WILLINGNESS TO PAY FOR VCT AND NEVIRAPINE FOR THE PREVENTION OF MOTHER TO CHILD TRANSMISSION OF HIV IN THE KASSENA-NANKANA DISTRICT OF NORTHERN GHANA.

George Bruno Akanlu

A dissertation submitted to the Faculty of Health Sciences of the University of Cape Town in partial fulfilment for the Masters in Public Health (specializing in Health Economics) degree.

May 2004

DECLARATION

While acknowledging information from other sources, I declare that this research paper is my original work and has not been submitted for any academic and /or examination purposes at any University.

GEORGE BRUNO AKANLU

This research paper has been submitted for examination with my approval as the University supervisor

DR. MICHAEL THIEDE

DEDICATION

With great appreciation, I dedicate this work first and foremost to the Almighty God for giving me life and always guiding me and secondly to my parents for their relentless prayers and support and to my dearest, Cynthia Awiah Akanlu for her love and last but not the least, in the loving and blessed memory of my Uncle, Rt. Rev. Bishop R. Akanlu.

TABLE OF CONTENTS

CHAPTER 4: FIELD METHODOLOGY

CHAPTER 5: RESULTS

CHAPTER 6: DISCUSSION

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

ARVs	Antiretrovirals
ATP	Ability To Pay
CVM	Contingent Valuation Method
DALY	Disability Adjusted Life Years
DCU	Disease Control Unit
DHMT	District Health Management Team
FGM	Female Genital Mutilation
FHI	Family Health International
KND	Kassena-Nankana District
MOH	Ministry of Health
MTCT	Mother-to-child transmission
NVP	Nevirapine
OIs	Opportunistic Infections
PLWHA	People Living With HIV/AIDS
PMTCT	Prevention of mother-to-child-transmission
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNICEF	United Nations Children's Education Fund
US$	United States of American Dollars
VCT	Voluntary Counselling and HIV Testing
WHO	World Health Organization
WTP	Willingness To Pay

ACKNOWLEDMENT

This study has been put together with the assistance of many people. First, I would like to express my sincere gratitude to Dr Michael Thiede for all the assistance he has given me, not only as my supervisor but also helping me with information on finding funding for my masters' programme before I got this scholarship. I am especially most appreciative of his initial willingness to help me develop a proposal for funding prior to me getting funding from the HEU.

I am also thankful to all people in the Health Economics Unit who have helped me in various ways. I am especially grateful, to Professor McIntyre for all the invaluable assistance and advice in many areas prior to me getting funding for this programme, I am sincerely appreciative. My gratitude also goes to Mr. Okore Okorafor for all the assistance throughout the entire course.

I wish to sincerely thank my sponsor, the Swedish International Development Agency (SIDA) for the kind assistance extended to me in the form of a scholarship that enabled me to pursue this programme. Without their assistance I would never have been able to participate in this programme.

My special appreciation also goes to Sister Patricia Akweongo for all the help and advice over the years. I am eternally grateful to her for the advice and guidance she gave me

prior to this course. I am particular grateful to her for assisting me come up with this topic for my masters' dissertation.

I wish to acknowledge and appreciate the technical and logistic support of my home institution, the Navrongo Health Research Centre.

My appreciation goes to the chiefs and people of the Kassena-Nankana district for their contribution in making this study fruitful.

My warmest thanks go to Dr Abraham Hodgson, Director of NHRC, Sister Elizabeth Awine, Mr. James Akazili, Dr. Frank E. Baiden, Dr. John E. Williams, Dr. Cornelius Debpuur, Dr. Philip Baba Adongo, Dr. Doctor Henry, Reshma Naik, Livesy Abokyi, Mr. Martin Adjuik and all the Teachnical staff of the Centre for their valuable contributions in making this study possible.

I am greatly indebted to Mr. Peter Wontou, Ernest Kanyomse, Sister Elizabeth Awine, the Data Entry Clerks, the field assistants who collected the data and all the other staff who helped me in diverse ways in collecting and cleaning my data.

Dr. and Mrs Wurapa, I wish to say a very big Thank you for your constant moral and material support that always strengthened me when the going was getting too tough for me. Words cannot express how much I treasure all the support you gave me throughout my academic life. I remain greatly indebted to you.

A special thank you to my friends particularly John Akaligaung and Jerry Abayaa, and Raymond Aborigo, Gordon Kanyoke and Walter Kotuah Adagnira for their encouragement and moral support throughout the programme.

To my classmates Mr James Batuka, Mr. David Shingirai Chandiwana, Dr. Vincent Bosulwa, Dr. Lennie Kymhangi and Dr. Mercy Kampira, I say thank you for your support and the nice time we spent together. May the Almighty God be with us all.

I remain grateful to my family for all their support, daily prayers and well wishes throughout my masters' programme.

I am grateful to the Almighty God for the good health, protection and immense blessings throughout my academic life.

ABSTRACT

Mother-to-child-transmission (MTCT) of HIV is one of the tragic consequences of the HIV pandemic. There are antiretrovirals for the prevention of mother-to-child-transmission (PMTCT) and Nevirapine (NVP) is the cheapest, most feasible and highly cost-effective of all and suitable for resource poor settings. Voluntary Counseling and HIV Testing (VCT), known for its effectiveness in behavioral change, is also essential for the prevention of mother-to-child transmission of HIV and for the control of HIV/AIDS. Family Health International and Ghanaian MOH intend to implement a prevention of mother-to-child transmission programme in the Kassena-Nankana district using VCT and NVP. The success of the use of VCT and NVP for the prevention of mother-to-child transmission of HIV depends on how effective and sustainable they are implemented and patronized. The purpose of this study therefore is to assess household willingness to pay for VCT and NVP for the prevention of mother-to-child transmission of HIV in the Kassena-Nankana district of northern Ghana to provide insights into how the impending programme can be implemented sustainably.

An empirical study was conducted, whereby 389 household heads/adults in the district were interviewed. The survey instrument was designed to collect information on the demographic characteristics of the respondents, general knowledge on HIV/AIDS, willingness to pay for VCT and NVP, respondents' income and household consumption

expenditures. The contingent valuation method was used to elicit households' maximum willingness to pay for VCT and NVP. The quantitative data was supported by focus group discussions with men and women, and in-depth interviews with pregnant mothers attending antenatal clinics.

Willingness to pay for VCT and NVP was generally high compared to the generally low patronage of preventative health services in the district. About 82% and 92% of the respondents were willing to pay for VCT and NVP respectively. The mean maximum willingness to pay for VCT and NVP were 6013.13 Cedis (US$ 0.75) and 13353.51 Cedis (US$ 1.67) respectively. These figures are lower than the current cost of VCT (US$ 3.64) and NVP (US$ 10.00) in health facilities and pharmacies. Willingness to pay for VCT and NVP were strongly influenced by ethnicity, religion, occupation, level of education, age group 45-60, sex of respondents, household general income, household basic and occasional expenditures, modes of payments and marital status.

The high costs of VCT services and NVP are likely to be major hindrances to the patronage of VCT and NVP by households. At the expressed mean willingness to pay, poor households will require about 1.5% of total annual expenditure for a single woman to be tested and put on NVP compared to 0.07% by the rich households. At the current costs they will need 8.4% of annual expenditure for a woman to be tested and put on NVP compare to 0.4% by the rich households.

Most respondents were willing to pay cash as the preferred mode of payment for these services. This is not because of the availability of cash among respondents but because respondents are used to paying user fees (in cash) for healthcare in health facilities.

A full economic evaluation of the most cost-effective way of implementing this intervention by looking at different options is needed. A follow-up study to determine if respondents actually expressed this initial willingness to go for VCT and subsequently NVP is also necessary when the intervention is implemented. An exploration of the most feasible and effective modes of payment for VCT and NVP is also recommended since the mode of payment influenced willingness to pay for VCT and NVP.

