapted from Cabana et al (1999:1458) and Roelens et al (2006:4) sought to review barriers to HIV testing, and treatment among children aged 0-14 years. It also explains the sequence of behavior change from knowledge, to attitude and then practice. This implied exploration of relationships and comparison among subgroups. Lastly, the fact that the independent variables (HIV testing and treatment) cannot be manipulated indicate a valid choice of a non-experimental research design. It can be concluded that the researcher therefore chose an appropriate design for the problem at hand.

3.7 RESEARCH METHOD

Research method refer to the systematic approach of collecting information based on established processes and procedures largely linked to behavioral and social sciences. In other words, a research method outlines how the study is carried out and is clear enough for other researchers to repeat the same study. The research methods therefore should outline the procedures of selecting samples, measuring variables, gathering data and

analyzing the information. The choice of the research method is largely linked to the purpose of the research (Welman, Kruger and Mitchell 2005:2).

3.7.1 Population

Haber (2002b:240) and Stommel and Willis (2004:297) define a population as a well-defined set that has specified characteristics or special attributes that a researcher is interested in studying and may consist of events, places, objects, animals, or individuals while a sample is “a set of elements which make up the population”. A population can consist of inanimate objects or living things. The population descriptors that qualify individual elements for inclusion in the study help define the population. Information in a study is collected from the individual elements, which make up a sample and generalizations then made to the population from which the sample is drawn. The population is further classified into target and study population. The target population is the ideal full set of individuals with a particular condition to be studied and for which the researcher would like to generalize the findings, which for this study were all people living with HIV in Addis Ababa.

This study was limited to the accessible population which was defined as the proportion of the target population that was available to be researched, met the eligibility criteria and allowed more concrete generalizations (Burns and Grove 2005:366; Haber 2002b:242). Eligibility criteria as defined by Haber (2002:240) are those population descriptors that form the basis of inclusion in the sample and should be visible in the selected sample. Only those persons who were living with HIV, were on ART and had children aged 0-14 years were included in the current study. For this study, this accessible population was drawn from a sampling frame of at least 3500 persons living with HIV currently on ART and receiving other care and support services through a network of 457 volunteers in ten (10) sub cities of Addis Ababa.

3.7.2. Multistage cluster sampling

Haber (2002b:242) and Burns and Groove (2005:341) define sampling as a process of selecting a portion or subset of the designated population to represent the entire population. This sample is drawn from a sampling frame that represents a full list of members of a population from which the study respondents will be drawn (Haber

2002:247; Jennings 2001:140). The study used random cluster sampling, a form of probability sampling technique, to select respondents for this study. As Haber (2002b:243) maintains, probability sampling uses some form of random selection of respondents. This is supposed to be the best approach to ensure rigour, resulting in a more representative sample that can be used for generalization. Both Haber (2002:250) and Babbie (2009:219) contend that random cluster sampling involves dividing the study population into groups usually geographical. Some of the groups are then randomly selected and the sample is drawn for each of the clusters based on defined sampling frame. Similarly, for this study, based on administrative boundaries, an initial random sample of 4 sub cities (suburbs) was selected from the sampling frame of 10 (table 3.1). At the second stage, 6 health centres were randomly selected from a list of 15 health centres in the 4 selected sub cities.

TABLE 3.1: MULTISTAGE CLUSTER SAMPLING OF RESPONDENTS

Stage 1	Stage 2	Stage 3	Stage 4
Sub city selected from a list of 10	Name of health centres selected	Names of Kebeles (communities) selected	Number of parents living with HIV , who are on ART and have with children aged 0-14 years
Arada	Arada HC	K 01/02, k03/09	32
	Entoto HC	k 01/02, k 03/04	32
	Kotebe	k 16/17/18	32
Nifassilk	Woreda 19	k 09/14, k 10/18	32
Kolfekeraino	Woreda 24 HC	k 02/03, K04	32
Yeka	Yeka HC	k 08/15, k 09/10	32
Total selected	6	11	192

The third stage involved a random selection of 11 kebeles/communities (smallest administrative units in Ethiopia) which served as catchment sites to the six health centres already selected. Finally, a list of all persons who are HIV positive, currently on ART and have children aged 0-14 years and receiving community care and support from 22 volunteers was produced. The final sample of 192 persons was randomly drawn from this list. Any person who opted out of the study was randomly replaced from the remaining unselected but eligible persons on the list.

Initially a sample of 180 was calculated based on $p=0.05$, power =0.8 and effect size of 0.02 (Cohen 1988:29). However, the researcher arbitrarily sampled an additional 6% of respondents to counter for refusal. Once the interview got underway, the total number of respondents eventually interviewed was 192.

The researcher considered the type of analysis to be used on the data collected in the study. In the context of multiple regression, the researcher approached sample size determination from four perspectives; the effect size, alpha level, power of the test and the number of independent variables.

Effect size measures how important an obtained effect is in reality if a test presents a significant result. According to Cohen (1988:8) effect size refers to the degree to which the phenomenon is present (beyond zero) in the population. The larger the value, the greater the degree to which the phenomenon under study is manifested. The researcher chose an effect size of 0.2 to represent the smallest effect that would be important to detect in this study. The researcher chose to use the small effect size since the phenomena under study were typically not under good experimental or measurement control. In addition, the influence of uncontrollable extraneous variables made the size of the effect small relative to these (Cohen 1988:26; Statsure c2013). Denoted as p , the alpha level typically set at 0.05 represented the probability of rejecting the null hypothesis when it was true. Setting the alpha level at 0.05 allowed the researcher to reject the null hypothesis of the population multiple correlation coefficient equaling zero. The researcher also considered the power of the test that represented the probability of rejecting the null hypothesis when it is false. In other words, the statistical power of the test denoted the ability of a test to detect an effect, if the effect actually exists. The investigator typically set this at 0.8. The study also considered the number of dependent variables to be included in the analysis (Statsure c2013). Based on the questionnaire subsections, 13 independent variables were identified.

Apart from circumventing the difficulty of obtaining a complete sampling frame of all people living with HIV in Addis Ababa, cluster random sampling was chosen to save time and cost

which would have accrued if a simple random sampling method was applied (Burns and Grove 2005:372).

The study recognized the inherent biases introduced through cluster sampling. In cluster sampling, the probability of each unit being selected is not the same. This could happen if some of the randomly selected communities are smaller than others (Forthofer, Lee and Hernandez, 2007:422). These apparent biases introduced through the sampling design are overcome by selecting clusters at each stage of cluster sampling (Babbie 2009:219). This study utilized this strategy to reduce biases by selecting at least 40% of clusters at each stage of sampling.

3.7.3 Data collection, approach and methods

Data collection, according to Burns and Groove (2005:733), is a systematic process of getting information relevant to the study and should be able to address the research purpose, objectives and answer the research questions. The data collection approach applied in this research was structured and based on the ontological view of universal truths and epistemological notion of objectivity. An objective method presupposes the researcher does not influence real objects existing in a world and that truth is inherently linked to empirical foundations and ideas (McCartney 2001:133).

Data collection methods refer to the actual means by which data are collected. The particular method chosen influence the quality of information obtained. The choice of data collection methods depends on several issues that include accessibility to respondents and their ability to read and write (Fowler 2002: 58). It also follows that the construction of specific instruments and the actual administering of the instrument by field workers can either introduce or minimize bias (Derrett and Colhoun 2011:10).

This study used an interviewer-administered structured questionnaire to solicit information from the selected sample of respondents, on their knowledge, attitude and practice about HIV counseling, testing and access to treatment among children. A questionnaire is a printed form with a list of questions designed to get information through responses from study respondents (Burns & Groove 2005: 398). The questionnaire items used in this study

had prescribed wording allowing all respondents to get the same stimulus. Responses were pre-coded, with the respondent choosing appropriate responses depending on the question and how applicable it was to the respondent's situation (Elselen, Uys and Potgieter 2005:21).

Questionnaire design was guided by the mode of administration and type of sample selected to meet the objective of the research and obtain accurate and complete information within the specified period of time (Balnaves and Caputi 2001: 231). Since the study sampled respondents from a defined list, the researcher had relatively easy access to respondents making an interviewer-administered structured questionnaire suitable. Questionnaires, according to Sullivan-Boylai and Grey (2002: 301) and Babbie (2009:292) are suitable for collecting data from respondents about their knowledge, attitudes and beliefs and are mostly suited for survey research.

3.7.4 Development and testing of the data collection instrument

The questionnaire used in this study was adapted from existing questionnaires from different studies (Population Council, 2008) and related literature utilizing similar conceptual frameworks (Roelens et al 2006:4 and Cabana et al 1999:2). The questionnaire covered the various aspects under study, including the demographic characteristics, knowledge, attitudes, motivational aspects, perceptions and practices related to HIV testing and treatment among children aged 0-14 years.

The questionnaire was divided into four major sections, with the first part focusing on socio demographic characteristics of the respondents mainly age, marital status, education level, number of children and gender. The second section of the questionnaire dealt with respondents' general knowledge of HIV transmission routes among children. Questions on attitudes towards HIV counseling and testing among children were reflected in section three of the questionnaire. Also included in this section, were questions on the extent respondents felt confident to handle HIV testing and treatment among children and the feasibility of doing so. The last section contained questions designed to bring out the general practices surrounding HIV testing and treatment among children. These included questions on the actual practices of the respondents in dealing with their own status as

well as that of the children in their own households. The questionnaire is shown as annexure C.

For each of the main variables under study, a composite set of question items was provided. The questionnaire contained close-ended questions with a fixed number of responses the respondents had to choose from. The use of fixed response items allowed the researcher to standardize the questionnaire for all respondents and simplify the data analysis process (Sullivan-Boylai and Grey (2002: 301). The responses were either in the form of Likert type scales where the respondent was asked to indicate the extent to which they agreed or disagreed with certain statements. The use of Likert type questions permitted the construction of indexes and scales at the data analysis stage (Babbie 2009:162). Respondents were also subjected to fixed response items requiring “yes” or “no” answers.

The questionnaire was translated to the local language (Amharic) and back translated to English by two independent persons. Although the questions were adapted from existing survey questions (Population Council, 2008) and related literature applying similar conceptual frameworks (Roelens, et al 2006:4 and Cabana et al 1999:2), a pilot study was carried out to test the adequacy of the research instruments. During the pilot phase, the researcher administered the questionnaire to 10 respondents who were asked to provide their feedback to identify ambiguous and difficult questions. This feedback was used to modify scales, reword, or discard questions as appropriate (Van Teijlingen and Hundley (2001:3). The pilot phase assisted the researcher in measuring the suitability of the individual questionnaire items for creating a composite index by assessing their face validity and uni-dimensionality (Babbie 2009:162).

3.7.5 Data collection process

Six data collectors and two supervisors were trained for two days on interview and data collection techniques. The data collection was supervised by the two data supervisors who were familiar with both the language and the research setup.

3. 8 DATA ANALYSIS

Burns and Groove (2005:754) describe data analysis as the process of categorizing, arranging into order, manipulating and ultimately summarizing data in order to be able to answer the original research questions. The purpose is to reduce data collected to a format that can give meaning and allow one to draw conclusions. The data collected in this study was entered and analyzed with SPSS version 17. The completed questionnaires were pre-coded before the actual data entry. The study presented both descriptive and inferential statistics.

3.8.1 Levels of measurement in this study

Bello (2002:333) refers to measurement as “the assignment of numbers to objects or events according to rules”. At the nominal level, numbers are used to classify objects into mutually exclusive and exhaustive categories. Numbers assigned to the categories have no meaning beyond being labels. In this study, gender and marital status were variables that were classified at the nominal level. School attendance was measured on the ordinal scale that uses numbers to show relative rankings of objects (Bello, 2002:334; Eiselen et al 2005:334). Age was classified at the ratio scale that “shows rankings of events or objects on scales with equal intervals and absolute zeros” (Bello, 2002:334). Attitude and some self-efficacy questions were organized as Likert type question where respondents specified their level of agreement or disagreement on a symmetric agree-disagree scale for a series of statements. Accordingly, the range captured the intensity of their feelings for a given item (Burns and Bush, 2008:245)

3.8.2 Independent and dependent variables

Haber (2002:57) and Burns and Grove (2005:183) define an independent variable as that variable which has a presumed effect on the dependent variable. As reasoned by Haber (2002:57), the dependent variable is what the researcher is mostly interested in. In this study, HIV testing/treatment of children was the dependent variable while knowledge and attitudes related constructs were the independent variables in this study. Other independent variables considered in the current study were, total number of children, marital status, level of education, age and gender as they affected attitudes towards and practices of HIV testing and treatment of children. In experimental research, the researcher manipulates independent variables, however in non-experimental, comparative research

like the current one, independent variables knowledge and attitudes were supposed to just to occur naturally.

3.8.3 First level of analysis: Descriptive statistics

Bello (2002:332) notes that descriptive statistics refer to statistical procedures one can use to describe and summarize data in a meaningful and organized manner. As preliminary analysis, data from this study was primarily presented as proportions of all respondents who responded to each question (Akhtar, Luby, Rahbar and Azam 2001:373; Cabana et al 1999:1458; Roelens et al 2006:1). The researcher utilized refined ordinal measures derived from Likert scales for both knowledge and attitude that allowed categorization of respondents' knowledge, attitudes, and practices as low, high and very high. This was done through an index or scale formed from the several questionnaire items serving as composite indicators for each variable (Babbie 2009:161). For the Likert type items, the scores for each choice were summed up to represent a reliable measure of the attitude or efficacy trait being measured.

3.8.4 Second level analysis: Composite measures

Composite measures were created from the multiple items representing the concepts of knowledge, attitude and practice in the questionnaire. The researcher recognized that analyzing one variable at a time would not yield complete and desirable results measuring knowledge attitude and practice and opted for composite measures (Kaci, 2012:2).

3.8.5 Third level of analysis: Principal component analysis

Principal component analysis (PCA) is a variable reduction procedure that transform, to a new set of variables called principal components that are uncorrelated (Jolliffe 2002:1). Principal component analysis carried out separately on different sets of variables on knowledge and attitude towards HIV testing and treatment for children was expected to yield clear interpretable uncorrelated component structures of knowledge and attitudes (Akhtar et al 2001:353). The researcher used principal component analysis at this stage because of its ability to ease the analysis of complex survey data. The building of the regression model was made much simpler as the PCA resulted in fewer than the original number of variables.

3.8.6 Fourth level of analysis: Stepwise multiple regression

Level four of the analysis focused on multivariate analysis using the stepwise multiple linear regression to investigate the independent contribution of potential predictors to the outcome of interest (Forthofer, Lee and Hernandez, 2007:269; Giuseppe, Abbate, Albano and Angellilo, 2008:36; Burns and Grove 2005:547). Stepwise multiple linear regression was carried out to identify if any of the independent variables (socio demographic characteristics, knowledge and attitude factors) predicted the practice factors (feasibility and actual action for testing or putting children on treatment (Akhtar et al, 2001:353). Additional bivariate analysis was carried out to determine correlations among certain variables. The analysis also explored the various pathways that did or did not result in increased access to HIV testing and treatment among children aged 0-14 years. At this stage, the analysis considered both socio-demographic and independent variables generated from the principal component analysis.

Although the researcher utilized an adapted version of the behavioral model (Cabana et al 1999: 1458;Roelens et al 2006:1) to inform this study, there was an expectation to use similar multivariate analysis. Roelens et al (2006:1) applied multivariate analysis to their data using a stepwise binary logistic regression and used likelihood ratio tests to compare different models. Roelens et al (2006:3) reason that binary logistic regression is appropriate for their study that assumes that attitude and behavior cannot be measured through responses only to a single question for each of the variables. In the current study, this assumption did not hold true as knowledge; behavior and attitude were measured indirectly through composite measures. As the independent variables were linearly correlated with the dependent variable, the current study opted for the use of stepwise multiple linear regression analysis. Given the long list of potential predictors, stepwise multiple linear regression was chosen as the principal method of analysis since it allowed for choosing the best subset of predictors with as few variables as possible. It additionally allowed the researcher to explore relationships among variables (StatSoft: c2013; Roelens et al 2006:3).

3.9 INTERNAL AND EXTERNAL VALIDITY

The validity of a research instrument refers to the extent to which the instrument accurately measures what it is supposed to measure. Reliability relates to the degree to which the instrument will yield the same results if administered repeatedly to the same respondents to measure behaviours that normally remain constant between the two measurement periods (LoBiondo–Wood and Haber 2002:315). Thus the need to demonstrate the validity and reliability of any measurement instrument if conclusions drawn from the study are to be considered valid cannot be overemphasized.

3.9.1 Internal and external validity

Internal validity refers to the extent to which the observed changes in the dependent variable can be attributable to change in the independent variables (Taylor and Asmundson 2008:24). If findings can be shown to result only from the independent variables, then there is internal validity. The researcher took measures to control for internal validity by using questionnaire items already used in other studies and then piloting the questionnaire with 10 respondents from one of the project sites (Population Council 2008, Roelens et al 2006:4). This procedure gave the researcher assurance that the findings obtained using this instrument reflected reality. Additionally, the researcher ensured internal validity through an arduous selection of respondents using a multi- stage cluster sample.

According to Taylor and Asmundson (2008:30), external validity occurs when results can be generalized to and across populations, settings and different periods. Threats to external validity include the Hawthorne effect, which refers to the alteration of the respondents' behaviour through knowing that they are being studied. The researcher can also influence external validity if they communicate their expectation to the subject. Moreover, if the data collection is varied, then external validity is threatened. This study ensured external validity by relying on solicited responses through an anonymous questionnaire and assurances of confidentiality. In addition, the trained data collectors tried to control for external validity by making sure that the research process was consistent from respondent to respondent.

3.9.2 Validity of data collection instruments

Burns and Grove (2005:399) note that the appropriateness, usefulness and meaningfulness of any inferences derived from the scores generated by a measurement instrument are called content validity. In other words, the validity of data collection instruments refer to the extent to which the question items in the instruments adequately reflect the real meaning of the concepts under consideration (Babbie 2009:146). It therefore implies that the researcher should be concerned over the extent to which the measurement tool and the items it contains are representative of the content domain the researcher intends to measure (LoBiondo-Wood and Haber 2002:314). By utilizing questions on knowledge, attitude and practices already used in various other surveys or derived from literature (Population Council 2008; Roelens et al 2006:4), albeit with minor modifications, the researcher had confidence that the instrument was valid. However, the researcher gave the instrument to three colleagues, (a pediatrician and public health practitioner, a social research methods college lectures and a statistician) to gauge its face validity by evaluating the contents against the concepts (knowledge, attitude and practices) and the domains the researcher intends to measure.

3.9.3 Reliability of data collection instruments

Reliability of data collection instruments relates to the application of a valid measuring instrument to different groups of people under different situations to give the same results (Babbie 2009:143; Haber 2002:319;). There are factors that can affect reliability which include researcher or interviewer emanating from their own orientation, attitudes and beliefs and socio- economic status. Secondly, the research instrument can affect reliability.