Chapter one

INTRODUCTION

1.1 Background

One of the tragic consequences of the Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) pandemic is mother-to-child transmission (MTCT) of HIV. MTCT is responsible for over 90% of infections among children under 15 years of age (UNAIDS, 2002). Globally an estimated 800,000 children became infected with HIV in 2001, and about 87% of these occurred in sub-Saharan Africa. Most of these children were infected through MTCT (UNAIDS 2001). MTCT can occur during pregnancy, labour and delivery or breastfeeding. Worldwide, around 1% of pregnant women are HIV-positive; 95% of these live in developing countries along with 90% of all HIV-positive children.

In Ghana, data from sero-prevalence surveys of sentinel sites of pregnant women across the country show an increasing prevalence rate from 2.7% in 1994 to 3.0% in 2000 (MOH 2001). According to the 2003 sentinel report (DCU/MOH, 2003), 3.6% of pregnant women across the country were HIV positive, up from 3.4% in 2002. Thus, MTCT is the second most prevalent mode of HIV transmission in Ghana. The increasing infection rate of women due to low condom use, biological vulnerability of women and

generally low levels of education among women worsens MTCT in Ghana. More than half of all HIV patients in Ghana are females.

In the Kassena-Nankana district (KND), which is the focus of this study, the sero-prevalence survey in 2000 showed a prevalence of 2.4% in pregnant women and in 2002 this had increased to 5.1% (Baiden et. al., 2003). This prevalence coupled with the heavy reliance on breastfeeding worsens the problem of MTCT of HIV in the district.

HIV-positive pregnant women can halve the chances of transmitting the virus to their babies by taking antiretroviral (ARV) drugs and practising safe feeding methods such as formula feeding. The ARV drugs include but are not limited to zidovudine (AZT), lamivudine (3TC) and nevirapine (NVP). NVP, which is focussed on in this study, is the cheapest and most feasible ARV drug suitable for poor countries. Voluntary counselling and HIV testing (VCT) to know one's status therefore becomes very essential for early access to these ARV drugs for the prevention of MTCT (PMTCT) as well as care and support services. Prevention of MTCT programmes using NVP has been implemented in many countries in sub-Saharan Africa.

The sustainability of MTCT interventions depend on how these interventions are accepted by households and whether or not households are willing to pay for them. Very few studies have investigated the willingness of households to participate in VCT and NVP programmes. In this study, the willingness of households in the KND of northern Ghana to pay for VCT and NVP will be investigated.

1.2 Research problem

Apart from adult HIV infections, MTCT has become a problem worldwide, particularly in sub-saharan Africa, which is the most affected by this pandemic. MTCT is the commonest mode of HIV transmission in children under 15 years in Ghana and in most sub-saharan African countries. The KND is one of the districts with a high HIV prevalence among antenatal clinic attendants in the Upper East Region of Ghana.

Considering the location of the KND, the increasing level of commercial activity, the influx of people from neighbouring Burkina Faso and the various tourist attractions, there is potential for a rapid spread of HIV/AIDS in the district. It has become evident that a comprehensive programme of HIV/AIDS control is needed to curb the spread of the virus in the district. Family Health International (FHI) in collaboration with the MOH intends to implement a VCT and PMTCT intervention programme in the district using NVP, and fees would be charged on full-scale implementation.

The problem that is still unresolved is whether these VCT and MTCT interventions are sustainable on full-scale implementation. The question of acceptability, willingness to go for and ability of households to pay for these services have become an important policy issue in the district. Also, these issues have not been explored in areas where VCT and MTCT intervention programmes are currently being implemented as public health service for the PMTCT. In some of these areas households have to pay a fee for VCT services and subsequently for NVP for HIV positive pregnant women (Kombe et al., 2003). Household responses to these fees will influence the utilization of this intervention programmes particularly among the rural poor who are the target. This study therefore

examines the determinants and barriers to VCT among households, and household willingness and ability to pay for VCT and NVP for the PMTCT. This information may enlighten the health directorate on the pricing and sustainability of these interventions, on full-scale implementation, in controlling HIV/AIDS in the district.

1.3 Aims and objectives

The aim of this study is to assess the willingness and ability of households to pay for Voluntary Counseling and HIV Testing (VCT) and Nevirapine (NVP) for the prevention of mother-to child transmission of HIV.

Specific subsidiary objectives are:

- To assess the level of knowledge of HIV/AIDS, VCT and other-to-child transmission in the Kassena-Nankana District;
- To assess the acceptability and to identify the determinants of voluntary counselling and HIV testing in households;
- To identify the barriers to VCT services in households;
- To identify the determinants of maximum willingness to pay for VCT and NVP by households;
- To assess households ability to pay for VCT and NVP.

1.4 Justification for the study

Various studies have established the safety and efficacy (Guay et al., 1999; Moodley et al., 2000), and cost-effectiveness (Marseille et al., 1999) of NVP in reducing perinatal transmission of HIV/AIDS. FHI, in collaboration with the Ghanaian MOH, has started implementing VCT and NVP programmes in selected sites in Ghana and intends to scale up to the KND of northern Ghana (MOH, 2001). During the initial stages of the trial, all counselling and HIV testing services on everybody and the supply of NVP to HIV positive pregnant women and their newborns will be free of charge. This is to encourage people to see the need and to cultivate the habit of testing to know their HIV serostatus.

To ensure sustainability of the programme on full implementation at operational level, the MOH intends to introduce fees for VCT services and for the supply of NVP after the initial stages. Declining budgetary resources in sub-Saharan African countries including Ghana, coupled with a general worldwide increase in prices of pharmaceuticals, make it difficult for governments to finance these programmes/interventions even if they are proved to be cost-effective. Donor organizations, specialized UN agencies, international monetary institutions and African Health Ministries have all in the recent times advocated policies that endorse community financing of the public health sector in Africa (Arhin, 1995). Users of VCT services and NVP will, therefore, have to make out-of-pocket (full or part) payment for the services depending on what combinations of public and private funds can be used to finance these programmes. The difficult task is how to price VCT and NVP such that utilization will not be discouraged.

Households' willingness and ability to pay will affect the efficiency and equity of the prices for VCT services and for NVP. Willingness and ability to pay have been used synonymously in the literature (Russell, 1994) but people's willingness to have VCT and NVP services provided might not reflect actual demand for these services since, for effective demand, willingness to have the services must be backed by the ability to pay (affordability) for them. Thus, fees for VCT services and NVP must be sensitive to local economic conditions with exemptions being granted to vulnerable and socio-economically disadvantaged groups to encourage their utilization.

This study therefore intends to contribute in filling this gap by investigating among other issues, the acceptability of VCT among households, factors that motivate households to go for VCT, the mean fees that households are willing to pay and the determinants of the maximum willingness to pay for VCT and NVP. In addition, the study would assess the ability of households to pay for VCT and NVP using household annual incomes, and household basic and occasional consumption expenditures. It is expected that the results of this study will be used as a policy designing and pricing tool for the impending VCT and NVP programme in the KND.

1.5. Organisation of the remaining chapters

Chapter two reviews the literature on the HIV/AIDS situation globally with emphasis on sub-Saharan Africa, and that of Ghana, specifically on the study area. Issues on MTCT of HIV, VCT and NVP are also reviewed.

Chapter three describes the conceptual framework. It expounds on the concept of willingness to pay (WTP), the contingent valuation method (CVM), the bidding game technique and the potential biases in the CVM. It also discusses the issue of ability to pay for VCT and NVP.