LoBiondo-Wood and Haber (2002:319) note three main attributes of reliability in an instrument – namely, stability, homogeneity and equivalence. Stability refers to the extent to which an instrument can produce the same scores with repeated measurement. The study did not concern itself with this aspect of reliability since knowledge, attitude and practices are attributes that are not normally constant and are likely to change between the test periods (Burns and Grove 2005:399).

Homogeneity refers to the extent to which all the items in the instrument measure the same concept or characteristic. The study would have applied Cronbach's alpha test of internal reliability (LoBiondo-Wood and Haber 2002:322), to show the extent to which the composite questions approximate the concepts being measured namely knowledge, attitude and practice. However due to the various sub-concepts being measured under knowledge, attitude and practices, the Cronbach's alpha test would underestimate reliability for some of the measures with less than 9 questionnaire items (Tavakol and Dennick, 2011:53).

3.10 ETHICAL CONSIDERATIONS

This study complied with ethical requirements encompassing research with human subjects according to the University of South Africa (UNISA)'s policy on research ethics (UNISA 2007:9). In this respect, research that involves people as respondents should be conducted in an ethical manner to protect the rights of respondents.

3.10.1 Respecting and protecting the rights of the respondents

Burns and Grove (2005:191) note that for research to be ethical it should protect research respondents. The researcher therefore took the responsibility to protect the rights of the individual in relation to self-determination, privacy, autonomy, fair treatment and protection from harm. The researcher took measures to protect subjects of the research from any harm whether physical, psychological, economic or otherwise. This was done through seeking of consent from the Addis Ababa City Administration Health Bureau ethics committee as well as from the respondents themselves. The researcher explained the nature, purpose and significance of the study to allay any fears that the study would not jeopardize their or their children's access to treatment in the future. The researcher assured respondents of confidentiality and anonymity and that no harm or loss would come to them because of acceptance or refusal to participate in the study. At the end of each interview, respondents were provided with a token of appreciation valued at 50 Birr. Information about the token was not revealed before the client had given voluntary consent.

The researcher maintained the respondents' right to self-determination and informed consent were respected as the respondents voluntarily participated in the study and could opt out at any time during the study. The respondents were free to ask questions and their role and that of the investigator were clarified. At all times during the study, research respondents were given a contact number they could reach the researcher on.

The researcher and data collectors answered all questions pertaining to the research as and when they arose. A consent statement was read before each of the respondents in the study was asked for their verbal consent for the collection and processing of their personal information. The data collectors explained to the respondents that they were acting as proxies for the researcher whose details appeared in the consent statement. To protect respondent identities, each interviewer signed on the consent statement to indicate the interviewee's verbal consent to participate in the study. This consent was not coerced but given freely. The study respected and protected the dignity, privacy and confidentiality of the respondents at all times by conducting the interviews at the convenience of the respondents and in the comfort of their homes. The study also ensured anonymity by not writing the names of the respondents on the questionnaire. A unique identifying coding system was used on the questionnaire. The researcher kept the list of the names linked to the unique identification separate from the questionnaires making it impossible to link the respondent's names to the questionnaire with their information. However, this system allowed for data verification where vital information was missing or inconsistent.

3.10.2 Protecting the rights of the institution(s)

An ethical clearance certificate was obtained from the University of South Africa (UNISA)'s Department of Health (Annexure A). Locally, permission to conduct the research was sought from and granted by the Addis Ababa City Administration Health Bureau's Ethical Clearance Committee with copies to the four sub cities' Health Departments (Annexure B).

3.10.3 Scientific integrity of the research

The researcher maintained scientific integrity of the research by clearly stating the purpose of the research to the respondents and to the Addis Ababa City Administration Health Bureau. The researcher also informed the respondents of the possibility that the results from the study could be published. The researcher kept the list of the names linked to the

unique identification separate from the questionnaires making it impossible to link the respondent's names to the questionnaire with their information or place of residence. The researcher at all times safeguarded the completed questionnaires by keeping completed questionnaires in a locked cupboard in the researcher's home. The researcher did all data entry and analysis, reporting the findings as accurately as possible. The completed questionnaires will be destroyed a year after the study is completed to allow for verification of results in needed or answer any questions on data collection.

3.10.4 Basic ethical principles; autonomy, justice, beneficence and non-maleficence

During the data collection process, the researcher took cognizance of the fact that ethical issues could arise from the problem being investigated and the method of identifying respondents for inclusion in the study. Subjects were treated as human beings in the context of their socio and cultural environment making sure that the study also focused on non-maleficence. The research was of benefit to respondents since information generated highlighted problems parents with HIV faced when they try to deal with the HIV status of their own children. This information could assist Addis Ababa City Health Department to make HIV testing and treatment services physically available and socially accessible. A copy of the dissertation will be given to the Addis Ababa City Health Bureau after the study has been accepted fulfilling the condition set in their ethical clearance.

3.11 CONCLUSION

This chapter indicated how cross sectional analytical design guided the selection of study respondents and data collection methods. Data analysis procedures used in the study to explain relationships among variables at various levels were also presented. The study also demonstrated the various measures to ensure both validity and reliability of the research instruments as well as ethical issues related to the study.

CHAPTER 4

ANALYSIS, PRESENTATION AND DESCRIPTION OF RESEARCH FINDINGS

4.1 INTRODUCTION

This chapter discusses data analysis, presentation and description of research findings. The chapter further presents data management and analysis, research results, and overview of the findings. Research findings are presented in the context of the conceptual framework as depicted in figure 2.1.

This study set to document knowledge, attitudes and practices of parents concerning HIV testing and treatment among children aged 0-14 years and disentangle why parents who were aware of their own HIV status and were accessing treatment were not willing to get their children tested for HIV. The researcher had observed that despite the availability of services for HIV testing and treatment for children, parents on treatment did not routinely get their children tested or started on treatment. While focus of previous studies has been on unraveling the barriers to HIV testing and treatment among children from the supply point of view, this study examined the contributory effect of parents' socio-demographic characteristics, knowledge and attitudes of parents.

The study employed a quantitative, cross sectional analytic survey design to collect data using a structured questionnaire. Data from 192 HIV positive parents on ART was collected over a period of 5 days in November 2012. The data was analyzed using SPSS version 17.0. The results were presented as both descriptive and inferential statistics.

4.2 DATA MANAGEMENT AND ANALYSIS

This section gives details of the steps in data management such as data entry, data cleaning and ensuring data security. It also describes the data analysis process including the methods used and the process of evaluating data using analytic and logical statistical reasoning to examine each component the data provided (Jourbert and Ehrlich 2007:50).

4.2.1 Data management

Once the 192 questionnaires from this study were returned to the researcher, data processing commenced. This consisted of office coding and editing, data entry using SPSS version 17.0, editing computer-identified errors. All the 192 questionnaires were sequentially numbered before data collection, making it easier to go back to each questionnaire during data cleaning process. Data entry followed this sequential numbering. Simple frequency distributions were generated to check for completeness of data entry and any errors were corrected by physically revisiting the original questionnaires. The password protected file with the data was kept on the researcher's personal laptop in a password-protected file. After data entry, the completed questionnaires were also stored in a locked and secure cupboard at the researcher's home.

4.2.2 Data analysis

The researcher checked data to identify any strange values and errors that could have originated in the source documents or introduced during coding or data entry. This was done by checking one variable at a time, checking of missing variables, inappropriate codes and cross-checking of variables which were interrelated (Jourbert and Ehrlich 2007:128). The analysis that followed was in four stages, exploratory data analysis through descriptive statistics, data reduction through composite measures, principal component analysis and stepwise multiple regression analysis.

4.2.2.1 Descriptive statistics

Frequency distributions showed the proportions of all respondents who responded to each question while graphical display showed distribution of the variables under study.

4.2.2.2 Composite measures of parental knowledge, attitude and practices of HIV testing and treatment among children

Composite measures were created from the multiple indicators representing the concepts of knowledge, attitude and practice in the questionnaire. The researcher recognized that analyzing one variable at a time would not yield complete and desirable results measuring knowledge attitude and practice (Kaci, 2012:2). The concepts of knowledge, attitude and practice were complex and could not be indicated simply by the responses to a single variable or by a single piece of information. The generation of composite measures

consequently reduced the 58 questionnaire items to relate to the main variables under knowledge, attitude and practices as illustrated in the conceptual framework (figure 2.1).

4.2.2.2.1 Knowledge

Computing composite measures for knowledge resulted in the creation of two sub categories related to general knowledge of HIV transmission and knowledge of common myths on HIV transmission among children. In the conceptual framework, these knowledge sub categories equate to the concept of familiarity and awareness of HIV testing and treatment among children (figure 2.1).

4.2.2.2.2 Attitude

Composite measures for the variable attitude posed as three sub categories: self-efficacy, general positive attitudes and negative attitude towards HIV testing and treatment of children. In the conceptual framework, the composite measure, general positive attitudes, equated to the concept of agreement and outcome expectancy that justified parents taking positive action towards HIV testing among children. Likewise, negative attitudes towards HIV testing of children exemplified the notion of low motivation in the conceptual framework (figure 2.1). In the conceptual framework, motivation related to a sense of responsibility to take the child for testing or access to treatment. The sub category self-efficacy equated to the concept of perceived self-efficacy as it denoted the level of confidence and skill parents exhibited to deal with HIV testing and treatment among children .

4.2.2.2.3 Feasibility of HIV testing and treatment of children

In the conceptual framework (figure 2.1), feasibility of getting a child tested was a subcategory under practice. This related to the availability of services, support for disclosure and perceived or actual stigma experienced by both parents and children. However, the creation of composite measures based on individual questionnaire items related to both practice and feasibility revealed that these two categories were inherently separate and distinct; a factor further confirmed through principal component analysis. Accordingly, three sub categories emerged to represent composite measures of feasibility. These were, feasibility based on perceived level of community stigma; feasibility based on level of perceived self-stigma and perceived availability of services for testing and treating children.

4.2.2.2.4 Practice of HIV testing and treatment

Lastly the independent variable, practice was reduced to one composite measure of positive *actions* towards HIV testing and treatment of children. This was derived from five questionnaire items representing specific actions taken by parents related to HIV testing and treatment of children.

4.2.2.3 Principal component analysis of knowledge attitude and feasibility independent variables

Principal component analysis (PCA) is a variable reduction procedure that transform, to a new set of variables called, principal components that are uncorrelated. According to Jolliffe (2002:1), principal component analysis reduces the dimensionality of a data set comprised of a relatively large number of interrelated variables. Principal component analysis overcomes the problem of multicollinearity among independent variables that may lead to misleading estimates of the regression equations and explanation of the relationship between the independent variables and the dependent variable. Three principal components emerged from the principal component analysis, namely knowledge, attitude and feasibility related to HIV testing of children by parents.

4.2.2.4 Stepwise multiple linear regression to predict the effect of knowledge attitude and feasibility on practice and explain the relationship among variables

The last stage of the analysis focused on stepwise multiple regressions to investigate the independent contribution of potential predictors to the actual practice of either allowing the child to be tested or put on treatment. The analysis also explored the various pathways that did or did not result in increased access to HIV testing and treatment among children aged 0-14 years. The analysis took into consideration the relative contribution of the three principal factors (knowledge, attitude and feasibility) and the subgroups inherent in them towards actual practices of HIV testing and treatment among children.

The stepwise multiple regression analysis was premised on the logical assumptions linking knowledge and attitude variables to practice as outlined in the conceptual framework (see figure 2.1). According to this framework, not only did HIV testing and /or treatment among children depend on parental knowledge but also on their attitudes. These were in turn influenced by socio demographic characteristics like age, education level, gender, marital status and number of children. Consequently, the researcher, in the analysis, applied

analogous reasoning to review factors affecting HIV testing and treatment in children and explained the sequence of behavior change from knowledge, to attitude and then practice.

The dependent variable was the composite measure of practice of HIV testing and treatment among children aged 0-14 years based on responses to questions pertaining to specific positive actions. The potential predictors included scores on 13 variables that were either continuous or dichotomous variables. These were gender, age, level of education, marital status, knowledge of HIV transmission, knowledge of HIV transmission myths, positive attitude, negative attitude; self-efficacy, feasibility based on level of community stigma, feasibility based on level of self-stigma and perception of availability of services.

4.2.2.5 Choice of regression model

Multiple regression analysis is a form of multivariate techniques that is applied to predict a dependent variable from two or more independent variable assuming a linear relationship (Jourbet and Ehrlich 2007:154). Given the long list of potential predictors, stepwise multiple linear regression was chosen as the principal method of analysis since it allowed for choosing the best subset of predictors with as few variables as possible. It additionally allowed the researcher to explore relationships among variables.

Stepwise regression combined forward selection and backward elimination of variables. Forward selection began with independent variables that posed as the best predictors of the dependent variable and checked that the coefficient was significantly different from zero at the 5% level. The procedure then added only one variable at a time to the model as the model was slowly built. At the third stage or beyond it was possible to remove a variable from the model although this was not the case in the application of the procedure to this data set. This process was repeated until no more variables passed the criterion. In backward elimination, the analysis started with all independent variables in the regression and then removed the one with the smallest t statistic provided its p value was at least 0.10. This process continued until no more values were removed. These two processes were repeated until no more variables could either be added or removed. Each step modified the older model and replaced it with a newer one. Each model was then tested for statistical significance (StatSoft: c2013).

4.2.2.6 Testing assumptions

Multiple regressions provide valid results only when certain assumptions are met (Lund Research 2013:4). To assess whether the stepwise multiple regression provided valid predictions, six assumptions that should hold true in the order they were presented below were tested. These assumptions were, independence of residuals, linear relationship between the predictor variables, homoscedasticity of residuals, no multi-collinearity among independent variables, no significant outliers or influential points and those residuals are normally distributed. The validity of these assumptions allowed the researcher to provide information on the accuracy of the prediction model, how well the model fitted the data and determined the variation explained by the dependent variables.

4.2.2.6.1 False Independence of errors (residuals)

To test for independence among residuals, the Durbin-Watson statistic was calculated. This statistic can range from 0-4 with an approximate value of 2 showing no correlation between residuals. For this dataset, there was relative independence of residuals as assessed by a Durbin –Watson statistic of 1.891 (Lund Research 2013:4).

4.2.2.6.2 A linear relationship between the predictor variables and the dependent variables

This assumption was tested by examining scatter plots generated in SPSS which indicated the independent variables collectively were linearly related to the dependent variables and also that each independent variable was separately linearly related to the dependent variable (Lund Research: 2013:4).

4.2.2.6.3 Homoscedasticity of residuals (equal error variances)

The assumption of homoscedasticity was that all the residuals were equal for all values of the predicted dependent variable. The scatter plots produced to test the assumption of linearity were also used for this particular assumption. In all the scatter plots, the residuals did not decrease or increase as one moved across the predicted values of the dependent variable implying that there was homoscedasticity. This assumption was therefore not violated (Lund Research: 2013:5).

4.2.2.6.4 No multi-collinearity among independent variables

When two or more independent variables are highly correlated with each other, there is multicollinearity that leads to problems in understanding which variable contributes to any variance observed in the dependent variable. As already discussed, the process of

principal component analysis took care of multicollinearity among the dependent variables. The variables represented under the three principal components were used to test this assumption firstly, by inspecting the correlations arising from the regression model and secondly, by calculating the Tolerance/VIF values. As none of the correlations were greater than 0.7, this assumption was not violated. Furthermore, the Tolerance values were all greater than 0.1 and VIF values less than 10, further confirming that there is no multi-collinearity among the independent variables (Lund Research 2013:5).

4.2.2.6.5 No significant outliers or influential points

Values that can be regarded as unusual (outliers, high leverage points and highly influential points) are detrimental to the generalization of the regression equation. Outliers are data points or observations that are far away from their predicted value and are shown in the regression analysis as any case with standardized residual greater than ± 3 standard deviations. Based on these criteria, no outliers were found in this data set. No high leverage values were detected as all leverage values were less than 2. Influential points were assessed using the statistic, Cook's distances and there were no values above 1 implying that there were no influential points (Lund Research 2013:5).

4.2.2.6.6 Residuals are normally distributed

The residuals in prediction should be normally distributed to determine statistical significance. An inspection of the histogram with a superimposed normal curve produced during the regression analysis showed that the residuals were approximately normally distributed with the mean and standard deviation values of approximately 0 and 1 respectively. Furthermore, the P-P plot further confirmed normality as all the points were aligned along a diagonal line (Lund Research 2013:6).

4.2.2.7 Exploring the effect of socio-demographic variables on knowledge, attitude and practice of HIV testing of children

In the first instance, stepwise multiple linear regression was carried out to evaluate if any of the socio demographic characteristics had any effect, on the composite variables of knowledge, attitude, feasibility and the actual practices of HIV testing and getting children on treatment. The socio demographic variables under consideration were age, gender, marital status, level of education and total number of children below 14 years.

4.2.2.8 Exploring the sequential effect of knowledge, attitude and feasibility variables on practice of HIV testing of children

Based on the pathways proposed in the conceptual framework to explain the practice of HIV testing and treatment among children (figure 2.1), further stepwise multiple regressions were effected to explore the sequential influence of knowledge variables on attitudes and practice. Similar analysis was done to investigate the predictive effect which attitude variables had on parental practice of HIV testing and treatment among children. This analysis took into consideration the subcategories of knowledge and attitudes that emerged from the principal component analysis. As feasibility emerged as a distinct category with three subcomponents under principal component analysis, stepwise multiple regression was also conducted to explore how it was affected by knowledge and attitude and how feasibility variables in turn affected practice of HIV testing and treatment of children.

4.2.2.9 Determining the overall predictive effect of social demographic variables, knowledge attitudes and feasibility on the practice of HIV testing of children

To align with the tenets of stepwise regression, the investigator carried out an additional analysis to determine the best sub set of predictors of practice of HIV testing of children from a combined set of socio demographic, knowledge, attitudes and feasibility variables.

4.3 RESEARCH RESULTS

This section presented research results in the order of the data analysis shown in section 4.2 above. Descriptive statistics focusing on sample statistics and responses to each question were presented first. Results were presented as frequency distributions, charts and graphs for selected variables to describe sample characteristics and general findings on knowledge, attitude and practices. Results of creating composite measures of knowledge, attitudes, feasibility and practice of HIV testing of children were presented second. This was followed by the results of the principal component analysis. Lastly, results of the several stepwise regression were presented.

4.3.1 Sample characteristics

The study collected sample statistics with respect to parents' gender, age, education level, marital status and number of children aged 0-14 years.

4.3.1.1 Gender of respondents

Of the 192 respondents, 67% were females and 33% males (figure 4.1). These findings closely reflected the proportions of the people living with HIV and on treatment in Ethiopia and elsewhere.