Chapter four focuses on the methodology of the study. This chapter gives a short profile of the country and the Kassena-Nankana District (KND). It describes the methodology of the study and discusses the study limitations and how the ethical issues were overcome.

Chapter five presents an exposition of the results of the study. This includes the descriptive statistics, some regression results and an assessment of ability to pay for VCT and NVP.

Chapter six analyses the results presented in the preceding chapter. It evaluates the extent to which the study objectives have been realised.

Chapter seven presents the summary, conclusions and policy recommendations based on the findings and results of the study. It concludes with suggestions for future research.

Chapter two

LITERATURE REVIEW

2. Introduction

This chapter presents the HIV/AIDS situation in sub-Saharan Africa, Ghana and in the KND. It reviews issues on MTCT of HIV, acceptability and barriers to VCT, and efficacy and cost of NVP.

2.1: HIV/AIDS situation in Sub-Saharan Africa.

The HIV/AIDS pandemic is one of the worst to ever hit mankind. The rate of spread of this pandemic is alarming. There have been steady increases in the number of People Living With HIV/AIDS (PLWHA) in all regions: sub-Saharan Africa, East Asia and the Pacific as well as Eastern Europe and Central Asia (UNAIDS, 2003). Sub-Saharan Africa is the most affected by the pandemic. UNAIDS estimates the number of HIV infections worldwide at about 36.1 million by the end of 2000 of which 25.3 million were found in sub-Saharan Africa. As at the end of 2003, a total of 40 million people were living with HIV/AIDS, of whom an estimated 26.6 million were in sub-Saharan Africa. Sub-Saharan Africa carries 71% of the world's HIV/AIDS burden although it contains only 11% of the world's population (UNAIDS, 2003).

The HIV prevalence is not uniform throughout sub-Saharan Africa. According to UNAIDS (2003), it varies from less than 1% in Mauritania in West Africa to almost 40%

in Botswana in Southern Africa. Southern Africa is home to about 30% of PLWHA worldwide yet this area has less than 2% of the world's population.

The main modes of HIV transmissions in sub-Saharan Africa are through heterosexual contact and MTCT, and about 10000 people are infected daily. This rate of infection is worsened by the time lag (about 8 to 10 years for adults) between infection and the onset of clinical symptoms. Complicating the problem further is the fact that several types and sub-types of the virus are spreading at different parts of the sub-region (Bloom, 1998).

According to Bloom (1998), the spread of HIV/AIDS in sub-Saharan Africa is exacerbated by the combined effect of a number of contributory factors: high rate of multiple sexual partnering and of sexually transmitted diseases; continued widespread use of untested and contaminated blood and blood products and non-sterile medical practices; reliance on breast feeding; low rates of condom use; low levels of education; and very high proportions of the population in its sexually active years. In addition, large numbers of intra-continental migrants and refugees and the high rate of urbanization (especially young men seeking seasonal work) contribute to the spread of HIV through increased anonymity and separation from family. The stigma and discrimination against those infected with or affected by HIV/AIDS also facilitates the spread of the disease by undermining the success of AIDS testing and care efforts (Gupta, 2003).

Women are most infected with HIV than men in sub-Saharan Africa. Approximately, 55% of all HIV positive adults are women (UNAIDS, 2002) and according to a six nation-survey, women are one-and-a-half times more likely to be infected as compared to their male partners (UNAIDS, 2003). This may be due to the biological vulnerability of

women, gender inequalities, generally low education among women (lack of knowledge and access to information), forced sex, involvement in polygamous relation and some traditional practice (female genital mutilation and childhood betrothals) increase the vulnerability of women. This high rate of infection among women increases the risk of MTCT of HIV, and therefore the need for the implementation of the PMTCT interventions.

The impact of HIV/AIDS on sub-Saharan Africa has been very devastating considering the fact that no vaccines, cures or inexpensive treatments currently exist. Life expectancy in the region has dropped from 62 years to 47 years due to HIV/AIDS (BBC News, Tuesday, 28 November 2000, 18:48 GMT). Many families are losing their breadwinners resulting in the dissolution of families as children are sent to relatives for care and upbringing. Households are becoming poorer due to increased health care and funeral expenses of members with HIV/AIDS and a reduction in the ability of the caregivers to work, emergence of child-headed households, continuous pressure on health facilities and personnel due to increasing hospitalisation of AIDS patients, drastic drop in school enrolments and increased teacher deaths due to AIDS, and a reduction in labour output in workplaces (UNAIDS, 2002). The final effect of these on the economic growth and development of the sub-region is enormous. HIV/AIDS is erasing decades of economic development in many countries in the sub-region. A recent calculation has suggested that the economic growth rate in sub-Saharan Africa has fallen by 2-4 percentage points due to this pandemic (UNAIDS, 2002). The death toll from HIV/AIDS in this sub-region is expected to continue to rise before peaking around the end of the decade, meaning that the impact of the pandemic will continue to be felt in the next ten years and beyond.

There have been significant efforts in response to this pandemic. Sub-Saharan African governments, bilateral and multinational agencies are spending a lot of resources on HIV/AIDS programmes: especially on prevention, care and support, and the provision of antiretroviral treatments (ART) because prevention efforts can slow the spread of HIV, and ART blunt the impact of AIDS. Nevertheless, the focus of some international aid agencies on this pandemic, like the USAID, has shifted from care and support for PLWHA to prevention. This is partly because of the inability of care and support provided to those already infected to stop the spread of the virus. The focus now is on PMTCT and behavioural change strategies, which rely on Voluntary Counselling and HIV Testing (VCT). An assessment of the acceptability, willingness and ability to pay for VCT and PMTCT interventions is therefore necessary to facilitate their implementation.

2.2: HIV/AIDS in Ghana.

The first HIV case in Ghana was diagnosed in 1986. The disease has since then spread slowly but steadily in the country. Sentinel surveillance surveys, recommended by WHO, between 1994 and 2003 showed a rise in HIV prevalence from 2.7% in 1994 to 3.6% 2003 among the 15-49 age group, implying that about 3.6% of the entire adult population in Ghana is HIV infected. According to UNAIDS (2002), the prevalence of HIV among the 15-49 years age group is an indication of the burden of the disease on the country. In 2000, about 330,000 adults and 20,000 children were already infected (MOH, 2001) and in 2003, 684,000 Ghanaians were living with the virus (DCU/MOH, 2003).

Two main modes of transmission account for most infections in Ghana, just like in any other sub-Saharan African country: heterosexual contact and MTCT. Eighty percent of all

infections are transmitted through heterosexual contact, 15% through MTCT, and other forms of transmission (transfusion of infected blood and blood products, reuse of needles, and other unsterilised medical tools) account for 5% (MOH, 2001).

The social and economic impact of AIDS in Ghana is massive considering that the adult age group is the most affected. The country will lose a good number of its manpower that could have contributed to the development of the nation. About 4.6% of all deaths in 1994 were attributable to AIDS and this will increase to 28% by 2014 (MOH, 2001). The inevitable result of the adult deaths is the number of children who are orphaned (or infected) by HIV/AIDS and the strain on the social system to cope with these numbers. Also, the treatment of opportunistic infections (OIs) resulting from AIDS can put a considerable strain on the health sector. According to Nabila et al. (2001), the yearly cost of treating OIs of an AIDS patient in Ghana is 4.2 million Cedis (about US$ 594.98), and of providing ARVs will be 45 million Cedis (about US$ 6,374.84) a year. This has a grave impact on the household and the macro-economy in general.

The MOH and collaborating organisations have adopted certain interventions to slow down the spread of the disease. These involve promoting abstinence and faithfulness; promoting reductions in the number of sexual partners; encouraging delays in the onset of sexual activity among adolescents; promoting the correct use and consistent availability of condoms; strengthening programmes for Sexually Transmitted Disease (STD) control; and encouraging voluntary counselling and HIV testing (Antwi and Oppong, 2003). The Ghana AIDS Commission, the Disease Control Unit and the Ghana Health Service are actively involved in the implementation of these interventions through a variety of

strategies: for instance media campaigns, counselling and education programmes and social marketing campaigns.

Table 1 (below) shows the projected HIV infections for the 15-49 year olds under two scenarios:

Table 1: Projection of HIV prevalence, 15-49 age group.

Year	High projection	Lower projection
1994	2.7%	2.7%
2000	3.0%	3.0%
2004	4.7%	3.3%
2009	6.9%	3.6%
2014	9.0%	4.0%

Source: *MOH, 2001.*

From Table 1 (above), the number of PLWHA is projected to increase from 350,000 in 2000 to 860,000 in 2009 and about 1.2 million in 2014 under the high prevalence scenario, and to 470,000 in 2009 and 568,000 by 2014 under the low prevalence scenario. These projections include only new infections and not the number of Ghanaians who would have died from AIDS over this period of time. The low projections are only possible if expanded and effective programme of interventions, such as VCT and PMTCT, are implemented. VCT is expected to facilitate sexual behaviour change and thus reduce sexual transmission of HIV. PMTCT is also aimed at reducing the number of children who become infected with HIV. The combined effect of VCT and the PMTCT is

expected to reduce the rate of spread of the disease in the country but this will depend on how people accept and participate in these programmes. It is therefore essential to assess peoples' acceptability, willingness and ability to pay for these interventions, so that these interventions can contribute to slowing down the rate of spread of the disease.

The Upper East Region, which includes the KND, is one of the ten regions of Ghana. According to a MOH (2001) report, the Upper East Region had the lowest HIV prevalence of 1.3% in the country, but this increased to 3.8% in 2002 (DCU/MOH, 2002). The KND has one of the highest prevalence among the six districts in the region. In 2002, the HIV seroprevalence among pregnant women at the district hospital was found to be 5.1% up from 2.1% in 2001 (Baiden et al., 2003). This implies almost the same rate of increase of MTCT of HIV since all pregnant women have between 14-42% chances of passing the disease to their newborns if no preventative action is taken. This sharp rise in sero-prevalence in the district is attributed to an increased cross-border activity caused by the civil war in La Cote d'Ivoire and influx of people from neighbouring Burkina Faso, where HIV prevalence is higher than in Ghana.

Table 2 (below) shows the age and sex distribution of HIV cases in the district from 2001 to 2003.

Table 2: HIV/AIDS cases reported at health facilities in KND from 2001-03.

Age group	2001		2002		2003	
	Males	Females	Males	Females	Males	Females
0-14	1	2	1	4	0	2
15-49	8	21	11	25	9	18
50-59	2	2	0	4	6	9
60+	0	0	0	0	0	0
Total	11	25	12	33	15	29
Grand total	**36**		**45**		**44**	

Source: *District Health Management Team-MOH, Kassena-Nankana District, 2003.*

The figures in Table 2 are reported cases in the district. In truth, the number of HIV/AIDS cases in the district (and in Ghana) is unknown and unknowable as the vast majority of those infected do not know that they are. For a variety of reasons, including cost and access (social, economic and geographic), some individuals do not seek hospital care when they are sick (Antwi and Oppong, 2003). Nonetheless, the figures in the table suggest that there has been an increase in the number of reported HIV/AIDS cases in the district over the specified period. There are more people in the reproductive age group (15-49) who have been infected, most of whom are females. This suggests that MTCT of HIV in the district is likely to be high as well and hence it is urgent to have VCT and MTCT programmes in place to protect the unborn from infection and to create awareness about the pandemic. For these intervention programmes to be effective in reducing the

rate of spread of the disease, the programmes must first be accepted and the people willing to participate in them. Thus, this study investigates the acceptability and barriers to VCT, and households' willingness and ability to pay for these services in the KND.

The next subsection is a general review of the current state of mother-to-child transmission of HIV and the various prevention options available.

2.3: Mother-To-Child Transmission of HIV/AIDS

Mother-To-Child-Transmission (MTCT) of HIV remains a major public health problem worldwide, especially in breastfeeding communities. MTCT of HIV is the second highest mode of HIV transmission after heterosexual transmission in sub-Saharan Africa. According to UNAIDS (UNAIDS, 2001) an estimated 200 million women around the world become pregnant each year of whom about 2.5 million are HIV positive. An estimated 800,000 children were newly infected with HIV in 2001, almost all through MTCT. Of the 40 million PLWHA at the end of 2003, 2.5 million were children under 15 years. Women of childbearing age constitute nearly half of the 40 million adults living with HIV/AIDS worldwide, with 58% of them found in sub-Saharan Africa. Heavy reliance on breastfeeding by these HIV positive women in sub-Saharan Africa, lack of access to PMTCT interventions and generally low level of education among them facilitates MTCT of HIV. Thus, the majority (87%) of MTCT of HIV occurs in sub-Saharan Africa (UNAIDS, 2001). Dabis et al., (2000) estimate the vertical transmission rate of HIV in the breastfeeding population to be between 25-35%. In Ghana, 15% of all HIV transmissions are through mother-to-child (MOH, 2001). There is no estimate of MTCT of HIV in the KND, but given the high number of HIV/AIDS female patients

(from Table 2 above) and the high sero-prevalence rate (5.1%) of HIV among antenatal clinic attendants in the district, it is most likely that MTCT of HIV is also high.

MTCT, restricted here to vertical transmission of HIV during pregnancy, delivery and the breastfeeding period, is the major mode of acquisition of infection for young children, with an estimated 1600 of the 16000 new infections each day being children, most in developing countries (Dabis et al., 2000). According to Dabis et. al. (2000), two-thirds of the transmissions are believed to occur during pregnancy (in utero), and labour and delivery (intrapartum), and about a third through breastfeeding (postnatal). Some 15-20% occur during pregnancy, 50% during labour and delivery and 33% through breastfeeding. Also, in Kinshasa, Zaire, an estimated 23% of MTCT occurred in utero; 65% intrapartum and early postpartum; and 12% postnatally through breastfeeding (Bertolli et al., 1996).

Reported rates of MTCT of HIV in the absence of any intervention are higher in developing countries (25%-40%) than in the industrialized world (15%-25%)(FHI, 2001). Preventing MTCT of HIV is possible once the mother knows she is HIV positive. Intervention options include: the use of preventative ARVs, elective caesarean section, replacement feeding or exclusive breastfeeding and avoidance of unnecessary invasive procedures during labour and delivery. ARVs and formula feeding have been seen to constitute the two key components of the intervention to reduce MTCT in many settings (Dabis et al., 2000). The available ARVs for the PMTCT of HIV include: zidovudine (AZT), lamivudine (3TC) and nevirapine (NVP). Formula feeding is unlikely to be successful in sub-Saharan Africa because of generally: lack of availability of breast-milk substitutes, lack of access to clean water, poor sanitary conditions and high illiteracy rate

among most HIV positive mothers. These conditions might expose the infants to diarrhoeal, respiratory and other infections and they may die as a result. These conditions limit the ability of HIV positive mothers to employ safe breast milk substitutes. Breastfeeding mothers are however advised to take precautions to lessen the chances of MTCT, these include: preventing or treating breast problems such as cracked nipples, mastitis and other inflammation, and immediately treating any sores or thrush that develop in infant's mouth (personal interaction with Dr John Williams, a Reproductive Health Specialist).