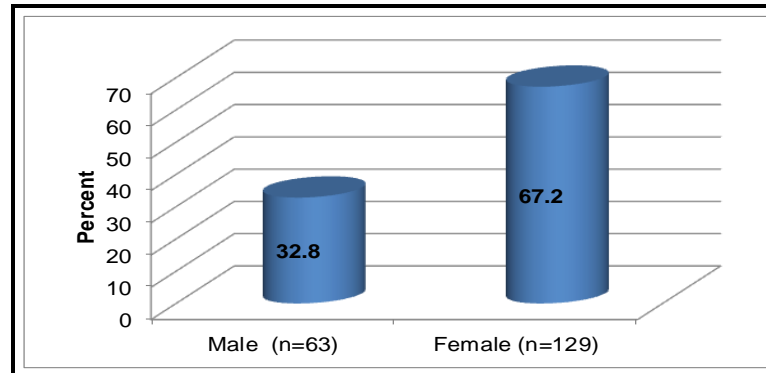


Figure 4.1 Distribution of respondents by gender (N=192)

According to WHO, UNAIDS, UNICEF (2008:4), 60% of HIV positive adults aged 15 years or older in Ethiopia were females. At least 65% of all adults living with HIV and accessing treatment in Addis Ababa in 2011 were females (Management Sciences for Health 2011:84). A study in Uganda also found that 64% of patients on ART presenting at hospitals were females (Kigozi, Dobkin, Martin, Geng, Emenonu, Bangsberg and Hahn 2010:280).

4.3.1.2 Respondent's age

Figure 4.2 shows that most respondents (79.7%) were aged between 25-44 years.

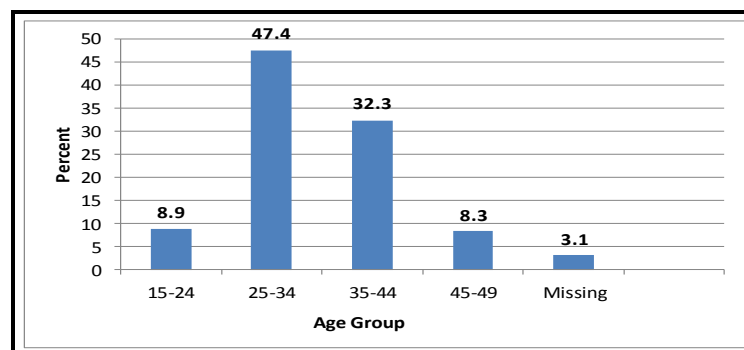


Figure: 4.2 Distribution of respondents by age group (N=192)

Respondents aged 15-24 comprised 8.9 % of the sample while another 8.3 % was composed of respondents aged 45-54 years. The age ranged from 19-49 years. The distribution of respondents by age group mirrored the distribution of HIV prevalence in the main population. According to Ethiopia Demographic and Health Survey (EDHS) (2011:256), HIV prevalence was highest among the age groups 25-44.

4.3.1.3 Education level of respondents

Table 4.1: LEVEL OF EDUCATION OF RESPONDENTS (N=192)

LEVEL OF EDUCATION	FREQUENCY	PERCENT
None	26	13.5
Elementary (7 years)	92	47.9
High School (12 years)	60	31.3
Higher (over 12 years)	14	7.3
Total	192	100.0

As shown in table 4.1, information on the highest level of education showed that 13.5% of respondents had never attended school, 47.9% had completed elementary level, and 31.3% had completed high school. Another 7.3% had completed tertiary education beyond high school.

4.3.1.4 Respondents' marital status

Figure 4.3 shows the distribution of respondents by marital status.

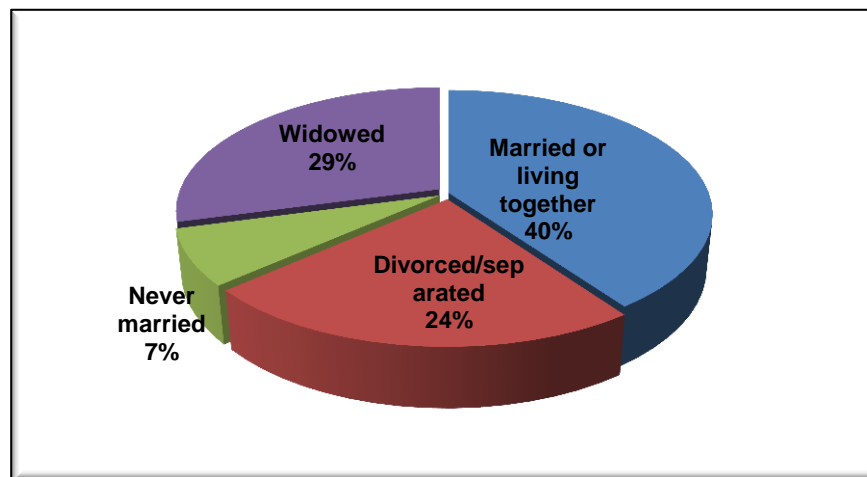


Figure 4.3 Distribution of respondents by marital status (N=192)

Of all the respondents, 40% were married or living with someone, 24 % were divorced or separated and 29% were widowed. Another 7% of the respondents were never married.

4.3.1.5 Number of children aged 0-14 years living in the same house with a parent on ART

Figure 4.4 showed that at least 39.6% of respondents had one child aged less than 14 years living with them, 30.7% had 2 children while 21.4% had three children. Parents who had 4 or 5 children living with them constituted 8.3% of the sample.

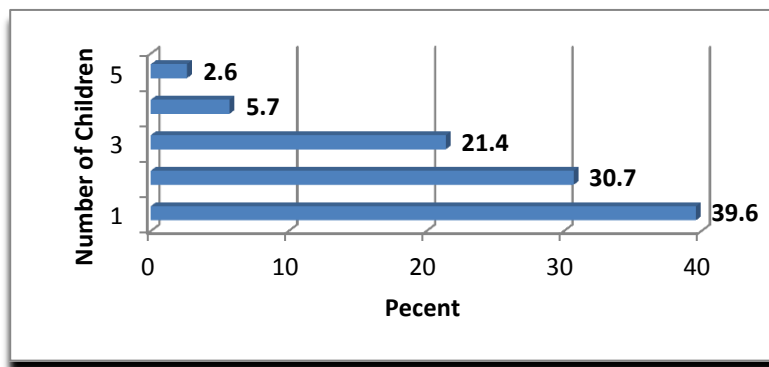


Figure 4.4 Distribution of respondents by number of children living in the same household

4.3.2 Parents' knowledge of HIV transmission among children

Parental knowledge of HIV testing and treatment among children was illustrated through the extent of their familiarity and awareness of various modes of HIV transmission and common myths surrounding HIV transmission among children. At the analysis stage, section 2 of the questionnaire dealing with HIV/AIDS knowledge questions was re-classified to produce two sub sections, namely general knowledge of HIV transmission among children and knowledge of common myths related to that HIV transmission.

4.3.2.1 General knowledge of HIV transmission among children

Increasing knowledge of ways in which HIV can be transmitted from mother to child is essential in reducing mother to child transmission (EDHS 2011:196). Figure 4.5 showed that the proportion of respondents who could correctly identify the various ways HIV was transmitted in children was over 86% for all categories.

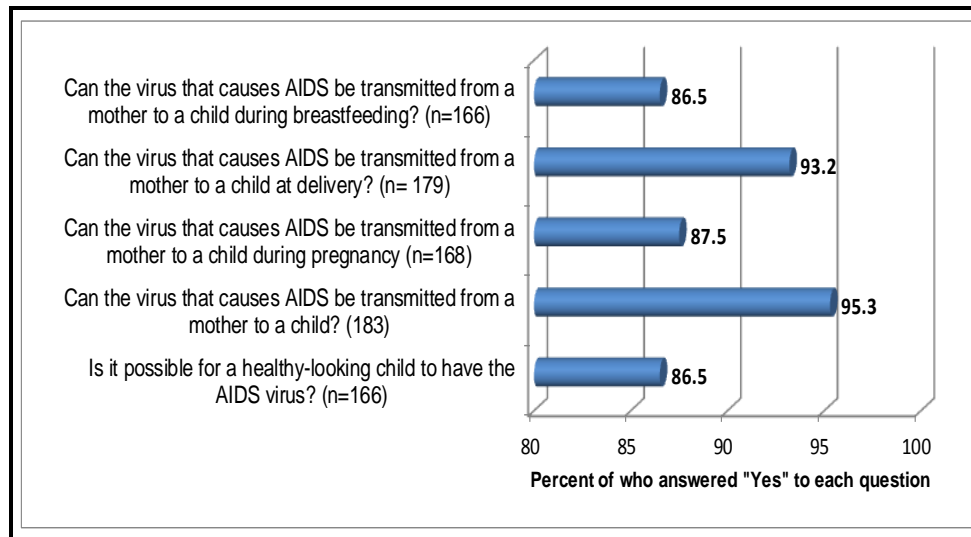


Figure 4.5 Distribution of respondents by general knowledge of HIV transmission among children (N=192)

At least 93% of respondents knew that HIV could be transmitted from mother to child during delivery, 87.5% knew that a child could be infected during pregnancy while 86.5% indicated that the HIV could be transmitted from mother to child during breastfeeding.

4.3.2.2 Knowledge of common myths related to HIV Transmission in children

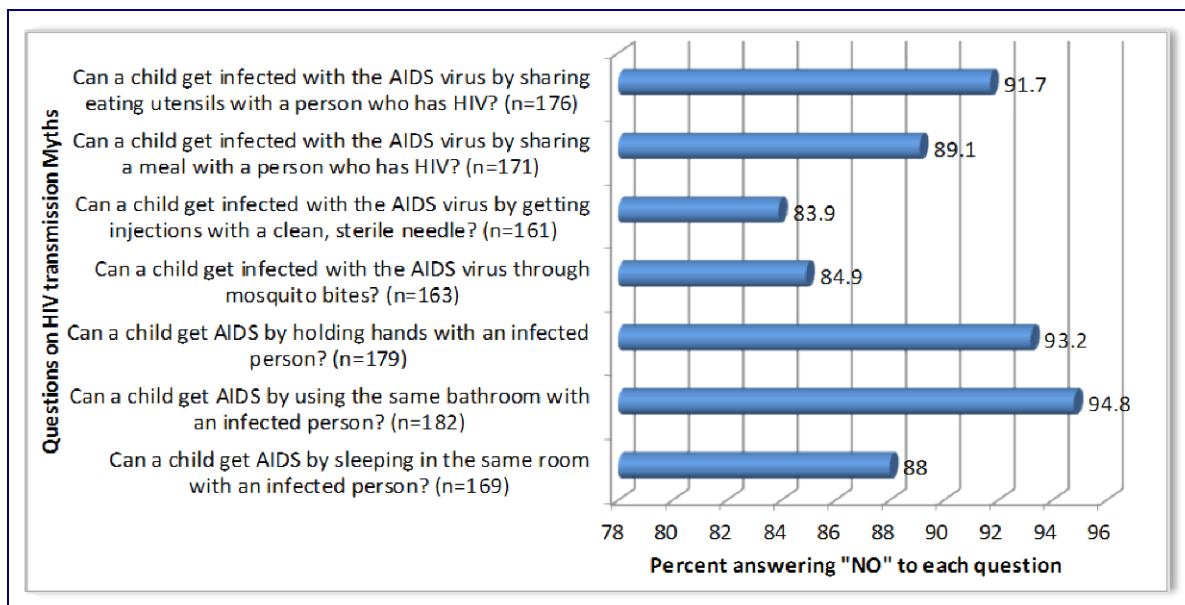


Figure 4.6. Distribution of respondents by knowledge of common myth of HIV transmission among children (N=192)

Figure 4.6 showed that the majority of respondents could correctly identify the common myths surrounding HIV transmission in children. The majority of the respondents knew that a child could not get HIV through sharing bathroom facilities (94.8%), holding hands with an infected person (93.2%), sharing eating utensils with an infected person (91.7%) or sharing a meal with an infected person (89.1%). Most respondents also knew that a child could not get HIV through injections administered with sterile and clean needles (83.9%), mosquito bites (84.9%) or sleeping in the same room with an infected person (89.1%).

4.3.3 Attitudes of parents towards HIV testing among children

In the conceptual framework, (figure 2.1), attitudes were illustrated through three sub categories- namely agreement and outcome expectancy, motivation and self-efficacy. In the analysis of the data, agreement and outcome expectancy were demonstrated through positive attitudes towards the efficacy of ARV medication use among children. Motivation was typified by negative attitudes towards ARV use among children. Self-efficacy embodied the extent to which parents felt equipped and able to deal with various situations pertaining to HIV among children.

4.3.3.1 Positive attitude: Agreement and outcome expectancy

Positive attitudes towards HIV testing and treatment among children characterized the extent to which parents were in agreement with and expected positive results from getting their children tested for HIV and initiated on treatment. The questions in this section were meant to identify to what extent parents felt justified to get their children tested given the positive expectations they had based on what they perceived as benefits of ARV treatment in children.

Based on the responses in figure 4.7, parents in this study exhibited generally high positive attitudes towards the efficacy of ARV medications in preventing illness among children and prolonging their lives. Over 80% of respondents thought ARV medications prolonged children's lives and that when taken as prescribed; these medications made the children healthier. At least two thirds of the respondents agreed that ARV medications are effective in preventing serious illness among children. A similar proportion agreed that if not taken properly, ARV medications would not be as effective. Sixty-four percent of respondents

agreed that with ARV, HIV in children could be managed like any other disease while 84% agreed that HIV is no longer a serious disease because of ARV medications.

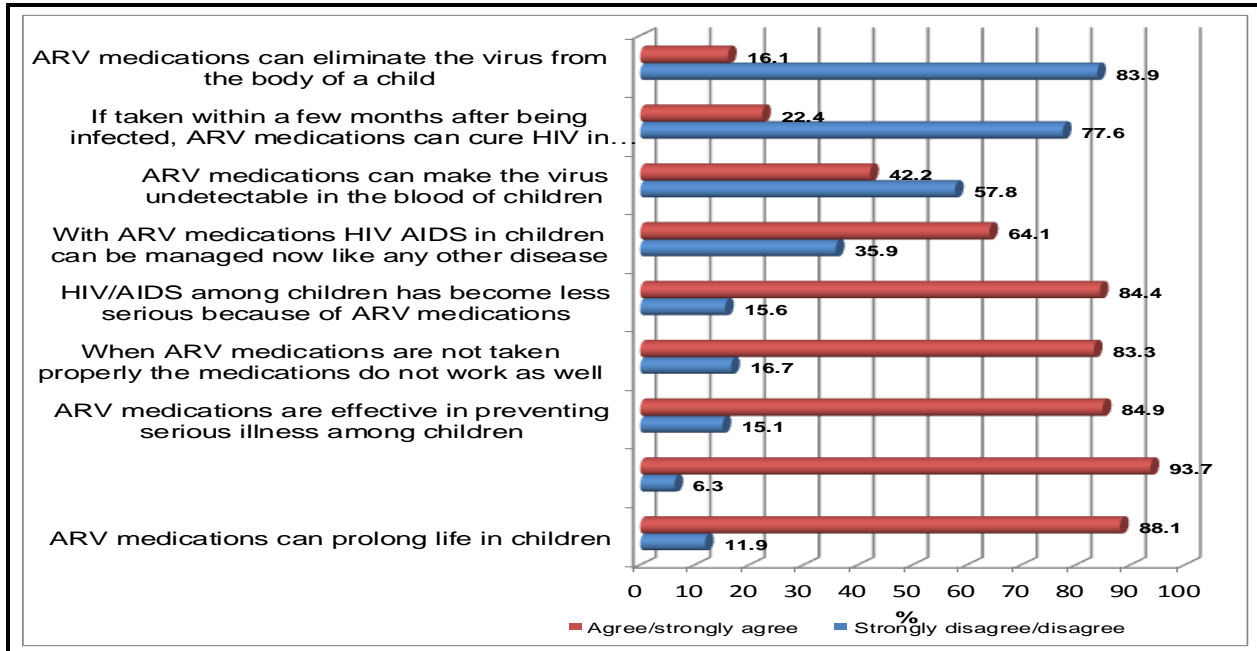


Figure 4.7 Distribution of respondents showing positive attitude towards HIV testing of children (N=192)

While parents were generally positive that ARV medicines could improve the health of children and prolong their lives, they were less positive about their efficacy in eliminating HIV in children if treatment is initiated early. Only 16.1% of parents agreed that ARV medications could eliminate the virus from the body of a child. Another 22.4% believed that if taken within a few months of a child being infected, ARV medications could cure HIV in children. Slightly over 42% of the respondents agreed that ARV medications could make the virus undetectable in the blood of children.

4.3.3.2 Motivation of parents to get their children tested for HIV and started on treatment

Information on the extent to which parents felt responsible to take their children for testing and access treatment was gathered through a set of questions that showed their negative attitude towards HIV testing and treatment. The negation of any positive effect of ARV

medication used on children with HIV showed how motivated parents were to get their children tested and put on treatment.

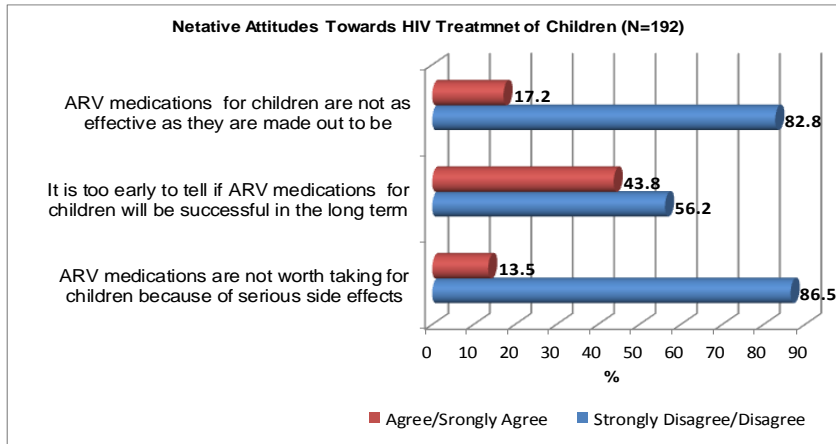


Figure 4.8 Distribution of respondents showing negative attitude towards ARV use among children (N=192)

Low levels of motivation (negative attitudes) could be construed from figure 4.8 that shows that almost 43.8 % believed that it is too early to tell if ARV medications for children will be successful in the long term. At least 13.5 % felt that ARV medications were not worth taking for children because of serious side effects and another 17.2% agreed/strongly agreed that ARV medications were not as effective as they were made to be.

4.3.3.3 Self-efficacy

Perceived self-efficacy was portrayed by level of confidence parents possessed to deal with HIV testing and treatment among children. Self-efficacy was therefore evaluated by asking respondents how confident they felt to deal with specific situations relating to their own HIV and children's HIV status.

By looking at the proportion of respondents who disagreed/strongly disagreed with self-efficacy statements, it can be deduced from table 4.2 that 24.5% of parents did not feel confident to make general decisions pertaining to children in their households. At least 29.1% did not feel confident to recommend HIV testing for their children. Another 24% did not feel confident to look after a child who has tested positive for HIV. At least 60% did not feel confident enough to tell a child that they were HIV positive. Fifty-two percent felt they

could not disclose their own status to their children. Only 15% and 23% felt unskilled to deal with child illness or other care needs for children in the household respectively.