"MTCT-plus" is an initiative that seeks to expand services (basic care for prevention, treatment of OIs, and treatment with ARVs) for the HIV-positive woman participating in PMTCT programmes. This initiative was started by some voluntary organisations in collaboration with the UN (UNAIDS, 2003). The initiative became necessary following complains that HIV-positive mothers participating in the PMTCT programmes were not given any care or support, which was unethical.

It is clear from the statistics above that preventing MTCT is essential and VCT is the main entry point for pregnant women to know their HIV status in order to access MTCT interventions. There is therefore an increasing need for hospitals and community health programmes to provide accessible and affordable VCT services.

2.4: Voluntary Counselling and HIV Testing (VCT)

Voluntary Counselling and HIV Testing (VCT) is a confidential dialog between a client and a provider aimed at enabling the client to cope with and make personal decisions related to HIV/AIDS (Sangiwe, 2003). It is a process by which an individual undergoes confidential counselling to enable the individual to make an informed choice about being tested for HIV and to take appropriate action (UNFPA, 2004). The voluntary nature of the VCT is one of its underlying principles, and the counselling consists of pre-test, post-test and follow-up counselling. Pre-test counselling enables the individual to make an informed decision as to whether or not to take the HIV test. It creates the opportunity for a more in-depth discussion on HIV between the counsellor and the client. The post-test counselling supports a client to understand his/her test result and its implications. Follow-up counselling helps the client to cope with the test result, both positive and negative.

VCT is a vital component of any comprehensive HIV/AIDS prevention and care services, such as PMTCT, management of OIs and social support schemes. An added benefit of VCT is its proven success as a behaviour change intervention for both clients that test positive and negative; including a reduction in multiple partners, an increase in condom use, a decrease in unprotected sexual intercourse and more clients choosing abstinence. A randomised control study-by FHI, WHO and UNAIDS, coordinated by the Centre for AIDS Prevention Studies (CAPS) and conducted in Kenya, Tanzania and Trinidad demonstrated a reduction in risk behaviour following receipt of VCT, especially among HIV positive women (FHI, 2001).

2.4.1: Acceptability of VCT

The starting point for any health intervention is its acceptability. Results from most VCT programmes in sub-Saharan Africa show that the willingness of people to undergo VCT has been used as a measure of its acceptability (Dabis et al., 2000; Baiden, 2002). A study to evaluate the attitude of pregnant women towards HIV testing in Abidjan (Ivory Coast) and Bobo-Dioulasso (Burkina Faso) showed that 78% and 92.4% of the women consented to HIV testing respectively (Cartoux, Msellati et al., 1998). Several other studies conducted in sub-Saharan Africa showed acceptance rates of between 70-95% among antenatal clinic attendants (Kilewo et. al., 2001; Baiden, 2002). Conversely, Fylkesnes et al. (1999) in a study to examine factors affecting readiness for HIV-related voluntary confidential counselling and testing in Zambia, found that of the 37% (low acceptability) who were willing to be tested, most of whom were men, only 9.4% actually came for counselling and were tested. This shows a clear difference between what people think is good and how they actually respond when services are made available. Acceptability of an intervention therefore might not necessarily mean utilization of the service. Also, according to Laver (2001), only 21.0% of the study participants in Harare thought of testing, and more singles expressed preparedness to get tested in six months. These studies with low VCT acceptability (Fylkesnes et. al., 1999; Laver, 2001) were conducted among adults and out of the clinic setting, whereas those with high acceptability (Cartoux, Msellati et. al., 1998; Kilewo et. al., 2001; Baiden, 2002) were conducted with antenatal clinic attendants in clinic settings. Assessing VCT acceptability among households, for an impending VCT programme, is essential to see how this would

differ from the different levels of acceptability from the various settings and participants in the previous studies. Thus, this study intends to fill this gap.

On the other hand, willingness to undergo VCT for HIV alone is not enough to ensure the success of VCT programmes in sub-Saharan Africa. Pool et al. (2001) in a qualitative study in Uganda revealed that almost all the women in the study were willing to undergo VCT for HIV but they were, however, sceptical about the confidentiality of their test results. The women expressed fears that the maternity staff would not attend to them once they knew their HIV status, and the rumour that some might intentionally kill the HIV-positive patients in order to stem the spread of the epidemic. Many of them were concerned about being blamed, separated or subjected to domestic violence once their husbands knew they were HIV positive. Pool and colleagues (2001) confirmed that VCT has been accepted in principle, but for its successful implementation, much has to be done to ensure confidentiality to allay fears of stigmatisation and discrimination. They suggested that community sensitisation and male involvement should be incorporated into VCT programmes. Cartoux et al. (1998) also concluded that the overall acceptability of VCT most frequently depended on return rates for test results because acceptance rates of the test itself were generally high. The overwhelming majority of African women appear to accept HIV-testing, but only a proportion (59-61% in recent intervention trials) return for the results (Coovadia, 2000). Several studies conducted in sub-Saharan Africa have suggested that HIV-infected pregnant women are less likely to return to obtain test results than uninfected women (Ladner et al., 1996; Cartoux et al., 1998) and this defeats partly the aim of VCT.

In spite of the high VCT acceptability, there are still barriers and refusals to HIV testing in some studies. The following subsection reviews VCT refusals and some of the barriers to HIV testing.

2.4.2: VCT refusal

In spite of the general acceptability of VCT, there are still barriers to HIV testing in sub-Saharan Africa. Potential and current VCT sites will have to acknowledge and explore these barriers and develop strategies to overcome them. Common barriers to VCT include; stigma attached to HIV/AIDS, lack of perceived benefits of VCT, gender inequalities and lack of understanding of the risk of HIV (UNFPA, 2004). Women who refused to be tested in Abidjan and Bobo-Dioulasso indicated that the reasons for their refusals included: to get consent of partner before taking HIV test, fear of AIDS, the need to make a decision later at home, and the limited professional skills and empathetic attitude of some counsellors (Cartoux, Msellati et al., 1998). Factors associated with test refusal included: educational level of the woman (and the partner), ignorance of the main mode of HIV transmission (sexual) and the main means of prevention (condom). Cartoux, Msellati et al. (1998) concluded that women with high educational levels, who supposedly have good access to information on HIV infection, were reluctant to accept testing probably because these women were better able to perceive the risk of stigmatisation and discrimination or may have perceived themselves at low risk of infection. Fylkesnes and colleagues (1999) also found in Zambia that the lack of medical care and confidentiality (especially if providers are known by local community) have a negative influence on the use of VCT services. The length of waiting time for test results

also influences people's willingness to get tested. The limited or non-existent possible benefits of VCT (such as medical and psychosocial management) in developing countries, and the fear of having to cope with the results are also common reasons for refusal (Sahlu et al., 1998). Laver (2001) indicated that strongly articulated fears about HIV testing in Harare included being seen by friends at the VCT centres, stigmatisation, violence and stress associated with positive HIV test result.

In a qualitative study in Abidjan, Coulibaly et al. (1998) found that most women who refused to be tested thought probably they were HIV-positive and expressed fear that the disease process would accelerate once they were informed of their HIV infection. The reactions of their relatives, and particularly their husbands or partners, to a positive HIV test result were also mentioned. There were also concerns about possible breaches of confidentiality. Some felt pregnancy was not the best time to find out that they were HIV positive. Women can therefore be reluctant to be tested for fear of discrimination and loss of marital security or domestic violence (Temmerman et al., 1995). In the KND, where there is an impending community-based VCT intervention using lay-counsellors and MTCT programmes, key barriers to the use of VCT services by households have to be thoroughly investigated and this study highlights potential barriers to the use of VCT services and suggests possible strategies to improve the use of VCT services.

2.4.3: Willingness to pay for VCT.