TABLE 4.2: FREQUENCY DISTRIBUTION OF RESPONDENTS' LEVEL OF SELF-EFFICACY

Question	Strongly Disagree % (n)	Disagree % (n)	Agree % (n)	Strongly Agree % (n)
I feel confident in my ability to make decisions for the household.	6.3 (12)	15.1 (29)	54.2 (104)	24.5 (47)
I feel confident to recommend HIV testing for my children	5.7 (11)	23.4 (45)	52.1 (100)	18.8 (36)
I feel confident to look after a child who has tested positive for HIV	4.2 (8)	19.8 (38)	52.1 (100)	24.0 (46)
I feel confident to reveal to the child if he or she is HIV positive	25.0 (48)	35.4 (68)	26.0 (50)	13.5 (26)
I feel confident to reveal to my children that I am HIV positive	21.4 (41)	30.7 (59)	32.3 (62)	15.6 (30)
I am able to care for the needs of younger children/child in this household.	4.2 (8)	19.3 (37)	57.8 (111)	18.8 (36)
I know what to do when one of the children falls ill	1.6 (3)	14.1 (27)	62.5 (120)	21.9 (42)
If I wanted my child to be tested, I and my child will get a confidential HIV test at the nearest health centers	6.3 (12)	16.2 (32)	51.6 (99)	25.5 (49)

4.3.4 Feasibility of parents taking their children for HIV testing or treatment

Feasibility of getting a child tested and put on treatment was related to level of stigma and support for disclosure and by the perception of availability of services. In the conceptual framework, feasibility was placed under practice variables. However, the analysis of the responses to the questions on feasibility showed three distinct categories of variables separate from the practice variables: those pertaining to levels of community stigma, perception levels of self-stigma and perception of availability of services.

4.3.4.1 Feasibility based on perceived level of community stigma

In this study, the level of stigma was measured through a set of questions that the respondents had to answer based on how they thought community members treated people with HIV. Findings from this study, as shown in figure 4.9, indicate by proxy, that communities in Addis Ababa showed varying degrees of accepting people living with HIV. At least 28% of parents thought that people who had HIV deserve it, while another 20% would not allow an HIV positive child to play with their children. Sharing of utensils and living space was no longer a big deal as reported by less than 10% of the respondents.

However, renting accommodation to HIV positive people was reported as problematic by at least 12% of respondents with another 15% reportedly having problems with physical contact with an infected person.

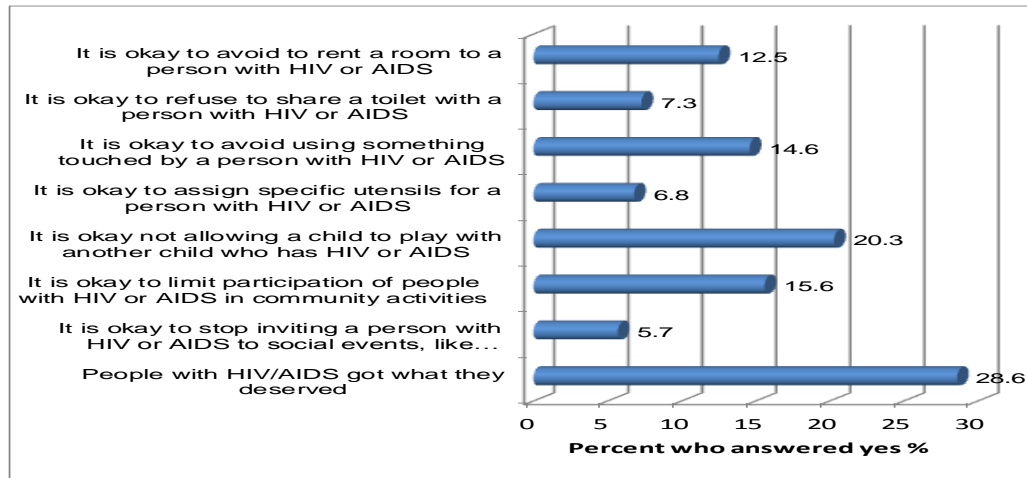


Figure 4.9. Distribution of respondents by their perception of level of community stigma (N= 192)

4.3.4.2 Feasibility to test children based on parents' perception of self-stigma

Respondents were asked specific questions to gauge their perceived levels of self-stigma. Based on responses in table 4.3, about 56% of respondents were afraid to confront their children about their HIV status. At least 31% did not want to take their children for testing because they would feel guilty if the child tested positive. Another 29.2% were afraid to disclose their status to their children in case they told other children in the community.

TABLE 4.3 FREQUENCY DISTRIBUTION OF RESPONDENTS' PERCEPTIONS OF LEVEL SELF-STIGMA (N=192)

Question	Yes	%
I am afraid of confronting my children with my diagnosis	108	56.3
I don't want to take my children for testing because I will feel guilty if they are positive	60	31.3
I am afraid that if my child knows my status they will tell other children	56	29.2

4.3.4.3 Feasibility based on perceived availability of services

Perception on the availability of services was demonstrated through responses to two questions that asked parents to either agree or disagree that HIV testing facilities for

children were available and that they did not know where to take their children for testing. At least 21% of the respondents thought there were no HIV testing facilities for children while about 16% did not know where to take their children even if they wanted to (figure 4.10).

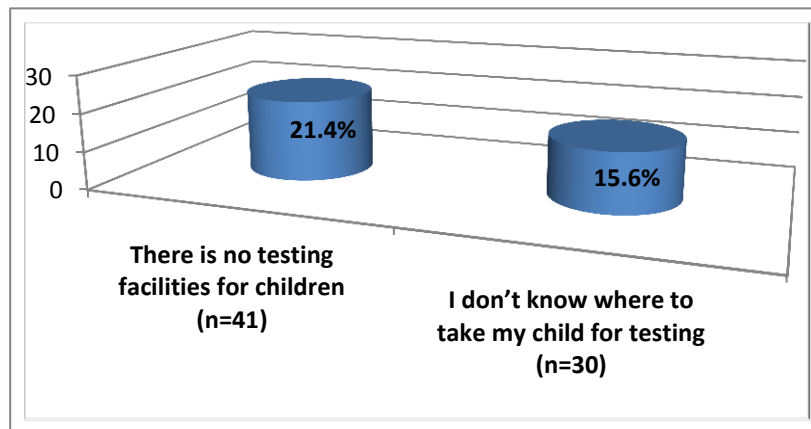


Figure 4.10: Distribution of respondents by their perception of availability of service for HIV testing of children (N=192)

4.3.4.4 Practice of HIV testing and treatment of children by HIV positive parent on treatment

The actual practice of HIV testing and treatment of children was measured through answering questions on specific positive actions towards HIV testing and treatment of children. These related to membership to an association of people living with HIV, getting children tested and disclosing own and their children's status. Responses to these questions are shown in table 4.4.

TABLE 4.4: FREQUENCY DISTRIBUTION OF RESPONDENTS WHO TOOK POSITIVE ACTIONS TOWARDS HIV TESTING AND TREATMENT OF CHILDREN (N=192)

Question	Yes (n)	%
Are you a member of an association of people living with HIV or a support group?	62	32.3
Have any of your children ever been tested for HIV?	131	68.2
Are any of the children on ART treatment?	77	40.1
Have you disclosed to the child or children on ART about their HIV status.	49	25.5
Have you disclosed your HIV status to anyone of your family or community?	118	61.5

At least 68% of the respondents had their children ever tested for HIV although 40% reported that their children are on treatment. Almost 62% of parents had disclosed their status to their family or community members. However, only 25% had disclosed to the child about their HIV status. Parents delayed disclosing their status to their children due to worry that their children would be unable to handle the psychological burden of shock, fear and stigma. Only 32% reported that they were members of an association of people living with HIV.

4.3.5 Composite measure of knowledge, attitudes feasibility and practice of HIV testing and treatment of children

Computed composite measures to reduce the 58 questionnaire items epitomizing knowledge, attitude, and feasibility practice of HIV testing yielded nine sub categories of these variables were shown in figure 4.11. The composite measures were presented within the contextual meaning depicted in the conceptual framework (figure 2.1). Based on the composite measures of knowledge, attitude, feasibility and practice shown in figure 4.11, at least 71 % of respondents correctly identified the various ways HIV was transmitted from mother to child.

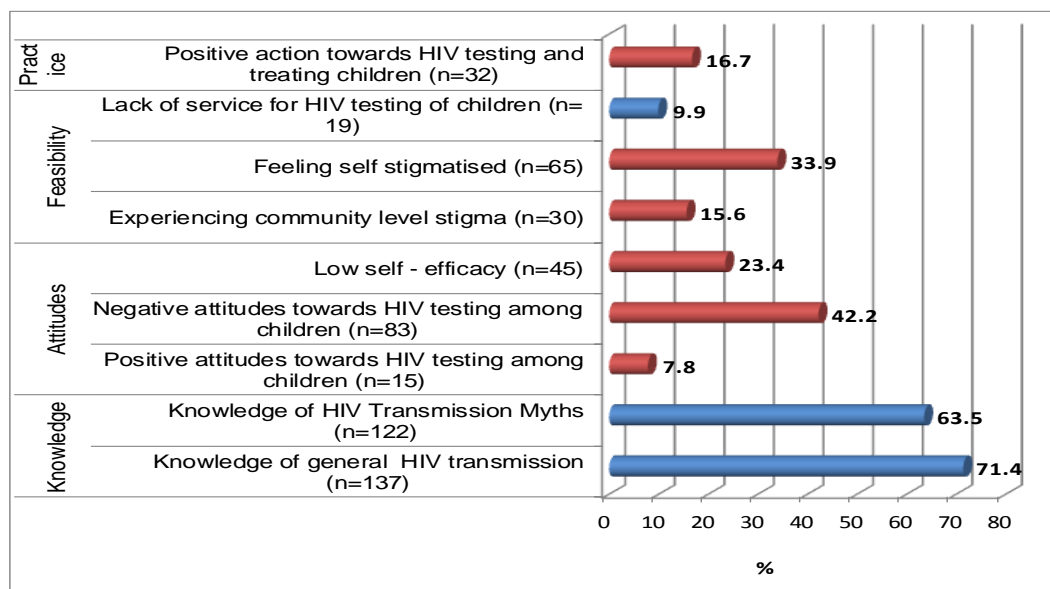


Figure 4.11 Composite measures of knowledge attitude, feasibility and practice of HIV testing and treatment among children

At least 63.5% correctly recognized common myths surrounding HIV transmission from mother to child. Only 7.8% of respondents showed agreement and outcome expectancy exhibiting positive attitudes towards HIV testing of children. At least 42.2% of the respondents showed negative attitudes towards HIV testing of children illustrating low motivation. Only 23.4% of respondents felt that they had the confidence and skills (self-efficacy) to deal with HIV testing and among children. About 15.6% of respondents felt that community stigma was still rampant while 33.9% displayed self-stigma. Perceived lack of services for HIV testing and treatment of HIV among children was reported by 9.9% of study respondents. Only 16.7% of parents demonstrated positive actions towards HIV testing of children.

4.3.6 Principal component analysis results

Principal component analysis (PCA) was carried out to convert the correlated set of nine composite measures into a smaller set of linearly uncorrelated variables. Three distinct principal factors, namely feasibility, attitude and knowledge emerged and became central to the prediction of practices of HIV testing and treatment among children. As PCA was concerned with overcoming multicollinearity among independent variables, the dependent variable practice, was excluded.

Feasibility emerged as a distinct category under PCA, instead of being loaded as a sub category under *practice* as postulated in the conceptual framework (figure2.1). The other two latent variables under feasibility were (a) feasibility based on perceived level of community stigma and feasibility based on level of perceived self-stigma. The variables, attitudes and knowledge retained the same sub categories as those presented as composite measures.

The suitability of the PCA was assessed prior to the analysis. Inspection of the correlation matrix showed all variables had at least one correlation coefficient greater than 0.3. Scatter plots also showed that the independent variables were linearly related. The overall Kaiser-Meyer–Oklin (KMO) measure of sampling adequacy was 0.556 and Bartlett's test of Sphericity was statistically significant ($p < .0005$) indicating that the application of PCA was appropriate (Lund Research 2013b:1). Communalities represent the proportion of each

variable's variance that is accounted for by the principal components analysis and can be expressed as component loadings.

TABLE 4.5: RESULTS OF PRINCIPAL COMPONENT ANALYSIS ON KNOWLEDGE, ATTITUDE AND FEASIBILITY COMPOSITE MEASURES

Composite measures	Component extracted			communalities
	1 (Feasibility)	2 (Attitudes)	3 (Knowledge)	
Knowledge of HIV transmission among children			-.807	.656
Knowledge of myths on HIV transmission in children			.717	.577
Positive attitude towards HIV testing and treatment of children		.776		.622
Negative attitude towards HIV testing and treatment of children		-.692		.493
Self-efficacy		.798		.688
Feasibility of HIV testing of children based on community stigma	.876			.789
Feasibility of HIV testing of children based self-stigma	.789			.743
Perception of availability of services	.574			.384

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

By looking at the content of the composite variables that load onto the same factors (table 4.5), common themes were identified. In this data set variables that tended to load highly (absolute loading value >0.4) on component 1 related to *feasibility* variables (feasibility based on perceived level of community stigma, feasibility based on self-stigma and perception of availability of services). The second component seemed to relate to *attitude*, as those components loading highly on it were attitudinal variables namely *self-efficacy*, *general attitude and negative attitude*). The third component related to *knowledge* with two sub categories (general knowledge of HIV transmission and knowledge of HIV transmission myths).

This final list of components satisfied the four interpretability criteria. At least three items (variables) with significant loadings on each retained component existed for two of the components. All variables, which load on each of the components, shared some conceptual meanings and they seemed to measure different constructs. Lastly, the rotated factor pattern demonstrated a simple structure i.e. high loading on one component and near zero loading on the other components (Lund Research 2013b:5). The interpretation of

the data was consistent with the parental knowledge, attitude and practice of HIV testing among children that the questionnaire was designed to measure.

4.3 7 Results of stepwise regression analysis

A stepwise multiple regression was run to predict practice of HIV testing among children based on parents' number of children, age, gender, level of education, marital status, general knowledge of HIV transmission, knowledge of HIV transmission myths, positive attitude, negative attitude; self-efficacy, feasibility based on level of community stigma, feasibility based on self-stigma and availability of services.

4.3.7.1 Variables included/excluded in the stepwise multiple regression models

Table 4.6 shows the different regression models, which were tested under the stepwise procedures, the variables entered at each step, any variables removed and the method and criteria, used for adding or removing variables.

TABLE 4.6 VARIABLES ENTERED/REMOVED IN THE APPLICATION OF STEPWISE MULTIPLE REGRESSION

Model	Variables Entered	Variables Removed	Method
1	Self-efficacy	.	Stepwise (Criteria: Probability-of-F-to-enter \leq .050, Probability-of-F-to-remove \geq .100).
2	Feasibility based on level of self-stigma	.	Stepwise (Criteria: Probability-of-F-to-enter \leq .050, Probability-of-F-to-remove \geq .100).
3	Total number of children	.	Stepwise (Criteria: Probability-of-F-to-enter \leq .050, Probability-of-F-to-remove \geq .100).
4	Marital status	.	Stepwise (Criteria: Probability-of-F-to-enter \leq .050, Probability-of-F-to-remove \geq .100).
5	Feasibility based on level of community stigma	.	Stepwise (Criteria: Probability-of-F-to-enter \leq .050, Probability-of-F-to-remove \geq .100).

a. Dependent Variable: Practice of HIV testing among children

b. Only 5 of the requested 13 variables were entered based on criteria listed in the table

Based on table of variables entered/removed (table 4.6), the most important predictor of practice of HIV testing of children was self- efficacy. The second most important predictor was feasibility based on self-stigma, followed by total number of children, marital status and lastly feasibility based on community stigma.

4.3.7.2 Determining the how well the model fits

The researcher considered the four common measures (R , R^2 , adjusted R^2 and standard error of the estimate) to determine how well chosen regression models fitted the data (Lund Research 2013a:6). The values of these four measures were shown in table 4.7.

4.3.7.2.1 Multiple correlation coefficient (R)

From table 4.7, the value of R , the multiple correlation coefficient was considered as a measure of the quality of the prediction of the dependent variable.

TABLE 4.7: REGRESSION STATISTICS TESTING THE FITNESS OF THE MODEL

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Durbin-Watson
1	.426	.182	.177	1.468	
2	.485	.235	.227	1.423	
3	.522	.272	.260	1.392	
4	.540	.291	.276	1.377	
5	.554	.307	.289	1.365	1.891

R denoted the relationship between the subset of independent variables that best predict the dependent variable. R also represented the correlation between the predicted scores and the actual scores of the dependent variables and could range from zero to 1 with higher values indicating that the predicted values were closely correlated to the dependent values. In this case, the obtained R -value of 0.554 could be characterized as moderate level of prediction. This was based on the rule of thumb that states that $R \leq 0.1$ is characterized as very weak, 0.249 as medium and 0.37 as large (Cohen 1988:26). The values of R were all above 0.4 in the regression model and therefore considered as large.

4.3.7.2.2 Total variation explained (R^2 and adjusted R^2)

R^2 , the coefficient of determination, showed the proportion of variance in the dependent variables that could be explained by the independent variables. With self- efficacy alone in the model, (model 1), 18.2% of the variance in the practice of HIV testing among children was accounted for. With both self-efficacy and feasibility based on self-stigma, (model 2), 23.5% of the variance was accounted for. The model, which added number of children to the model, accounted for 27.2% of the variance. When marital status was added at model 4, 29.1 % of the variance was accounted for. Finally, model 5, which included feasibility based on community stigma accounted for 30.7%.

4.3.7.2.3 Adjusted R^2

However, since R^2 is based on the sample and regarded as a positively biased estimate of the proportion of the variance in the dependent variable accounted for by the regression model, the adjusted R^2 was considered instead. Thus adjusted R^2 attempted to correct for this bias and gave smaller values as expected in the actual population. Based on R^2 model 1 now accounted for 17.7% of the variance in the practice of HIV testing among children. Model 2, accounted for 22.7%, model 3, 27.2% and model 4, 29.1%. Model 5, which included all variables, accounted for 28.9%.of the variance.

4.3.7.2.4 Standard error of the estimate

This represented the standard deviations of the difference between actual values of the dependent variables and the predicted values. In other words, this statistic was used to assess error of the prediction for a regression line. Based on table 4.8, these ranged from 1.468 for model 1 to 1.368 for model 5.

4.3.7.3 Statistical significance of the model

The significance of the regression model was evaluated using the F values shown in table 4.8. The F statistics tests the full model (model 5) against a simulated model with no variables and with the estimate of the dependent variables being the mean of the values of the dependent variables.

TABLE 4.8: TESTING THE SIGNIFICANCE OF THE MODEL USING ANALYSIS OF VARIANCE (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	90.828	1	90.828	42.138	.000
	Residual	409.541	190	2.155		
	Total	500.370	191			
2	Regression	117.473	2	58.737	28.993	.000
	Residual	382.896	189	2.026		
	Total	500.370	191			
3	Regression	136.147	3	45.382	23.425	.000
	Residual	364.223	188	1.937		
	Total	500.370	191			
4	Regression	145.736	4	36.434	19.212	.000
	Residual	354.634	187	1.896		
	Total	500.370	191			
5	Regression	153.740	5	30.748	16.499	.000
	Residual	346.630	186	1.864		
	Total	500.370	191			

From table 4.8, all the 5 independent variables (self- efficacy, feasibility based on self-stigma, total number of children, marital status and feasibility based on community stigma) statistically significantly predicted the dependent variable. Model 5, with all variables considered, showed that the regression model was a good fit of data with $F(5,186) = 16.499$, $p < 0.0005$. This also implied that at least one regression coefficient (except for the intercept) was statistically different from zero. Based on the F statistics shown in table 4.8, self-efficacy, and feasibility based self- stigma, total number of children, marital status and feasibility based on community stigma statistically significantly predicted practice of HIV testing of children.

4.3.7.4. Coefficients for the regression model to predict practice

From table 4.9, the general form of the equation to predict practice of HIV was obtained. Using the unstandardised coefficients, self -efficacy, feasibility based on self-stigma, total number of children, marital status and feasibility based on perceived level of community stigma were factored into the equation.

TABLE 4.9: COEFFICIENTS FOR THE REGRESSION MODEL TO PREDICT PRACTICE

Model		Unstandardized Coefficients		t	Sig.
		B	Std. Error		
1	(Constant)	10.940	.507	21.592	.000
	Self-efficacy	-.144	.022	-6.491	.000
2	(Constant)	11.949	.565	21.166	.000
	Self-efficacy	-.103	.024	-4.245	.000
	Feasibility based self-stigma	-.398	.110	-3.627	.000
3	(Constant)	12.515	.581	21.527	.000
	Self-efficacy	-.087	.024	-3.591	.000
	Feasibility based self-stigma	-.459	.109	-4.211	.000
	Total number of children	-.309	.100	-3.105	.002
4	(Constant)	12.204	.592	20.630	.000
	Self-efficacy	-.098	.024	-4.000	.000
	Feasibility based self-stigma	-.426	.109	-3.910	.000
	Total number of children	-.320	.099	-3.241	.001
	Marital Status	.183	.081	2.249	.026
5	(Constant)	14.483	1.246	11.620	.000
	Self-efficacy	-.114	.025	-4.473	.000
	Feasibility based on self-stigma	-.247	.138	-1.783	.076
	Total number of children	-.352	.099	-3.555	.000
	Marital Status	.199	.081	2.460	.015
	feasibility based on community stigma	-.157	.076	-2.072	.040

Unstandardised coefficients indicated how much the dependent variable varied with an independent variable when all other dependent variables were held constant. Therefore, predicted practice of HIV testing of children = $14.483 - (0.114 \times \text{self-efficacy}) - (0.247 \times \text{feasibility based on level of self-stigma}) - (0.352 \times \text{total number of children}) + (0.199 \times \text{marital status}) - (0.157 \times \text{feasibility based on perceived level of community stigma})$.

The tests for the statistical significance of each of the independent variables in the overall model (model 5) were carried out to check whether the unstandardised coefficients were equal to zero in the population. The coefficients were statistically significantly different to 0 if $p < 0.05$. From the table 4.9, all independent variables were statistically different from zero ($p = 0.0005$) except for feasibility based on self-stigma which was nearly significant ($p=0.076$). This was because feasibility based on level of self-stigma was highly correlated to the main predictor variable self-efficacy with a coefficient correlation of -0.56.

4.3.7.5 Summary of regression analysis to predict practice of HIV testing of children

A multiple stepwise regression was run to predict practice of HIV testing in children from 13 anticipated predictor variables. These were, parents' number of children, age, gender, level of education, marital status, general knowledge of HIV transmission, knowledge of HIV transmission myths, positive attitude, negative attitude; self-efficacy, feasibility based on level of community stigma, feasibility based on level of self-stigma and availability of services. Five models were produced in five steps with each model being a standard multiple regression procedure. The five-step prediction model contained five of the 13 originally anticipated predictors. The five predictors were, in order of importance, self-efficacy, feasibility based on level of self-stigma, total number of children, marital status and feasibility based on perceived level of community stigma. Each of the five models represented measures that show how well that particular model explained the dependent variable. The assumptions of linearity, independency of residuals, homoscedasticity, unusual points and normality of residuals were met.

Self-efficacy, feasibility based on self-stigma, total number of children, marital status and feasibility based on perceived level of community stigma statistically significantly predicted practice of HIV testing $F(5,186) = 16.499, p < .0005$. These variables accounted for 30.7%

of variance of practice of HIV testing and treatment of children ($R^2 = 0.307$, adjusted $R^2 = 0.289$). Parental practices of HIV testing and treatment of children was primarily predicted by high level of self-efficacy, followed by feasibility based on level of perceived self-stigma, total number of children, marital status and feasibility based on community level stigma.

4.3.8 Effect of demographic characteristics on knowledge, attitude, feasibility and practice of HIV testing and treatment in children

Stepwise multiple regression was performed to identify if any of the socio demographic characteristics; age, gender, marital status, level of education and number of children below 14 years had any effect on the composite variables of knowledge.

4.3.8.1. Effect of socio demographic variables on knowledge

The variables of age, marital status, level of education, gender could not statistically significantly predict general knowledge of HIV transmission among children. However, age statistically significantly predicted knowledge of HIV transmission myths, $F(1,190) = 8.393$, $p < 0.004$, $R^2 = 0.42$ and adjusted $R^2 = 0.37$. Knowledge of HIV transmission myth was negatively associated with age ($r = -0.206$, $p < 0.004$). High knowledge of HIV transmission myths was associated with age groups 15-24 and 25-34 years.

4.3.8.2 Effect of socio demographic variables on attitude

The variables of marital status, education level and age group statistically significantly predicted positive attitudes of HIV testing among children $F(3,188) = 6.815$, $p < 0.0005$, $R^2 = 0.98$ and adjusted $R^2 = 0.84$. The socio demographic variables had no relationship with negative attitudes towards HIV testing of children. In this study, marital status statistically predicted low levels of efficacy, $F(1,190) = 5.005$, $R = 0.160$, $R^2 = 0.026$, adjusted $R^2 = 0.021$, $p < 0.026$. Low self-efficacy was expressed by those parents who were married or living together and those who were widowed ($p < 0.026$). As the study found, low self-efficacy was positively correlated to the feasibility factors linked to self-stigma ($r = 0.464$, $p < 0.0005$). It can be inferred that those parents in marital unions and those who have been widowed feared or had experienced discrimination. Self-efficacy was found to be negatively related to disclosure of parents' HIV status to family members ($r = -0.343$; $p < 0.0005$) and to disclosure of children's status to the concerned children ($r = -0.232$, $p < 0.001$).

4.3.8.3 Effect of socio demographic variables on practice

The variable, total number of children, statistically significantly predicted practice of HIV transmission among children, $F(1,190) = 21.436$, $p < 0.004$, $R^2 = 0.43$ and adjusted $R^2 = 0.38$. Number of children was negatively correlated with practice of HIV testing ($r = -.207$, $p < 0.004$). Positive actions linked to HIV testing were highest among parents with one child and lowest for parents with four or five children. It was likely that parents with one child had gone through PMTCT programs. It could also be that parents with more children surviving children did not perceive them to be at risk.

4.3.8.4. Sequential effect of knowledge variables on attitude and attitude on practice

The conceptual framework (figure 2.1) alluded to a sequential correlation between knowledge, attitude and practice as postulated by Yap, Lee, Yau, Ng and Tor (2010:5). In a study on knowledge, attitude and practices towards pandemic influenza among cases, close contacts and health care workers in Singapore, Yap et al (2010:8) note that higher knowledge and attitude scores were significant predictors of practices.

Following on the pathways proposed in the conceptual framework for this study (figure 2.1), to explain the practice of HIV testing and treatment among children, further stepwise multiple regressions were effected to explore the sequential effect of knowledge variables on attitude and attitude on practice. This analysis took into consideration the subcategories of knowledge and attitude that emerged from PCA. As feasibility emerged as a distinct category under principal component analysis, instead of being treated as a sub category under practice as postulated in the conceptual framework (figure 2.1), stepwise linear regression was also conducted to explore how it is affected by attitude and how feasibility in turn affects practice of HIV testing and treatment of children.

4.3.8.4.1 Effect of knowledge on attitude

Knowledge variables had no statistically significant relationship with all attitude variables.

4.3.8.4.2. Effect of attitude on feasibility measures (community and self-stigma and perception of availability of services)

Attitude variables had no statistically significant relationship with feasibility based on community level stigma. However, when all three attitude variables were considered (positive attitude, negative attitude and self-efficacy) only self-efficacy was found to

statistically significantly predict feasibility based on self-stigma $F(1,190)=52.267$, $p<0.0005$, $R^2=0.216$ and adjusted $R^2=0.212$. Parents with low self-efficacy were likely to experience self-stigma. Low self-efficacy also significantly predicted the perception of availability of services $F(1,190) = 6.375$, $p < 0.012$, $R^2= 0.32$ and adjusted $R^2 = 0.27$. Parents with low self-efficacy were likely to say there were no facilities for testing and treating children or that they did not know where to take their children.

4.3.8.4.3 Effect of attitude on practice

Low self-efficacy statistically significantly predicted practice of HIV testing of children, $(1,190)=42.138$, $p<0.0005$, $R^2=0.182$ and adjusted $R^2=0.177$. Low self-efficacy was negatively correlated to parental practice of HIV testing of children ($r=-0.426$, $p<0.0005$). Those parents with low self-efficacy levels were unlikely to adapt positive practices towards HIV testing and treatment of children. Both positive and negative attitude variables did not have a significant relationship with practice.

4.3.8.4.4 Effect of feasibility on practice of HIV testing and treatment of children

Of the feasibility related variables (community level stigma, self-stigma and perception of availability of services) on feasibility based on level of self-stigma statistically predicted practice of HIV testing of children, $F(1,190)=36.678$, $p<0.0005$, $R^2=0.162$ and adjusted $R^2=0.157$. Practice of HIV testing among children was negatively correlated with feasibility based on level of self-stigma ($r=-.402$, $p<0.0005$). As expected, when level of self-stigma decreases, HIV positive parents were likely to take positive actions towards HIV testing of children.

4.3.8.4.5 Effect on knowledge on practice

No statistically significant was found between knowledge variables and HIV practices.

4.3.8.5 Overall effect of demographic, knowledge, attitude and feasibility variables on parental practice of HIV testing and treatment of children

Parental practices of HIV testing and treatment of children was primarily predicted by a set of five variables in the order of importance; high level of self-efficacy, feasibility based on level of self-stigma, total number of children, marital status and feasibility based on community level stigma. The combined effect of these variables accounted for 30.7% of the variation observed in the actual practice of children $F(5,186)=16.499$, $p<0.0005$, $R^2=0.307$, adjusted $R^2= 0.289$.

4.4 OVERVIEW OF RESEARCH FINDINGS

Parental familiarity and awareness of various modes of HIV transmission and common myths surrounding HIV transmission among children was high indicating that the low level of HIV testing among children found in this study was not related to lack of knowledge. The study revealed low positive attitudes towards HIV testing and treatment of children. This symbolized lack of agreement and outcome expectancy, as parents did not perceive HIV testing and treatment of children beneficial. Parents also showed low motivation levels by expressing negative attitudes towards usefulness of antiretroviral treatment among children. Low self-efficacy was found among the parents who felt inadequately equipped to deal with the HIV status of their children.

Feasibility of getting a child tested and initiated on treatment was related to levels of community and self-stigma, support for disclosure and the perception of availability of services. Although community level stigma still prevailed, albeit at lower levels, higher levels of self-stigma were reported. Some parents thought there were no services available for testing and treating their children for HIV reflecting either poor perception of the quality of services offered for HIV positive children or the relative lack of social and physical access to these services despite their availability.

The study demonstrated low level of practices by HIV positive parents towards HIV testing and treatment of their children. Membership to associations of people living with HIV was low. This was despite the finding that membership to association encouraged disclosure of HIV status. Parents were more likely to disclose their own status to other people than to their children. Disclosure of children's own status was not widespread. Parental practices of HIV testing and treatment of children were primarily predicted by high level of self-efficacy, feasibility based on level of self-stigma, total number of children, marital status and feasibility based on community level stigma.

Low level of agreement and outcome expectancy, relatively low motivation, low self-efficacy, community and self-stigma, perceived unavailability of services, and among parents living with HIV presented as negative barriers towards HIV testing and treatment of

children. Membership to an association of people with HIV and disclosure of parental HIV status facilitated HIV testing among children.

4.5 CONCLUSION

Chapter 4 presented the process of data management and analysis focusing on the procedures and explaining assumptions behind methods used. The chapter then presented findings of the research using both descriptive and inferential statistics. Research findings were presented in the context of the conceptual framework and available literature.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter interprets the research findings concerning knowledge, attitudes and practices among parents towards HIV testing and treatment for children aged 0-14 years in Addis Ababa, Ethiopia. Using a revised conceptual framework, the chapter presents the relationship among socio demographic variables, knowledge, attitudes and practices of HIV infected parents towards HIV testing, and treatment among children. Also presented in this chapter are factors that affect uptake of HIV testing and access to treatment among children aged 0-14 years whose parents were infected and accessing treatment. The chapter ends by drawing conclusions, outlining limitations of the study and making recommendations based on research results.

5.2 SAMPLE REALISATION

The purpose of the study was to document knowledge, attitudes, practices of HIV infected parents on ART concerning HIV testing, and treatment among children aged 0-14 years. The study also sought to determine factors that hindered increased uptake of HIV testing and access to treatment among children aged 0-14 years whose parents were HIV infected and accessing treatment. The study was motivated by an apparent reluctance of HIV positive parents currently on antiretroviral treatment to take their own children for testing and subsequent treatment despite the apparent availability of these services.

The study used a structured questionnaire, in the context of a quantitative cross sectional analytic survey design, to collect data from 192 parents living with HIV, accessing treatment and staying with children aged 0-14 years. Initially when the study was conceived, the investigator was working on a comprehensive HIV/AIDS, treatment care and support program which served people living with HIV in 10 sub cities of Addis Ababa. The researcher worked with a network of 10 community mobilisers and 847 volunteers to provide community care and support services to over 13 000 people living with HIV and on treatment. The study was to be conducted in this context.

However, before the researcher could collect data, that program ended in July 2011 and another, initiated in September 2011 continued to provide clinical services to people living with HIV. Although no longer working in the program supporting Addis Ababa at the time of data collection, the researcher continued to interact with one community mobiliser who formed an association of 457 volunteers who continued to mobilize additional community resources to support at least 3 500 clients, some of whom were originally supported by the program. The researcher benefited from this interaction to gain access to the communities where the study was carried out. The researcher employed the founder of the volunteer association as one of the supervisors, responsible for recruitment of the six research assistants from his association, data collection and facilitating access to clients in the selected communities.

The six research assistants, together with others, their roles as care and support volunteers, kept registers of their clients on ART that also showed by age, the list of family members living with them. It was therefore easy for the researcher to identify, from these registers, 350 clients who had children aged 0-14 years. The six volunteers approached the 192 randomly selected parents in their homes as part of their weekly care and support visits and explained their recruitment into the study. Some of the respondents were initially suspicious of their inclusion in the study and why this was linked to their being parents of children aged between 0-14 years. When provided with adequate explanations, most respondents consented to the interviews. Where there was a refusal, a substitute was chosen from the original list. The researcher did not give leeway to the data collectors to interview less than the 32 questionnaire allocated to per site thereby achieving 100% response rate. At the end of each interview, respondents were provided with a token of appreciation valued at 50 Birr. Although information about the token was not to be revealed before the client had given voluntary consent, the researcher felt that this incentive could also have contributed to the response rate.

5.3 INTERPRETATION OF RESULTS

Cognisant of the research purpose and objectives, this section focused on interpreting research findings in relation to parents' knowledge of HIV transmission in children, their attitudes towards HIV testing and treatment of children and their actual practices of getting

their children tested and initiated on treatment. The elucidation of results also focused on demonstrating the relationships between socio demographic variables, knowledge, attitudes of HIV infected parents towards practices of HIV testing and treatment among children aged 0-14 years. Lastly, the interpretation showed the extent to which knowledge and attitudes influenced parental practices towards HIV testing, and treatment among children aged 0-14 years.

5.3.1 Parents knowledge of HIV transmission among children

Parents in this study exhibited relatively high levels of knowledge of mother to child HIV transmission and related myths. At least 71% of respondents could correctly identify the various ways HIV was transmitted from mother to child while 63% correctly identified common myths related to such transmission. Respondents in this study exhibited higher levels of knowledge than those reported from the EDHS (2011:196) which show that 77% of women and 75.9% of men aged 15-49 years correctly identified how HIV was transmitted from mother to child. The results from this study were as expected since all respondents in the study were living with HIV and likely to have had more access to information on PMTCT.

5.3.2 Attitudes of parents towards HIV testing among children

With 42.2%, 23.3% and 7.8% of respondents, respectively, showing negative attitudes, self-efficacy and positive attitudes towards HIV testing of children, the research claimed that parents did not perceive HIV testing and treatment of children as beneficial and were not equipped to handle HIV related issues among children. The study further maintained that the low level of agreement and outcome expectancy (positive attitudes), low motivation (negative attitudes) and relatively low self- efficacy expressed by parents towards HIV testing among children, precluded parents from routinely initiating HIV testing and treatment of their children.

5.3.3. Practice of HIV testing and treatment of children by HIV positive parents on treatment

By documenting specific positive actions taken by HIV positive parents, the study demonstrated their actual practices of HIV testing and treatment of children. These positive actions related to membership to associations of people living with HIV, getting children tested and keeping them on treatment and disclosing parental and child HIV statuses.

With only 16.7% of parents demonstrating these positive actions on a composite scale, the researcher contended that uptake of HIV testing and treatment of children was low.

5.3.3.1 Membership to associations of people living with HIV

Only 32% of respondents reported that they were members of associations of people living with HIV. As Rwemisisi et al (2008:39) reason, those parents who are members of associations of people living with HIV are likely to disclose their status to family members, including their children and therefore more likely to get those children HIV tested and treated. In this study, membership to associations of people living with HIV was associated with disclosure of parental HIV status and could therefore have facilitated HIV testing among children. The researcher contended that associations of people living with HIV provided support for disclosure to parents who were willing to disclose.

5.3.3.2 Testing of children and keeping them on treatment

Although 68% of the respondents had their children ever tested for HIV, only 40% of parents whose children had tested HIV positive reported that their children were on treatment. The researcher surmised that these children on treatment were most likely to be those targeted through PMTCT given that 56.3% of respondents were aged between 15-34 years.

5.3.3.3 Disclosing parental and child HIV statuses.

Although 61.5% of parents in this study had disclosed their status to other family or community members, only 25% of children on treatment were reported to know their own status. The researcher asserted that parents found it easier to disclose their own status to community and other family members than to their children hence the low proportion of children who knew their own status. Corona, Beckett, Cowgill, Elliot, Murphy, Zhou and Schuster (2006:138) show that parents who experienced stigma were less likely to let their children know of their status.