Most pilot VCT programmes are administered free of charge in sub-Saharan Africa by bilateral and multinational aid agencies and NGOs. Considering the already burdened and under resourced health sector in this sub-region, it is unlikely that the health sector

can continue to fund these programmes if these agencies eventually withdraw their support. The available evidence indicates that VCT programmes can only be implemented sustainably in this sub-region with substantial subsidy or cost sharing.

Several studies in sub-Saharan Africa reported VCT cost per person ranging from US$4.00 to US$7.30 (Marseille, 1998; Kinghorn, 1998; Marseille, 1999). A recent study in Zambia (Kombe et al., 2003) found that the average cost of providing VCT services per patient is US$3.64 meanwhile; the average annual per capita health expenditure in sub-Saharan Africa is less than US$10.00 and spending US$ 3.64 on VCT alone has a lot of implications for the health of the people. It is therefore inevitable that private funding for VCT programmes would have to be sought if they are to be sustainable. An assessment of the willingness of potential VCT clients to pay for the services and how much they would be willing to pay is consequently essential.

Sweat and colleagues (1999) in a cost-effectiveness study of VCT in reducing sexual transmission of HIV-1 in Kenya and Tanzania, found that respondents were willing to pay US$1.64 (Kenya) and US$5.11(Tanzania) after a receipt of the VCT services. After the study ended and sites were converted to pure service provision, each site implemented fees based on these results. Sweat et al. (2000) in a later study found that patronage was low at these prices especially in Tanzania, but patronage increased to the original level when the costs were reduced to US$0.50 (Kenya) and US$1.00 (Tanzania).

Laver (2001) found in a descriptive survey of VCT, that only 14.2% of the respondents, in Harare, expressed willingness to pay for a VCT test. Forsythe et al.

(2002) in a recent study to assess the cost and willingness to pay for VCT in rural Kenya found that most VCT clients were willing to pay at least US$2.00. However, if full cost of the service were charged to the client, less than 5% indicated they were willing and able to pay for the service. They concluded that full cost recovery was not feasible and that, at best, only partial cost recovery could be achieved. In another study in the KND (Baiden, 2002), respondents were just asked how much they would be willing to pay for an HIV test and about a third of the respondents wanted HIV testing to be free of charge, and at US$1.00, less than 20% of respondents would consider the cost of an HIV test to be affordable.

These studies (Sweat et. al., 1999; Baiden, 2002; Forsythe et. al., 2002) were conducted in health facilities among VCT clients and in the outside setting among adults (Laver, 2001). Apart from the study by Baiden (2002), all the other studies obtained the willingness to pay values for VCT programmes that were already running. Forsythe et. al. (2002) was the only study that used the contingent valuation method (CVM) to elicit willingness to pay values. The CVM is appropriate for eliciting willingness to pay for health products or services that have not yet been implemented. Given that VCT services are yet to be introduced in the KND, the CVM is the most appropriate to use to elicit willingness to pay values. Since the willingness of households to pay for VCT services has not been explored by previous studies, this study investigates the willingness of households to pay for VCT services in a rural setting. This is because the household instead of the individual makes health care decisions in a rural setting and it is essential to establish households' willingness to pay for VCT and to elicit how much they are willing to pay.

2.5: ARV drugs for preventing MTCT

There are a lot of ARVs that can be used for the PMTCT of HIV but the most commonly used ARVs in sub-Saharan Africa include: zidovudine (AZT), lamivudine (3TC) and nevirapine (NVP). The WHO in partnership with UNAIDS, UNICEF and UNFPA (in October 2000) approved the use of safe and effective ARV drugs in MTCT-prevention programmes. These regimens included AZT alone or in combination with 3TC, as well as NVP alone. This recommendation was made based on research that demonstrated the safety and efficacy of these ARV drugs (PETRA trial, 2002; Guay et al., 1999; Jackson et. al., 2003; Moodley et. al., 2003). However, the NVP regimen is particularly attractive due to its low cost and simplicity of use in many resource poor, generally illiterate and predominantly breastfeeding settings such as the KND. NVP also has the advantage of being administered to pregnant women who are detected to be HIV-positive late into the pregnancy. Thus, NVP is the focus in this study for the PMTCT of HIV.

2.5.1: Efficacy and safety of Nevirapine

The safety and efficacy of NVP was established in several sites where the drug was tried. The HIVNET 012 trial in Uganda was the first to demonstrate the safety and efficacy of NVP to prevent MTCT of HIV. This trial started in 1997 and the results were published in 1999. Nearly all babies in the study (98.8%) were breastfed and were (95.6%) still breastfeeding at age 14-16 weeks. The results indicate that a single dose of NVP given at the onset of labour plus a single dose to the newborn within 72 hours of birth could reduce the risk of HIV transmission more than a short course of AZT during labour. The efficacy of NVP compared to AZT was 47% up to age 14-16 weeks. Thus, NVP lowered

the risk of HIV-1 transmission during the first 14-16 weeks of life by nearly 50% (Guay et al., 1999).

Jackson et al. (2003) confirmed the efficacy and safety of NVP for all babies in the HIVNET 012 trial follow up to 18 months of age. They found that intrapartum/neonatal NVP significantly lowered HIV-1 transmission risk in a breastfeeding population compared with a short intrapartum/neonatal AZT regimen. The absolute 8.2% reduction in transmission at 6-8 weeks was sustained at age 18 months.

The SAINT study in South Africa also confirmed the efficacy of NVP equivalent to that of AZT. In this study, HIV pregnant women were screened in 11 maternity health institutions in South Africa and were enrolled in an open-label short course ARV regimen of either NVP or Multiple dose of AZT/3TC. The overall infection rates in the 1307 infants by 8 weeks were 12.3% for NVP and 9.3% for AZT/3TC. There were no drug related maternal or pediatric serious adverse effects (Moodley et al., 2000).

The report of the Pediatric AIDS Clinical Trials Group (PACTG 316) also confirmed the effectiveness of NVP for preventing MTCT of HIV. The PACTG 316 trial was conducted in the USA, Europe, Brazil and the Bahamas in HIV-infected pregnant women who were already receiving other ARV drugs and were given either NVP or a placebo. NVP was well tolerated with rare side effects.

There are however potential minor side effects of NVP especially on the mother. The most common side effects of NVP include: rash, headaches, diarrhoea, nausea, fever,

abdominal pains and muscle pains (myalgia), these usually disappear after a few weeks. The most serious effects are liver failure and severe skin reactions (NIH, 2003).

Another drawback of NVP is the development of resistance, which can occur after only a single dose in women and infants who become infected despite NVP prophylaxis. This resistance may influence the efficacy of NVP in subsequent pregnancies and treatments. In the HIVNET 012 study, 19% of the women tested within 6-8 weeks after delivery developed resistance (Jackson et. al., 2003).

Despite these side effects, NVP has been registered in the USA, countries of the European Union and numerous other countries for the PMTCT of HIV following WHO's recommendations. NVP is recommended by the US Public Health Task Force for (PHTF) MTCT prevention among women in labour who have had no prior therapy and is included in the WHO Model List of essential Medicines, which is updated on a regular basis (PHTF, 2003).

NVP has been used for the PMTCT of HIV in Uganda, Rwanda, South Africa and many other sub-Saharan African countries. FHI in collaboration with the Ghanaian MOH have started PMTCT pilot programmes using VCT and NVP in some districts in the country and intend to gradually scale-up to the other districts (MOH, 2001) including the KND in northern Ghana.

Thus according to WHO (WHO, 1999), if widely implemented, single dose of NVP given at delivery could protect some 300,000 to 400,000 newborns in developing countries annually from maternal HIV infection.

In conclusion, the acceptability of VCT is generally high among antenatal clinic attendants in the clinic setting but low among adults in the non-clinic setting. It is therefore essential to investigate the level of VCT acceptability among households to see how this will differ from the levels among clinic attendants and adults. Also, it is important to investigate the possible barriers to VCT among households and to compare these with barriers established in previous studies. Most of the studies on willingness to pay for VCT were not conducted among households or used the contingent valuation methodology. None of these studies also attempted to assess ability of respondents to pay for the values elicited. Willingness and ability to pay for NVP is also yet to be explored. Thus, this study investigates the willingness to pay for VCT and NVP among households using the CVM and attempts to establish the ability of households to pay for the elicited willingness to pay values.

Chapter three

CONCEPTUAL FRAMEWORK

3. Introduction

This chapter examines the conceptual framework used to approximate willingness and ability to pay for VCT and NVP.

3.1: The concept of Willingness To Pay

The Willingness To Pay (WTP) concept is an approach to the valuation of health programme/intervention benefits, and it is consistent with welfare economic principles and cost-benefit analysis if properly used. WTP studies have become crucial in eliciting individual and household willingness to pay for health services as governments and international aid agencies consider striking a balance between public and private provision and financing of health care. Governments are supplementing tax revenue by increasing direct household contributions to the health sector through a variety of policy reforms: user fees at government facilities; adoption of community based financing schemes (such as pre-payments, revolving drug funds); and encouragement of non-profit-making but fee-charging NGOs (Russell et al., 1995). At the same time there is concern about the empirical reliability, and theoretical and convergent validity of studies that focus on hypothetical WTP (Diener et al., 1998) as well as the need to consider who is able to pay (Russell, 1996). WTP studies have been bedevilled by a lot of controversies. The concept of attaching monetary values to non-marketed goods and services might appear intrinsically alien and therefore difficult

(Clark et al., 2000) and WTP responses on a questionnaire or in an interview offer no guarantee of sincerity (Whynes et al., 2003). Different WTP formats for eliciting WTP values can yield different results, yet no clear theoretical guidance exist as to which one of them is "correct" (Smith, 2000). And the use of any format alone is unlikely to bring out these controversies. Also, consumers' willingness to pay for health care does not necessarily mean ability to pay. Actual demand is expressed when WTP is backed by ability to pay. In some instances, people may be able to pay for a particular health service but would be forgoing other basic needs (water, food and shelter) necessary for the production of health. Given these concerns, extra caution needs to be exercised both in the design of WTP questions and in the interpretation of results.

Notwithstanding these controversies, WTP is a concept that is being used increasingly to inform policy decisions in the health sector (Russell et al., 1995). WTP is the most commonly used approach for valuing utility in monetary terms. Economic theory argues that the maximum amount of money an individual is willing to pay for a commodity or service is an indicator of the utility or satisfaction derived from that commodity or services. Thus WTP is the maximum amount of money an individual is prepared to give up to secure that a proposed project is undertaken (Johannesson and Jonsson, 1991). Individuals are asked how much they would be willing to pay for a given health improvement, or to avoid a health reduction. They are generally willing to pay for health services with obvious benefits to them and their families. The amount that an individual is willing to pay for health care depends on the expected utility. If the expected utility to be derived from the health good or service is greater than the stated price, an individual will opt to pay. The higher the probability of the expected

utility from an intervention, the higher the WTP since the individual is an expected utility maximizer. WTP has been used widely in the health sector: in laparoscopic cholecystectomy (Donaldson and Shackley, 1997), an asthma self-management programme (Barner et al., 1999), drug abuse treatment (Zarkin et al., 2000) and insecticides treated nets (Onwujekwe and Nwagbo, 2002). According to Russell et al. (1995), how much people are willing and able to pay for a good or service can be assessed in two ways: (a) by observing and modelling past health care utilization, expenditure and responsiveness to prices or; (b) by asking people directly how much they would be willing and able to pay for a specified health care service or product. The second method, which is used in this study, is known as the contingent valuation method (CVM). The CVM is the most commonly used in the health sector.

3.2: Contingent Valuation Method (CVM)

CVM is a survey method that is used to measure people's WTP for a particular programme or intervention. It assumes that respondents have had no previous experience of buying or using the health service or product that is going to be put on the market and instead asks people their willingness to pay on the basis of their expectation (Russell et al., 1995). The respondent's answer is based on the information or scenario presented by the interviewer. CVM is appropriate in assessing WTP for prevention programmes in the health sector since individuals make decisions everyday concerning prevention, for instance living responsibly after knowing one's HIV status (VCT) or run the risk of contracting the incurable virus. Diener et al. (1998) refer to this type of study as an *ex ante* insurance based study in which the respondents are

assumed to be at risk of contracting a disease (like HIV/AIDS) that would require an intervention (such as VCT and NVP programmes). It is appropriate to use CVM for this study because VCT and NVP are yet to be introduced for HIV/AIDS and MTCT interventions in the KND.

The CVM is consistent with social welfare theory as consumers are presumed to know the benefits and costs of what they choose to pay for to maximise their welfare. According to Paretian welfare economics, in a perfect market Contingent Valuation (CV) figure reflects an individual's valuation of the benefits of a good or service, and the sum of the individual valuations is the social valuation (Evans and Hurley, 1985). The CVM was developed and used mainly in valuing environmental benefits. Davis (1963) was the first to use it in teasing out the value of recreational area. CVM has also been used extensively in the health sector. Johannesson et al. (1990) in antihypertensive therapy, Weaver et al. (1996) in quality of care for child survival, Narbro and Sjostrom (2000) in obesity treatment, Bhatia and Fox-Rushby (2002) in treated mosquito nets and Forsythe et al. (2002) in voluntary counselling and HIV testing.

CV questions are either open-ended or discrete/binary valuation questions (Klose, 1999). In the open-ended valuation questions the researcher tries to measure directly the maximum WTP of each respondent, and in the binary valuation questions the respondent accepts or rejects only one price (bid) level for the good (Johannesson, 1996) or states the range that cover his/her WTP. The directly obtaining methods provide more information on the WTP than the discrete (binary) methods (Klose,

1999). Thus, open-ended valuation questions, used in this study, provide more information on VCT and NVP than binary questions, which are of the yes or no type, would have provided. Some kinds of aids (or techniques) are usually used to make it easier for the respondent to answer open-ended questions, such as the bidding game, introduced by Randall et al. (1974), which is used in this study. The bidding game technique is the most commonly used aid.

3.3: Bidding game technique.

The bidding game is a directly obtaining method with a series of iterated questions in which an auction process is simulated (Klose, 1999). It resembles the auction system and therefore closer to the real market situation. Here, the interviewer makes a first bid and the respondent accepts or rejects the bid. Depending on the answer, this bid is then lowered or raised and the respondent asked about this new bid. This process continues until the respondent's maximum WTP is reached.

The site for this study (the KND) has a predominantly illiterate population who are used to expressing their WTP for goods and services through bargaining, and the bidding game is the most appropriate technique to use. Furthermore, the bidding game closely resembles the haggling method used in Ghanaian local markets to buy goods and services, and therefore is the most appropriate instrument for determining peoples' WTP for VCT and NVP in KND.

The bidding game technique was used by Russell (1994) to test WTP for antenatal, delivery and post-natal package for a non-profit making hospital in Mexico. The

method has been used extensively in sub-Saharan Africa in various health fields: in health insurance in Ghana (Asenso-Okyere et al., 1997), in Insecticide Treated Nets in Ghana (Akweongo, 1999) in community-based insurance in Burkina Faso (Dong et al., 2003) and in the regressiveness of user fees in health facilities in Tanzania (Bonu et al., 2003).

3.4: Potential biases in Contingent Valuation studies.