Granted some of the children could have been too young to be told of their own or their parent HIV positive status, it is also possible that these findings reflected lack of support for parents who were willing to disclose to their children. As construed by Rwemisisi et al (2008:39), parents living with HIV choose not to disclose their status or get their children tested because of uncertainty of the appropriate age to do so and lack of perceived benefits beyond the disclosure. It could also be that parents delayed disclosing their status

to their children due to worry that their children will be unable to handle the psychological burden of shock, fear and stigma. In addition, the probability of a child being detected positive created, in parents, the psychological fear of facing discrimination in society. Parents were afraid that their own secret would come out through their children and that their children would stop respecting them (Chaturvedi and Vijay 2009:22; Corona et al 2006:138).

5.3.4 Revised conceptual framework

According to the conceptual framework (figure 2.1,) proposed to map and understand the relationships between, and among the independent and dependable variables in this study, HIV testing and treatment among children did not only depend on parental knowledge but also on their attitudes (Cabana et al 1999:1458; Roelens et al 2006:4). However, for the current study, the proposed framework fell short of adequately explaining how demographic variables, knowledge (awareness and familiarity), attitudes (agreement and outcome expectancy, motivation and self –efficacy) and feasibility affected the practice of HIV testing of children by parents living with HIV and on ART.

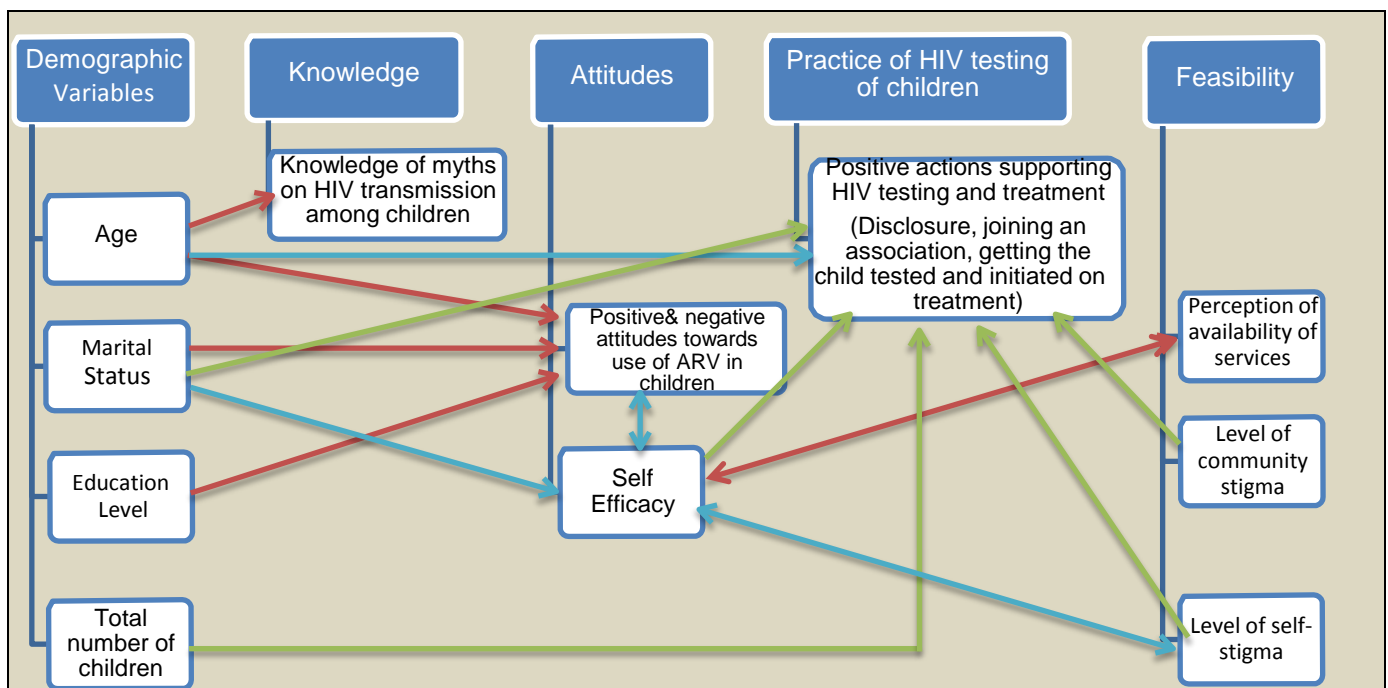


Figure 5.1 Knowledge, attitudes and practices towards HIV testing and treatment for children: A revised conceptual framework

5.3.5 Effect of socio demographic variables on knowledge, attitude and practices

Contrary to findings by Cabana et al (1999:1458), attitudinal factors that affected knowledge like lack of agreement and outcome expectancy and lack of self-efficacy did not have the same effect in this study. Unlike assertions by Roelens et al (2006:1), results in the current study did not link knowledge, motivation (attitude), lack of services (feasibility) and education level to practices of HIV testing of children. However, the framework amply demonstrated the interplay between self-efficacy and other attitudinal variables as originally anticipated by the researcher.

Since results from this study did not follow, the analogous interpretation originally envisaged but revealed a more complex set of reasoning that went beyond individual actions; a revised framework was presented in figure 5.1. The researcher subsequently applied the revised framework to explain the relationships among socio demographic variables, knowledge, attitudes and practices of HIV infected parents towards HIV testing, and treatment among children aged 0-14 years in Addis Ababa.

Five demographic factors were considered in the study; namely, age of parents, their education level, marital status, gender and the total number of children aged 0-4 years living with them. Only those variables that were associated with knowledge, attitude or practices were shown in the revised conceptual framework.

Of the five demographic variables considered in the study, only age was associated with knowledge and positive attitudes towards HIV testing of children. Higher parental knowledge of myths related to HIV transmission among children was reported among parents aged 15-34 years than in the other age groups. Parents aged 15-34 were likely to be more educated, had gone through PMTCT programs and accessed correct information through counseling services and other channels. These results differ from findings elsewhere. Delobelle et al (2009:1063), in a study to investigate HIV and AIDS related knowledge, attitudes, practices and perceptions of nursing staff in South Africa, claim that HIV/AIDS knowledge is not associated with age. Contrary to findings in this study, Abejabo et al (2003:107) also establish education to be statistically significantly related to

knowledge of HIV among health workers in Nigeria. In this study, parental education was associated with positive attitudes.

The current study claimed that although parents' marital status was associated with positive attitudes towards HIV testing among children, this association was made complex by the link between marital status and self-efficacy. Those parents who were married or living together and those who were widowed expressed lower self-efficacy levels than either never married or divorced parents. This could be linked to prevailing stigma and fear of disclosure of HIV status among married or widowed parents.

Number of children was associated with parental practices of HIV testing among children. Those parents with three or less children aged 0-14 years were more likely to engage in positive actions towards HIV testing or treatment of children. These were likely to be younger educated parents who were more receptive to PMTCT interventions.

5.3.6 Effect of knowledge on practices of parents towards HIV testing of children

The high levels of parental knowledge of HIV transmission among children and related myths should have contributed to the reduction of mother to child transmission (EDHS 2011:196; Chaturvedi and Vijay 2009:9) and ultimately increased uptake of HIV testing and treatment among children. However, the current study did not find any significant association between knowledge and practice of HIV testing among children, supporting the assertion by Thu et al (2005:13) and Cabana et al (1999:1458) that knowledge alone does not always translate into anticipated behavior change.

5.3.7 Effect of knowledge on attitude of parents towards HIV testing of children

Contrary to what other studies depicted (Yap et al 2010:1; Qu, Zhang, Guo and Sun 2010:59), the study did not find any link between knowledge and attitude. These results implied that there were factors other than knowledge, which contributed to low motivation and the general lack of positive agreement and outcome expectancy towards HIV testing of children among parents.

5.3.8 Effect of parents' attitudes on practice of HIV testing of children

In this study, parental attitude did not have any effect on their practices towards HIV testing and treatment of children. These results aligned with findings from other studies (Li,

Scott and Li 2008:147). However, the researcher reasoned that although there was no direct association between attitude and parental practices of HIV testing of children, negative attitudes influenced parental behavior through self-efficacy. Results showed that parents with low self-efficacy were likely to have experienced self-stigma, report on unavailability of HIV testing and treatment services for their children and more likely to express negative attitudes towards HIV testing of children. Based on these findings, the study claimed that those parents with low self-efficacy levels were unlikely to engage in positive practices towards HIV testing of children. The researcher made a case that factors, which either decreased or increased self-efficacy levels among parents were crucial in increasing HIV testing and treatment of children.

5.3.9 Factors that affected HIV testing and treatment among children aged 0-14 years.

The study maintained that parents living with HIV faced a series of difficult decisions about HIV testing and sharing information with the children. In the context of this study, parents evaluated the benefits to self or their children before they took action towards HIV testing and treatment. When anticipated outcomes were not necessarily pleasing, parents chose to act contrary to expected behaviours (Bandura 1986:391; Bandura 2001:4; Zimmerman and Schunk 2001:131).

Despite availability of services for HIV testing of children and adoption of WHO guidelines in the study area (EFHAPCO/FMOH 2008; WHO 2010) only 16.7% of parents demonstrated positive actions towards HIV testing of children. This result, suggestive of other impediments towards HIV testing and treatment for children, negated the notion by Phakathi et al (2011:173) who, in a study in South Africa postulate that access to ART increases HIV testing as benefits of ART are realized. Based on findings from this study, it can be implied that factors that pushed parents to test for HIV and subsequently take up treatment did not translate into increased uptake of HIV testing and treatment among children. Similarly, findings in this study contradicted the general conception that parents believed that knowing a child's status enabled them and clinical care providers to provide adequate care to the child (Atkinson et al 2001:12).

Consistent with the social cognitive theory (Bandura 1986:391; 2001:4), in this study, parental practice towards HIV testing of children should have been a function of their demographic characteristics, knowledge, attitude and other environmental/feasibility factors like access to services and the level of stigma. As depicted in figure 5.1, this study revealed that the most important variables in predicting parental practices of HIV testing and treatment of children were, in order of importance; self-efficacy, feasibility based on level of self-stigma, total number of children, marital status and feasibility based on community level stigma. The study maintained that dealing with barriers acting through these variables was crucial in increasing the uptake of HIV testing and treatment of HIV among children aged 0-14 years.

5.3.9.1 Self-efficacy

In this study, self- efficacy came out as the most important determinant of parental practices towards HIV testing and treatment of children. Results pointed towards low self-efficacy among parents with only 23.4% of respondents expressing confidence and feeling adequately skilled to deal with HIV testing among their children. In line with Bandura's (1990:9) contention, in this study, parents' beliefs about their capabilities to deal with their own HIV status determined whether they got their children HIV tested and treated or not. When parents in this study exhibited low self- efficacy levels, they did not necessarily take children for HIV testing or treatment, even if they knew what to do and services were available. In consequence, parents in this study did not move towards the anticipated course of action concerning access to treatment for children as they felt ill equipped to deal with concomitant issues relating to disclosure, stigma and adherence to treatment.

In this study, self –efficacy was interrelated with the perception of availability of services for HIV testing and treatment of children. The current study maintained that as long as parents expressed low self-efficacy and perceived services to be unavailable or of poor quality, they were less likely to actively engage in actions to get their children tested or treated of HIV.

The current study reasoned that perception of unavailability of services was an indicator of barriers that made these services socially and physically unavailable to parents and their

children. Contrary to the prevailing situation (Ethiopia Federal Ministry of Health (2008:8) and as asserted by Collins et al (2009:1), the availability of HIV services for children did not result in increased uptake of these services. It can be argued that perception of unavailability of services was an indication of the level of faith parents had in the efficacy and quality of treatment and services available for them and their children. As postulated by Rwemisisi et al (2008:39), parents tend to disclose their own HIV status and their children's if they have faith in the efficacy of treatment and services available. Lack of disclosure to children was also linked to the quality of services the parents received from HIV counselors and providers.

Findings from this study showed that low self-efficacy, associated with high level of self-stigma and low motivation levels, became an impediment to seeking HIV services for children. In tandem with findings from other studies, stigma and discrimination, whether feared or experienced, hindered access to HIV services for children (Chartuverdi and Vijay 2009:8; Chime et al 2004:1; Leeper et al 2010:4; Rahangdale et al 2010:841). As argued by Chaturvedi and Vijay (2009:22), lack of self-efficacy and low motivation can be a hindrance to child testing, as parents are unable to overcome the shock and grief linked to their own status.

5.3.9.2 Feasibility of HIV testing of and treatment of children.

Feasibility of getting a child tested and put on treatment was determined by the level of community and self-stigma experienced by parents. Parents in this study were prone to consider the level of stigma (community and self) before they took any action towards getting their children tested for HIV. Wide spread stigma and discrimination towards people living with HIV has been reported to negatively affect their willingness to be tested, adhere to treatment and access other services of HIV prevention, care and treatment (Mutalemwa et al 2008:220; Rwemisisi et al 2008:39; EDHS 2011:196; Buzdugan et al 2012:5; Feyissa et al 2012:1). The fact that 29% of parents in the current study expressed fear that if their children knew their status they would tell other children closely alluded to fear of stigma and against themselves and their children. The probability of a child testing HIV positive created, in these parents, the psychological fear of facing discrimination in society as

alluded to by Chaturvedi and Vijay (2009:22); Rahangdale et al (2010:841); Buzdugan et al (2012:5).

This study argued that although the decision to test one's child was concomitant upon the parent's own HIV status, parents were less likely to support HIV testing or treatment of children fearing that these children could be discriminated against. This study maintained that feared and experienced stigma, lack of community and family support hindered parents' access to HIV testing and treatment for children. In accordance with contentions by Rwemisisi et al (2008:39), the current study postulated that the inability or unwillingness by parents to confront their own HIV infection with their children was an important barrier to child testing in its own right.

5.3.9.3 Total number of children

The total number of children statistically significantly predicted parental practice of HIV transmission among children. Positive actions linked to HIV testing were highest among parents with one child and lowest for parents with four or five children. It was likely that parents with one child were younger parents who had gone through PMTCT programs. It could also be that parents with more children surviving did not perceive them to be at risk and therefore did not deem it necessary to get them tested

5.3.9.4 Marital status

In this study, marital status statistically predicted practice of HIV testing among children. Married and widowed parents were most likely to take positive action towards HIV testing of children. However, given that only 16.7% of parents took positive actions towards HIV testing of their children, this study argued that low level of self-efficacy linked to self-stigma among the married and widowed parents prevented most parents from getting their children HIV tested and put on treatment.

5.4 CONCLUSIONS

The study drew conclusions on parental practices towards HIV testing and treatment of children based on parents' knowledge of HIV transmission among children, their attitudes towards and feasibility of getting their children tested for HIV testing and initiated on treatment. Further conclusions were drawn on factors affecting these practices.

5.4.1 Parents' knowledge of HIV transmission among children

Parental knowledge of HIV testing and treatment among children was quite high. However, this knowledge did not translate into parental practice of HIV testing and treatment among children. These results showed that the low level of HIV testing among children was not a lack of knowledge but of other factors.

5.4.2 Attitudes of parents towards HIV testing among children

Findings revealed low self-efficacy levels, low positive attitudes and high negative attitudes towards HIV testing and treatment of children among parents living with HIV. Parents with low self-efficacy reported high levels of self-stigma and were unlikely to adopt positive practices towards HIV testing of children. Given these attitudinal factors, HIV testing and treatment among children remained low regardless of availability of services.

5.4.3 Feasibility of parents getting their children tested for HIV testing and initiated on treatment

Feasibility of getting a child tested and put on treatment was related to levels of stigma (community and self) and by the perception of availability of services. Continued existence of stigma and poor perception of availability and quality of services available to HIV positive children continued to hamper access to HIV testing and treatment among children.

5.4.4. Practice of HIV testing and treatment of children by HIV positive parents on treatment

The study demonstrated low levels of parental practices towards HIV testing and treatment of children despite availability of services. Membership to associations of people living with HIV, which was found to facilitate disclosure of HIV status by parents, remained low. Although parents were willing to disclose their own HIV status to other family or community members, they were less willing to tell children on ART that they were HIV positive. This implied that parents lacked skills and support to handle disclosure to children or feared stigma for themselves or the children.

5.4.5 Factors affecting HIV testing and treatment of children

Parental practices of HIV testing and treatment of children was primarily predicted by high level of self-efficacy, level of self-stigma, total number of children, marital status and level of community stigma. Negative attitudes towards use of ARV medication in children, relatively low motivation and self-efficacy, prevailing community and self-stigma, perceived

unavailability of services, presented as negative barriers towards HIV testing and treatment of children. Membership to associations of people with HIV and disclosure of both parental and child HIV statuses can facilitate HIV testing among children.

5.5 RECOMMENDATIONS

In the context of study findings, the following recommendations were proposed for increasing access to HIV testing and treatment among children.

5.5.1 Support to parents for disclosure of HIV status

Parents and other caregivers should be provided with skills and institutional, community and family support for disclosure of their own status and that of their children. Partner involvement in maternal and child health should be encouraged to promote disclosure among couples and increased access to HIV testing among children. Parents living with HIV should be encouraged to join associations of people living with HIV that present safe spaces for disclosure and peer modeling to increase self- efficacy.

5.5.2 Engagement of Community members in HIV/AIDS programs

In order to increase HIV testing and treatment of children, stigma, whether at community level or self, should be dealt with through the involvement of community members in designing and implementing localized and context specific models of community care and support. Identification of children for enrolment into care should go beyond facility based PMTCT programs and move towards innovative but supportive ways of identifying children at community level.

5.5.3 Improving HIV/AIDS services for children through health care providers

Health care providers should be retrained and supported to improve quality of services available to children. HIV/AIDS programs should focus on improving the technical abilities of health care providers to handle HIV treatment and care of children

5.5.4 Recommendations for further research

There is need for further research on evidence-based approaches to reach children beyond PMTCT programs and keeping them on treatment. Research is also needed to document the impact of the use of WHO guidelines on increasing access to HIV testing and treatment among children.

5.6 CONTRIBUTIONS OF THE STUDY

The study significance lay in the unveiling of factors, which acted as barriers to increase access to HIV testing, and treatment among children aged 0-14. These findings could inform strategies and HIV/AIDS programs aimed at increased uptake on HIV testing and treating services for children.

5.7 LIMITATIONS OF THE STUDY

The study was confined to four sub cities of Addis Ababa and communities served by six health centers and could therefore not be generalized to the whole country. Although the study revealed barriers towards HIV testing among children aged 0-14 years, it did not categorize the children by age group nor did it ask parents about their experiences with PMTCT programs. It therefore remained unclear if the children reported on treatment were those young enough to have benefited from PMTCT programs or not.

5.8 CONCLUDING REMARKS

Children born to HIV positive parents on treatment are not always routinely HIV tested and treated, despite availability of services. The study provided sufficient information to document knowledge, attitudes and practices of parents towards HIV testing and treatment for children aged 0-14 years in Addis Ababa, Ethiopia. The study further explored factors that affected increased uptake of HIV testing and access to treatment among children aged 0-14 years whose parents were infected and accessing treatment.

Findings showed that 71% of respondents knew how HIV was transmitted from mother to child. Negative attitudes towards HIV testing of children were expressed by 42.2% of respondents. Although 23.3 % of parents expressed high self-efficacy levels only 16.7 % of parents demonstrated specific practices towards HIV testing and treatment of children. Parental practices of HIV testing and treatment of children was primarily predicted by level self-efficacy, level of self-stigma, and total number of children, marital status and level of community stigma. In this study, knowledge and attitude had no direct relationship with parental practice of HIV testing of children. Results showed that parents with low self-efficacy were likely to have experienced stigma, report on unavailability of HIV testing and treatment services for their children and more likely to express negative attitudes towards

HIV testing of children. Feasibility of getting children tested for HIV depended on level of community and self-stigma experienced by parents. As long as parents expressed low self-efficacy and perceived services to be unavailable or of poor quality, they were less likely to get their children tested for HIV.

Recommendations to improve parental practices towards HIV testing of their children included interventions targeting barriers at parental, community and provider levels. These included provision of skills and other support to parents for HIV disclosure; localized care and support models to reduce stigma and identify children in need; and improving quality of services available to children.

LIST OF SOURCES

- Abejabo, BS, Bamgbala, AO & Oyediran MA. 2003. Attitudes of health care providers to persons living with HIV/AIDS in Lagos State. *African Journal of Reproductive Health*. 7(1) 103-112. From: <http://www.jstor.org/stable/3583350> (accessed 5 August 2010).
- African Network for the Care of Children Affected by AIDS (ANECCA). 2006. *Handbook on Paediatric AIDS in Africa*. Revised edition. USAIDREDSO East Africa. Kampala. *AIDS Behaviour* 14:1095–1105. DOI 10.1007/s10461-010-9715-y
- Akhtar, S, Luby, SP, Rahbar, MH & Azam, I. 2001. HIV/AIDS knowledge, attitudes and beliefs based prediction models for practices in prison inmates, Sindh, Pakistan *Southeast. Asian Journal of Tropical medicine and Public Health* 32(2):351-361.
- Arulogun, OS, Adewole, IE, Olayinka-Alli, L & Adesina, AO. 2007. Community gatekeepers' awareness and perception of prevention of mother-to-child transmission of HIV services in Ibadan, Nigeria. *African Journal of Reproductive Health / La Revue Africaine de la Santé Reproductive* 11(1):67-75.
From : <http://www.jstor.org/stable/30032489>(accessed 5 August 2010)
- Atkinson V, Phiri K, Mulwafu, W & Graham SM. 2001. Caregivers' knowledge and attitudes towards HIV testing in chronically ill Malawian children. *Malawi Medical Journal* (13):12-14.
- Babbie, ER. 2009. *The practice of social research*. 9th edition. Belmont: Wadsworth Publishing Company.
- Balnaves, M and Caputi, P. 2001. Introduction to quantitative research methods: an investigative approach. London: Sage
- Bandura, A. 1986. *Social foundations of thought and action: A social cognitive theory*. New Jersey: Prentice Hall.
- Bandura, A. 1990. Perceived self -efficacy in the exercise of control over Aids infection. *Evaluation and Program Planning* 13:9-17.
- Bandura, A. 1995. Exercise of personal and collective efficacy in changing societies, in *Self-efficacy in changing societies*, edited by A Bandura. New York: Cambridge University Press: 1-45.
- Bandura, A. 2001. Social cognitive theory: an agentic perspective. *Annual Review of Psychology* 52: 1-26.
- Bello, A. 2002. Descriptive data analysis, in *Nursing research methods: critical appraisal and utilization*, edited by G LoBiondo-Wood & J Haber. St Louis: Mosby: 331-347.

Burns, AC & Bush RF. 2008. *Basic Marketing Research*. 2nd edition. New Jersey: Pearson Education.

Burns, N & Grove, SK. 2005. *The practice of nursing research: conduct, critique and utilization*. 4th edition. St Louis: Elsevier Saunders.

Buzdugan R, Watadzaushe C, Dirawo J, Mundida O, Langhaug L, Wills, N, Hatzold K, Ncube G, Mugurungi, O, Benedikt, C, Copas, A & Cowan, FM . 2012. Positive Attitudes to Pediatric HIV Testing: Findings from a nationally representative survey from Zimbabwe. *PLoS ONE* 7(12): e53213. doi:10.1371/journal.pone.0053213

Cabana, DM, Rand, CS, Powe, RN, Wu, AW, Wilson, MH, Abboud, PA & Haya, R. 1999. Why don't physicians follow clinical practice guidelines? A framework for improvement. *The Journal of American Medical Association (JAMA)* 282(15): 1458-1465. From: <http://jama.ama-assn.org/cgi/content/full/282/15/1458> (accessed 8 March 2010).

Chaturvedi, VM, & Vijay, K. 2009. *Facilitating Testing and Disclosure for Children and Adolescents*. New Delhi: India HIV/AIDS Alliance.

Chime, J, Chitembo, L, Bhat, N & Manda, KD. 2004. *Challenges of testing children for HIV in community and University Teaching Hospital (UTH) in Lusaka, Zambia*. CD Only. The XV International Conference on AIDS. Abstract no. B12283). From: <http://www.iasociety.org/Abstracts/A2168863.aspx> (accessed on 8 April 2012).

Cohen, J. 1988. *Statistical power analysis for the behavioral sciences*. 2nd edition. London: Lawrence Erlbaum Associates Publishers.

Cohen, MZ. 2002. Introduction to qualitative research, in *Nursing research: methods, critical appraisal and utilization*, edited by G LoBiondo-Wood and J Haber. St Louis: Mosby: 125-138.

Collins, I, Leechanachai, P, Sirirungsi, W, Leusaree, T, Bhakeecheep, S & Ngo- Giang-Huong, N. 2009. Early diagnosis and care of HIV-Exposed infants: Lessons learned from Thailand, In *From the Ground Up: Building Comprehensive HIV/AIDS Care Programs in Resource-Limited Settings* edited by RG Marlink & ST Teitelman. Washington, DC: Elizabeth Glaser Pediatric AIDS Foundation. From: <http://ftguonline.org/ftgu-232/index.php/ftgu/article/view/2014/4024> (accessed 28 January 2011).

Corona, R, Beckett, MK, Cowgill, BO, Elliot, MN, Murphy, DA, Zhou, AJ and Schuster, MA. 2006. Do children know their parents HIV status? Parental reports of child awareness in a nationally representative sample. *Ambul Pediatr* May-June:6(2) :138-44

Creswell, JW. 2003. *Qualitative, quantitative, mixed methods approaches*. 2nd edition. Thousand Oaks: Sage publications.

CW.Psypress.com. [s.a] *Regression and stepwise regression*. Cw.psypress.com
From: http://cw.psypress.com/multivariate-analysis/medical-wxamples/chapter04/med_stepwise_regression.pdf (accessed 20 March 2013)

Deacon, H & Stephney, I. 2007. HIV/AIDS, stigma and children, literature review. South Africa: Human Sciences Research Council Press.

Denzin , NK & Lincoln , SY. (eds). 2011. Introduction: the discipline and practice of qualitative research, in *The sage handbook of qualitative research*. London: SAGE

Delobelle, P, Rawlinson JL, Ntuli S, Malatsi, I, Decock R, & Depoorter, MA .2009. HIV/AIDS knowledge, attitudes, practices and perceptions of rural nurses in South Africa. *Journal of Advanced Nursing* 65(5)1061-1073.

Di Giuseppe, G, Abbate, R, Albano L, Marinelli, P & Angelillo, IF. 2008. A survey of knowledge, attitudes and practice in adult population of Italy. *BMC infectious diseases*, 8:36. From: <http://www.biomedcentral.com/1471-2334/8/36> (accessed 8 February 2010)

Derrett , S and Colhoun, S. 2011. Being a quantitative interviewer: qualitatively exploring interviewers' experiences in a longitudinal study. *BMC Medical Research Methodology* 11(165). From: <http://www.biomedcentral.com/1471-2288/11/165> (accessed 13 April 2013)

Eiselen, R, Uys, T & Potgieter, N. 2005. *Analyzing survey data using SPSS13: A workbook*. University of Johannesburg

Ethiopia Demographic and Health Survey. 2011. Central Statistical Agency. Addis Ababa. Ethiopia. ICF International

Ethiopia Federal HIV/AIDS Prevention and Control Office and Ethiopia Federal Ministry of Health. 2008. *Guidelines for pediatric HIV/AIDS care and treatment in Ethiopia*. Addis Ababa: Andnet Printers.

Feinstein, L, Yotebieng, M, Moultrie, H, Meyers, T & Van Rie, A. 2012 . Effect of baseline immune suppression on growth recovery in HIV positive South African children receive antiretroviral treatment. *Journal of Acquired Immune Deficiency syndromes* 2012(61) 236-242 doi: 10.1097/QAI.0b013e3182634e09. From: <http://journals.lww.com/jaids/Abstract/2012/10010/> (accessed 16 April 2013).

Feyissa, GT, Abebe L, Girma E & Woldie M. 2012. Stigma and discrimination against people living with HIV by healthcare providers, Southwest Ethiopia . *BMC Public Health* 12 (522) .From: <http://www.biomedcentral.com/1471-2458/12/522> (accessed 28 march 2013)

Forthofer, NR, Lee, ES& Hernandez, M. 2007. *Biostatistics: a guide to design, analysis and discovery*. Washington DC. Academic Press .

Fowler, FJ, (Jnr). 2002. *Survey research methods. Applied social research methods series*. Volume 1, 3rd edition. Newbury Park: Sage publications.

Gordis L. 2004. *Epidemiology*. 3rd edition. Philadelphia: Elsevier Saunders:173-5

Haber, J. 2002a. Research problems and hypotheses, in *Nursing research methods: critical appraisal and utilization*, edited by G LoBiondo-Wood & J Haber. St Louis: Mosby: 51-76.

Haber, J. 2002b. Sampling, in *Nursing research methods: critical appraisal and utilization*, edited by G LoBiondo-Wood & J Haber. St Louis: Mosby: 239-265

Jennings, G. 2001. *Tourism research*. Milton: John Wiley and Sons

Joint United Nations Program for HIV/AIDS/World Health Organization. 2008. *Epidemiological fact sheets on HIV and AIDS, 2008 update*.

Jolliffe, IT. 2002. *Principal Component Analysis*. 2nd edition. New York: Springer-Verlag.

Ehrlich, R and Joubert, G. 2008. *Epidemiology: A research manual for South Africa*. 2nd edition. Cape Town: Oxford University Press

Kaci, A. 2012. Creating composite measures: lecture 6 computing variables. From: <http://akaci.info/6--creating-composite-measures-computing.html> (accessed 15 March 2013)

Kellerman, S & Essajee, S. 2010. HIV Testing for Children in Resource-Limited Settings: What Are We Waiting For? *PLoS Medicine* | www.plosmedicine.org 7(7) e1000285.

Kennedy, DP, Cowgill, BO, Bogart, RC, Ryan, GW & Murphy, DA. 2010. Parents Disclosure of their HIV infection to their children in the context of the family. *AIDS Behaviour* 14:1095–1105 DOI 10.1007/s10461-010-9715-y

Kigozi, IM, Dobkin, LM, Martin, JN, Geng EH, Muyindike, W, Emenyonu, NI, Bangsberg, DR & Hahn, JA. 2010. Late disease stage at presentation to an HIV clinic in the era of free antiretroviral therapy in sub-Saharan Africa. *Journal of Acquired Immune Deficiency Syndromes* 52 (2) 280-9.

Koenraadt, CJM, Tuiten, W, Sithiprasasna, R, Kijchalao, U, Jones, JW & Scott TW. 2006. Dengue knowledge and practices and their impact on aedes aegypti populations in Kamphaeng Phet, Thailand. *American Journal of Tropical Medicine and Hygiene* 74(4)

Leeper, SC, Montague, BT, Friedman, JF & Flanigan, PT. 2010. Lessons learned from family-centered models of treatment for children living with HIV: current approaches and future directions. *Journal of the International AIDS Society* 13 (suppl 2) from <http://www.jiasociety.org/content/13/S2/S3> (accessed 30 July 2010).

Li, Y, Scott, CS, and Li, L. 2008. Chinese nursing students HIV/AIDS knowledge , attitudes, and practice intentions. *Applied Nursing Research Aug: 21(3):147-52*. doi:10.1016/j.apnr.2006.10.004

Liehr, P & Smith, MJ. 2002. Theoretical framework, in *Nursing research methods: critical appraisal and utilization*, edited by G LoBiondo-Wood & J Haber. St Louis: Mosby:107-121.

LoBiondo-Wood, G & Haber, J. 2002. Reliability and validity, in *Nursing research methods: critical appraisal and utilization*, edited by G LoBiondo-Wood & J Haber. St Louis: Mosby: 311-331.

LoBiondo-Wood. G. 2002a. Introduction to Quantitative research, in *Nursing research methods: critical appraisal and utilization*, edited by G LoBiondo-Wood & J Haber. St Louis: Mosby: 187-203.

LoBiondo-Wood. G. 2002b. Non-experimental designs, in *Nursing research methods: critical appraisal and utilization*, edited by G LoBiondo-Wood & J Haber. St Louis: Mosby: 221-239.

Loudon, M, Bhaskar, M, Bhutia, Y, Deshpande, A, Ganesh, V, Mohanraj, R, Prakasam, CP, Royal NK & Saor SB. 2007. *Barriers to services for children with HIV-positive parents in five high prevalence states of India. UNICEF INDIA*

Lund Research. c2013: Principal components analysis in SPSS. Lund Research. From: <https://statistics.laerd.com/premium/pca/pca-in-spss-3.php>. (accessed 10 March 2013).

Lund Research. 2013. Multiple Regressions in SPSS. Lund Research. From: <https://statistics.laerd.com/premium/mr/multiple-regression-in-spss-4.php> (accessed 9 March 2013)

Management Sciences for Health. 2011. Restoring Hope. The rapid expansion of comprehensive HIV and AIDS Services in Ethiopia. HIV /AIDS Care and Support Program End of Program report. Addis Ababa. Cactus Communication.

McCartney, GE. 2001. Objectivity and the silence of reason: Weber, Habermas and the methodological dispute in Germany sociology. London: Transaction Publishers.

Merriam-Webster Online Dictionary. 2011.Sv "knowledge". From <http://www.merriam-webster.com/dictionary/knowledge?show=0&t=1307527261> (accessed 7 June 2011).

Miller, BK. 2002. Literature review, in *Nursing research methods: critical appraisal and utilization*, edited by G LoBiondo-Wood & J Haber. St Louis: Mosby:77-106.

Miller, RL & Brewer, JD. 2003. *The A-Z of social research*. SAGE. From: <http://srmo.sagepub.com/view/the-a-z-of-social-research/n38.xml> (accessed 18 October 2012).

Muijs, D. 2004. Doing quantitative research in education with SPSS. London: Sage publications.

Mutalemwa P, Kisoka W, Nyigo V, Barongo V, Malecela, MN & Kisinza, WN. 2008. Manifestations and reduction strategies of stigma and discrimination on people living with HIV/AIDS in Tanzania. *Tanzania Journal of Health Research*. 10(4):220-5.

Obmeyer, CM & Osborn, M. 2007: The Utilization of Testing and Counseling for HIV: A Review of the Social and Behavioral Evidence. *American Journal of Public Health*.97(10): 1762–1774. doi: [10.2105/AJPH.2006.096263](https://doi.org/10.2105/AJPH.2006.096263)

Qu, B, Zhang, Y, Guo, H, and Sun, G. 2010. Relationship between HIV/AIDS knowledge and attitude among student nurses: a structural equation model. *AIDS Patient Care STDS Jan*: 24(1):59-63. doi: 10.1089/apc.2009.0190

Peltzer, K, Mosala T, Shisana,O, Nqueko, A & Mngqundaniso, N. 2007. Barriers to prevention of HIV transmission from mother to child (PMTCT) in a resource poor setting in the Eastern Cape, South Africa. *African Journal of Reproductive Health / La Revue Africaine de la Santé Reproductive* 11 (1): 57-66.From <http://www.jstor.org/stable/30032488> (accessed: 05/08/2010).

Penazzato, M, Franceschetto, G, Nannyonga M, Morelli, E, Bilardi, D, Massavon, W Mazza, A, Crowley, S, and Giaquinto, C. 2010. *The evolution of paediatric antiretroviral treatment guidelines: what's the impact on the ground?* Abstract. @ 2010 International AIDS Society. From <http://pag.aids2010.org/Abstracts.aspx?SID=185&AID=14913> accessed 15 September 15 2013

Phakathi, Z, Van Rooyen, H, Fritz, K & Richter, L. 2011. The influence of antiretroviral treatment on willingness to test: a qualitative study in rural KwaZulu-Natal, South Africa. *African journal of AIDS research* 10 (2): 173-180.

Polit, DF & Beck, CT. 2008. Nursing research: principles and methods. 7thEdition. Philadelphia: Lippincott, Williams and Wilkins

Polit, DF, Beck, CT & Hungler, BP. 2001. *Essentials of nursing research: methods, appraisal and utilization*. 5th edition. Philadelphia: Lippincott.

Population Council. 2008. *AIDSQuest: The HIV/AIDS survey library HIV research domains*. From: <http://www.popcouncil.org/horizons/ORToolkit/AIDSQuest/topics/index.html> (accessed 8 August 2010).

Rahangdale, L, Banandur, P, Sreenivas, A, Turan, JM, Washington, R & Cohen, CR. 2010. 'Stigma as experienced by women accessing prevention of parent-to-child transmission of HIV services in Karnataka, India', *AIDS Care* 22(7):836-842. From:<http://dx.doi.org/10.1080/09540120903499212> (accessed 27 November 2010).

Rajaraman, D & Heymann, SJ.2007. The social determinants of HIV testing in Botswana: a keystone for addressing the epidemic. HEFP Working Paper 02/07, LSHTM, 2007
 Raosoft®.2004. *Sample size calculators*. From: <http://www.raosoft.com/samplesize.html> (accessed 20 June 2010).

Redmond, BF.2012. Self-Efficacy and social cognitive theories.
 From:<https://wikispaces.psu.edu/display/PSYCH484/7.+Self-Efficacy+and+Social+Cognitive+Theories> (accessed 28 October 2012).

Roelens, K. Verstraelen, H. Van Egmond, K. & Temmerman, M. 2006. A knowledge, attitude and practice survey among obstetrician-gynecologist on intimate partner violence in Flanders, Belgium. *BMC Public Health*: 238.From:<http://www.biomedcentral.com/147-2458/6/38> (accessed 5 August 2010).

Rwemisisi, J, Wolff, B, Coutinho, A, Grosskurth, H, &Whitworth, J. 2008. 'What if they ask how I got it?' Dilemmas of disclosing parental HIV status and testing children for HIV in Uganda. *Health Policy and Planning* 23(1):36–42 doi:10.1093/heapol/czm040

Sagepub.com. [s.a] .7b *Multiple regression: statistical methods using IBM SPSS*.
 Sagepub.com. From:www.sagepub.com/upm-data/49300_ch_7v.pdf. (accessed 20 March 2013).

SPSS Inc. [Sa] *SPSS Statistics 17.0 Brief Guide*. Chicago.

StatSoft. c2013. *Electronic Statistics Textbook*. Tulsa, OK: StatSoft. WEB. From: <http://www.statsoft.com/textbook> (accessed 25 March2013)

Statsure c2013. Effect Size. Statsure. From:<http://statsure.net/services/dissertation-help/common-statistical-tests/effect-size/> (accessed 5 March 2013).

Statsure. c2013. *Sample size*. Statsure. From:<http://statsure.net/services/dissertation-help/common-statistical-tests/sample-size/>(accessed 10 March 2013).

Stommel, M, & Wills, CE. 2004. *Clinical research: concepts and principles for advanced practice nurses*. Philadelphia: Lippincott .

Sullivan-Bolyai, S & Grey, M. 2002. Data collection methods in *Nursing research methods: critical appraisal and utilization* edited by G LoBiondo-Wood & J Haber. St Louis: Mosby:293-311.

Tan, X, Pan, J, Zhou, D, Wang C and Xie C. HIV/AIDS knowledge, attitudes and behaviors assessment of Chinese students: *Int. J. Environ. Res. Public Health* **2007**, 4(3), 248-253; A Questionnaire Study doi:[10.3390/ijerph2007030009](https://doi.org/10.3390/ijerph2007030009): From <http://www.mdpi.com/1660-4601/4/3/248> accessed 5 November 2012

- Tavakol, M & Dennick, R. 2011. Making sense of Cronbach's alpha. *International journal of Medical Education* 2:53-55 DOI:10.5116/ijme.4dfb.8dfd
- Taylor, S & Asmundson, GL. 2008. Internal and external validity in clinical research. *Handbook of research methods in abnormal clinical psychology*, 23-24.
- Taylor, M, Dlamini, SB; Sathiparsad, R, Jinabhai, C & de Vries, H. 2007. Perceptions and attitudes of secondary school students in Kwazulu- Natal towards virginity testing. *HealthGesondheid* 12(2): 27-36.
- The Compact Oxford Dictionary and Thesaurus. 2006. Sv "attitude". Oxford: Oxford University Press.
- Thu M, Kyu, HH & Van der Putten, M. 2005. Assessing knowledge, attitudes and practices on HIV-AIDS prevention among Myanmar migrant workers: A case study in Mahachai, Samut Sakhon province, Thailand. *Assumption University Journal of Technology* 8 (3):131-134.
- Tranmer, M & Elliot, M. 2008. Teaching paper: Multiple linear regressions. From: <http://www.ccsr.ac.uk/publications/teaching/mlr.pdf> (accessed 15 March 2013).
- United Nations Children's Fund, Joint United Nations Program for HIV/AIDS, World Health Organization and United Nations Population Fund (UNFPA). 2009. *Children and AIDS: Fourth Stock Taking Report*. United Nations Children Fund
- United Nations High Commissioner for Human Rights. 1989. *Convention on the rights of the Child*. From: <http://www2.ohchr.org/English/law/crc.htm> (accessed 26 July 2010)
- United Nations High Commissioner for Human rights: 2003. *Convention of the African Child: General comment number 3: HIV and the rights of the child*. From: [http://www.unhcr.ch/tbs/doc.nsf/\(symbol\)/CRC.GC.2003.3.En?OpenDocument](http://www.unhcr.ch/tbs/doc.nsf/(symbol)/CRC.GC.2003.3.En?OpenDocument) (accessed 26 July 2010).
- University of South Africa (UNISA). 2007. Policy of research ethics. From: http://cm.unisa.ac.za/contents/departments/res_policies/docs/ResearchEthicsPolicy_apprv_Counc_21Sept07.pdf (accessed 21 September 2010).
- Van Teijlingen, ER. & Hundley, V. 2001. The importance of pilot studies in *Social Update* (35). Guildford: University of Surrey.
- Welman, C, Kruger, F & Mitchell, B. 2005. *Research Methodology*. 3rd edition. Cape Town: Oxford University Press.
- WHO, UNAIDS, UNICEF. 2008. Epidemiological Fact Sheet on HIV and AIDS.

World Health Organization and United Nations Children's Fund. 2010. Policy requirements for HIV Testing and counseling of infant and young children in health facilities. Geneva. WHO Press.

World Health Organization. 2006. *Antiretroviral therapy of HIV infection in infants and children in resource- limited setting: towards universal access. Recommendation for a public health Approach*. Geneva: WHO Press.

World Health Organization. 2008. *Report of the WHO technical reference group, paediatric HIV/ART care guidelines*. Geneva: WHO Press.

World Health Organization. 2010. *Antiretroviral therapy of HIV infection in infants and children in resource- limited settings: towards universal access. Recommendations for a public health Approach*. 2nd revision. Geneva: WHO Press.

Yap, J, Lee, VJ, Yau, TY, Ng, TP & Tor, PC. 2010. Knowledge, attitudes and practices towards pandemic influenza among cases, close contacts, and healthcare workers in tropical Singapore: A cross-sectional survey. *BMC Public Health*, 10(:442).
From: <http://www.ncbi.nlm.nih.gov/pubmed/20667076>(accessed on 8 July 2012).

Zimmerman, B & Schunk, D. 2001. Social cognitive theory and self-regulated learning, In *Self-regulated learning and academic achievement: theoretical perspectives* edited by B Zimmerman & D Schunk. 2nd edition. New Jersey: Erlbaum:125-151.

ANNEXURE A APPROVAL FROM THE UNIVERSITY



**ANNEXURE B: UNIVERSITY OF SOUTH AFRICA
CLEARANCE CERTIFICATE**

**UNIVERSITY OF SOUTH AFRICA
Health Studies Research & Ethics Committee
(HSREC)
Faculty of Human Sciences
CLEARANCE CERTIFICATE**

Date of meeting: 9 November 2010

Project No: 4508-552-8

Project Title: Knowledge, attitudes and practices among parents towards Human Immune-Deficiency Virus (HIV) testing and treatment for children: The case of Addis Ababa, Ethiopia

Researcher: Nelia Matinhure

Supervisor/Promoter: Dr BL Dolamo

Joint Supervisor/Joint Promoter: N/A

Department: Health Studies

Degree: Masters in Public Health

DECISION OF COMMITTEE

Approved



Conditionally Approved



**Prof TR Mavundla
RESEARCH COORDINATOR**


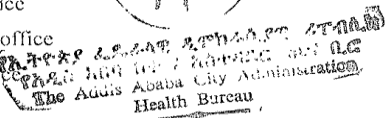
**Prof MC Bezuidenhout
ACADEMIC CHAIRPERSON: DEPARTMENT OF HEALTH STUDIES**

PLEASE QUOTE THE PROJECT NUMBER IN ALL ENQUIRES

ANNEXURE B LETTER OF APPROVAL: ADDIS ABABA HEALTH BUREAU

Reference: **A/A/H/7675/227**
 Date: **20/8/2022**

To
 Arada Sub City Health Office
 Kolfe Sub City Health office
 N/S/Laft Sub City Health office
 Yeka Sub City Health office
 Addis Ababa

Subject: A request to allow research work at the health facilities

This letter is to support Ms N Maintinhure to conduct her research, which is titled as **“Knowledge, Attitudes and Practices among Parents towards Human Immunodeficiency Virus [HIV] and Treatment for children; the case of Addis Ababa”**

The study proposal was duly reviewed and approved by UNISA IRB, subsequently reviewed and approved by Addis Ababa Health Bureau IRB, the Principal investigator is informed with a copy of this letter to report any changes in the study procedures and submit an activity progress report to the Ethical committee as required.


Therefore we request the Health facilities to provide support to the principal investigator.

Cc:-

To

MS N Maintinhure
 Addis Ababa
 Ethical clearance committee
 Health Bureau

With Regard
Alemu H/Mariam
 Head, Ethical Clearance Committee



ETHICAL REVIEW COMMITTEE

ETHICAL REVIEW FORM

Tel: +251 115 513911

P.O. Box 30738

Fax No. +251 115 515689

Directed study Project: "Knowledge, Attitudes and Practices among Parents towards Human Immunodeficiency Virus [HIV] and Treatment for children; the case of Addis Ababa"

Principal Investigator: Ms N Maintinhure

CRITERIA/ITEM	RATING
consent form	<input checked="" type="checkbox"/> Yes
1. Does the consent contain all the necessary information that the subject should be aware of?	<input type="checkbox"/> Requires revision <input type="checkbox"/> No <input type="checkbox"/> Not applicable <input type="checkbox"/> Not attached
2. Are the objectives of the study clearly stated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
3. Are provisions to overcome risks well described and accepted? a. Justice b. Beneficence c. Respect for a person	<input type="checkbox"/> Yes <input type="checkbox"/> Not well described <input type="checkbox"/> No <input checked="" type="checkbox"/> Not applicable
4. Are the safety procedures in the use of vaccines, drugs and other biological products acceptable?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not applicable
5. Are the procedures to keep confidentiality well described?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not applicable
6. Are the proposed researchers competent to carry out the study in a scientifically sound way?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not applicable <input type="checkbox"/> Unable to assess
7. Does it have material transfer agreement?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not applicable
8. Recommendation	<input checked="" type="checkbox"/> Approved on condition
9. Remarks	

Ethical Clearance Committee Members:

Name

Signature


Name

Signature

Alemu Haile mariam



Ato Tadesse Wordofa



Dr. Addis Akalu

Ato Ezra Mulunch

ANNEXURE C QUESTIONNAIRE

KNOWLEDGE, ATTITUDES AND PRACTICES AMONG PARENTS TOWARDS HUMAN IMMUNO- DEFICIENCY VIRUS (HIV) TESTING AND TREATMENT FOR CHILDREN: THE CASE OF ADDIS ABABA, ETHIOPIA.

Questionnaire ID	Number	†
Health centre name:		
Kebele/community names	Sub city name	

INTRODUCTION AND CONSENT

READ INFORMED CONSENT STATEMENT

Good Morning/Afternoon. My name is Nelia Matinhure. I am an MPH student at UNISA. I am currently conducting research as part of my academic studies. I have permission to conduct the study from both UNISA and the Addis Ababa Health Bureau.

The Department of Health Studies at the University of South Africa (UNISA) supports the practice of protection for human subjects participating in research. The following information is provided for you to decide whether you wish to participate in the present study.

The purpose of the study is to determine factors that determine the uptake of HIV testing and access to treatment among children aged 0-14 years whose parents are infected and are on treatment. While this information will assist me in completing my academic studies, programs targeting HIV testing and access to treatment for children and their parents may also benefit from the findings.

If you agree to participate in this study, I will be asking you a set of questions and recording your responses. I will not write your name down, or any information that will be able to identify you after I leave this house. Your name will not be associated in any publication or presentation with the information collected about you or with the research findings from this study. The data collected will be stored in the computer that I only will have access to. The papers that I am using will be destroyed at the end of the study. Some of the questions I will ask may invoke unpleasant memories with respect to your experiences living with HIV/AIDS. You are free to opt out of the study at any one time. The interview will take about 30 minutes of your time. Do you agree to participate in the study?

Ask, at this time, do you want to ask me anything about the research? May we begin the research now?

Signature of researcher: _____ Date: _____

Ques No	Section 1: Socio-economic and demographic questions		code
	<i>I would like to ask general questions about you and your family.</i>		
101	Record whether the respondent is male or female	Male1 Female2	

102	In what month and year were you born?	month † Year † Don't know 88	
103	How old were your last birthday? Compare and correct question 102 above as appropriate	Age in completed years †	
104	Have you ever attended school	Yes..1 No2	
105	What is the highest (grade) you attended: elementary, high school or higher?	Elementary.....1 High school..... 2 Higher.....3	
106	What is your marital status	Married or living together1 Divorced/separated.....2 Never married3 Widowed.....4	
107	How many children are living in the same household with you?	Girls † Boys †	
Section 2: HIV/AIDS Knowledge Questions			
<i>Now I would like to ask you some questions about HIV and AIDS among children.</i>			
201	Is it possible for a healthy-looking child to have the AIDS virus?	Yes.....1 No2	
202	Can the virus that causes AIDS be transmitted from a mother to a child?	Yes.....1 No2	
203	Can the virus that causes AIDS be transmitted from a mother to a child during pregnancy?	Yes.....1 No2	
204	Can the virus that causes AIDS be transmitted from a mother to a child at delivery?	Yes.....1 No2	
205	Can the virus that causes AIDS be transmitted from a mother to a child during breastfeeding?	Yes.....1 No2	
206	Can a child get AIDS by sleeping in the same room with an infected person?	Yes.....1 No2	
207	Can a child get AIDS by using the same bathroom with an infected person?	Yes.....1 No2	
208	Can a child get AIDS by holding hands with an infected person?	Yes.....1 No2	
209	Can a child get infected with the AIDS virus through mosquito bites?	Yes.....1 No2	

210	Can a child get infected with the AIDS virus by getting injections with a clean, sterile needle?	Yes.....1 No2	
211	Can a child get infected with the AIDS virus by sharing a meal with a person who has HIV?	Yes.....1 No2	
212	Can a child get infected with the AIDS virus by sharing eating utensils with a person who has HIV?	Yes.....1 No2	
213	Do you think it's possible to know by appearance if a child has the AIDS virus?	Yes.....1 No2	

Section 3. Attitude questions- General			
<i>These statements are designed to learn more about your thoughts and views about HIV and ARV among children. There is no right or wrong answer here. Please feel free to tell me what you think. How strongly do you strongly disagree, disagree, agree or strongly agree with the following statements</i>			
301	ARV medications can prolong life in children	Strongly disagree Disagree Agree Strongly agree	1 2 3 4
302	Taking ARV medications as prescribed by the doctor can make a child infected with HIV healthier and has a positive effect on their life	Strongly disagree Disagree Agree Strongly agree	1 2 3 4
303	ARV medications are effective in preventing serious illness among children.	Strongly disagree Disagree Agree Strongly agree	1 2 3 4
304	When ARV medications are not taken properly the medications do not work as well and the virus is not controlled	Strongly disagree Disagree Agree Strongly agree	1 2 3 4
305	HIV/AIDS among children has become less serious because of ARV medications	Strongly disagree Disagree Agree Strongly agree	1 2 3 4
306	ARV medications are not worth taking for children because of serious side effects	Strongly disagree Disagree Agree Strongly agree	1 2 3 4
307	It is too early to tell if ARV medications for children will be successful in the long term	Strongly disagree Disagree Agree Strongly agree	1 2 3 4
308	ARV medications for children are not as effective as they are made out to be	Strongly disagree Disagree Agree	1 2 3

		Strongly agree	4
309	With ARV medications HIV AIDS in children can be managed now like any other disease	Strongly disagree	1
		Disagree	2
		Agree	3
		Strongly agree	4
310	ARV medications can make the virus undetectable in the blood of children	Strongly disagree	1
		Disagree	2
		Agree	3
		Strongly agree	4
311	If taken within a few months after being infected, ARV medications can cure HIV in children	Strongly disagree	1
		Disagree	2
		Agree	3
		Strongly agree	4
312	ARV medications can eliminate the virus from the body of a child	Strongly disagree	1
		Disagree	2
		Agree	3
		Strongly agree	4

Section 3. Attitude questions- self-efficacy			
<i>Now, I would like to read some statements regarding your feelings towards HIV among children. Please indicate whether you strongly disagree, disagree, agree or strongly agree with the following statements.</i>			
313	I feel confident in my ability to make decisions for the household.	Strongly disagree	1
		Disagree	2
		Agree	3
		Strongly agree	4
314	I feel confident to recommend HIV testing for my children	Strongly disagree	1
		Disagree	2
		Agree	3
		Strongly agree	4
315	I feel confident to look after a child who has tested positive for HIV	Strongly disagree	1
		Disagree	2
		Agree	3
		Strongly agree	4
316	I feel confident to reveal to the child if he or she is HIV positive	Strongly disagree	1
		Disagree	2
		Agree	3
		Strongly agree	4
317	I feel confident to reveal to my children that I am HIV positive	Strongly disagree	1
		Disagree	2
		Agree	3
		Strongly agree	4
318	I am able to care for the needs of younger children/child in this household.	Strongly disagree	1
		Disagree	2
		Agree	3
		Strongly agree	4
319	I know what to do when one of the children falls ill	Strongly disagree	1
		Disagree	2
		Agree	3

		Strongly agree	4
320	If I wanted my child to be tested , I and my child will get a confidential HIV test at the nearest health centre?	Strongly disagree	1
		Disagree	2
		Agree	3
		Strongly agree	4
Section 4: Practice: Feasibility questions			
<i>Now, I would like to ask you about your perceptions on how most people in your community respond to the following statements: Indicate whether you disagree or agree</i>			
401	People with HIV/AIDS got what they deserved	Disagree	1
		Agree	2
402	It is okay to stop inviting a person with HIV or AIDS to social events, like weddings	Disagree	1
		Agree	2
403	It is okay to limit participation of people with HIV or AIDS in community activities	Disagree	1
		Agree	2
404	It is okay not to allowing a child to play with another child who has HIV or AIDS	Disagree	1
		Agree	2
405	It is okay to assign specific utensils for a person with HIV or AIDS	Disagree	1
		Agree	2
406	It is okay to avoid using something touched by a person with HIV or AIDS	Disagree	1
		Agree	2
407	It is okay to refuse to share a toilet with a person with HIV or AIDS	Disagree	1
		Agree	2
408	It is okay to avoid to rent a room to a person with HIV or AIDS	Disagree	1
		Agree	2
<i>Now I would like to ask you questions about what you think of your HIV positive status and the effect on your children. Indicate whether this applies to you by answering yes or no to thee following statements.</i>			
409	I am afraid of confronting my children with my diagnosis	Yes.....	1
		No	2
410	I don't want to take my children for testing because I will feel guilty if they are positive	Yes.....	1
		No	2
411	I am afraid that if my child knows my status they will tell other children	Yes.....	1
		No	2
412	There are no testing facilities for children	Yes.....	1
		No	2
413	I don't know where to take my child for testing	Yes.....	1
		No	2
Section 4 : Practice: Specific actions			
<i>Finally, I would like to ask you a few questions about you and your experience living with HIV and the children in this household.</i>			
414	Are you a member of an association of people living with HIV or a support group?	Yes	1
		No.....	2
415	Have any of your children ever been tested for HIV?	Yes	1
		No.....	2

416	Are any of the children on ART treatment?	Yes 1 No..... 2	
417	Have you disclosed to the child or children on ART about their HIV status.	Yes 1 No..... 2	
418	Have you disclosed your HIV status to anyone of your family or community?	Yes.....1 No2	

I would like to thank you for your time. Do you have any questions to ask me?