CV studies are open to biases as a result of the way the questions are framed and asked. Johannesson (1996) outlined a number of biases that are common with CV studies: strategic bias and compliance bias, starting point bias and scenario misspecification, which are all related to the response effect and the design of the CV instrument.

Strategic bias occurs when a respondent feels that it is in his/her self-interest to give a lower or higher value than the true value of a good/service in order to influence its provision (example is free-rider problem in economics). Compliance bias occurs when the respondent overvalues/undervalues WTP in an attempt to please the interviewer.

Starting point bias is present when a potential WTP value in the study instrument affects the respondent's valuation. In other words, it means that the respondents are influenced by the amount used to start the bidding and may think that it represents the true value of the good or service in question (Onwujekwe and Nwagbo, 2002). It is common in the bidding game technique. Scenario misspecification occurs when respondents do not understand the scenario as intended (Klose, 1999). In other words, the respondent does not respond to the correct contingent scenario.

To minimise the starting point bias, respondents were asked to propose the first bid, which formed the basis for the bargaining. The other biases were minimized through; the use of a well-sequenced instrument, a detailed explanation of the scenarios, conducting the interviews in the local languages of the respondents and randomly picking some completed interviews and re-interviewing the respondents on a later date to ensure reliability of responses.

3.5: Concept of ability to pay.

Affordability of essential services like health care has become a crucial policy issue in many developing countries because people are expected to contribute more from their own pockets as a result of health sector financing reforms (Russell, 1996), and the fact that households face an enormous financial pressure not only from the health sector but from other sectors like education and water. Most policy debates and research on cost recovery have treated willingness and ability to pay as synonymous. But WTP for health care does not necessarily mean ability to pay since household expenditure on health care could force them to cut down basic necessities like food and education to meet health care expenditure and the opportunity cost of payment (food, education) make health unaffordable (Russell, 1996). The cost of accessing health care (for example transport, health charges) can be considered affordable when utilization is not deterred for financial reasons, and when the opportunity costs incurred do not cause levels of consumption and investment (for instance on education) to go below the minimum requirements in the short run (Russell, 1996).

An analysis of the effective demand for health care is only possible when WTP is backed by Ability to Pay (ATP). However, there is no well-known method used in evaluating/assessing ATP, especially in rural settings such as the KND. The use of income to estimate ATP is not dependable because the measurement of household annual income is fraught with difficulties, since household resources are diverse and difficult to observe. The use of household basic and occasional consumption expenditure as a proxy for income is more reliable and can be used to estimate ATP because it is more stable and information on it can easily be provided. Thus, this study attempts to use household basic and occasional consumption expenditure data to estimate ATP for VCT and NVP. Annual expenditures by sex and by quintile groups are used to assess ATP.

There are other potential resources and coping strategies opened to the individual and the household during emergency periods. A disaggregation of these resources is central to analysis of household ATP for health care, since it highlights the different resources and potential strategies available to an individual, a household and different occupational groups (Russell, 1996).

Other potential resources like assets, education, cash and the ability to organise resources effectively that households can mobilize in the face of sudden contingency. Possession of assets such as bicycles, radios and livestock improves understanding of the potential asset strategies available to households when medical costs arise.

Coping strategies are also employed once the household needs to mobilize non-routine resources to pay for necessary treatment. Studies have measured household ATP by

looking at these coping strategies that can be used to mobilize resources for their needs. The dominant resources mobilized when cash is not available include: selling farm produce, belongings, livestock and reliance on claims from relatives (Russell, 1996).

All these different sources and coping strategies open to the household need to be assessed when estimating household ATP. However, this study used only household basic and occasional expenditures to estimate household ATP for VCT and NVP.

In conclusion, the WTP concept is the most frequent method used in valuing utility in monetary terms. There are two ways of assessing how much people are willing to pay for a good or service, but the CVM is the most appropriate method used in assessing WTP for prevention programmes in the health sector, since individuals make decisions everyday concerning prevention. The bidding game technique, which is the most commonly used in aiding respondents to answer open-ended contingent valuation questions, is employed in this study. In spite of the popularity of the CVM, it is opened to biases which include: strategic and compliance biases, starting point bias and scenario misspecification. Various strategies have been put in place to minimise these biases. For effective demand for health care to be possible, WTP must be backed by ATP. Household basic and occasional consumption expenditures are used in this study to estimate ATP for VCT and NVP.

Chapter four

METHODOLOGY

4. Introduction

This chapter outlines the methodology used in the study. It presents a brief profile of the country and the study area. The sampling technique, sample size, the unit of analysis and the data collection techniques are outlined. The chapter also explains the content of the data collection instruments, quality control and data management, and data analysis. It concludes with the limitations of the study and how the ethical issues were surmounted.

4.1. Study area

This subsection gives a brief and general background of Ghana and the Kassena-Nankana District (KND). It explains briefly the geography, economic, demographic and health background of Ghana and the KND.

4.1.1. Country profile

Ghana is an Anglophone country in West Africa, about 238.5 thousand square kilometres in size and about 750 kilometres north of the equator on the Gulf of Guinea, within latitudes 5 degrees 36 minutes north and longitude 0 degrees 10 minutes east. Ghana is bordered to the west by Ivory Cost, Togo to the east, Burkina Faso to the north and the west Africa coast line to the south. There are two rainy seasons (April-July and September to November) in southern Ghana, and a single rainy season (May-

September) in the north followed by the dry, cold and dusty harmattan winds from the Sahara desert. The predominant vegetations in Ghana are the: coastal savannah, forest vegetation and the guinea savannah. Ghana has a tropical climate characterized by moderate temperatures of about 21-33 ^{o}C all year round.

4.1.1.1: Population

The estimated population of Ghana in 2001 was 19.7 million with a growth rate 1.8% per annum. In 2002, the total population of Ghana was 20.1 million with an annual growth rate of 1.6%, lower than the growth rate (2.4%) in sub-Saharan Africa (The World Bank Group, 2003). Ghana has a diversified tribal groupings and predominantly Christian population. The population is growing yearly without a corresponding increase in jobs, social amenities, social services especially access to quality health care, and this exposes citizens to many economic hardships, infectious and immune-mediated diseases including HIV/AIDS and STDs. The economic indicators reported below highlights the economic constraints that the country and households face in the phase of the HIV/AIDS pandemic.

4.1.1.2: Economy

Table 3 (below) shows the trend of some key economic indicators of Ghana from 1982 to 2002 (in current US$).

Table 3: Key economic indicators for Ghana (in current US$).

Indicator	1982	1992	2001	2002
GDP (US$ billion)	4.0	6.4	5.3	6.0
Total debt/GDP	36.8	70.3	127.5	***
Current account balance/GDP	-4.8	-9.2	-7.3	-8.1
Total debt service/export	15.5	28.2	12.8	***
Present value of debt/GDP	***	***	74.4	***
Export of goods and services/GDP	3.3	17.2	52.2	51.0
Export of goods & services (US$m)	711	1,105	2,433	2,607
Import of goods & services (US$m)	813	1,845	3,428	3,662
Agriculture (% of GDP)	57.3	44.8	35.9	34.7
Industry (% of GDP)	6.2	17.4	25.2	24.9
Manufacturing (% of GDP)	3.6	9.3	9.2	9.4
Services (% of GDP)	36.4	37.8	38.9	40.3

Source: The World Bank Group: *http://www.worldbank.org/data/*

***Data not available.

Ghana's economy is a low-income economy and mainly rural. Cocoa, timber, and pineapples are the main export crops and mining (mainly gold) has become one of the biggest sources of foreign exchange. The total gross domestic product (GDP) for 2002 was US$6.0 billion with a gross national income per capita of US$ 270, which is lower than the per capita income (US$ 450.0) for sub-Saharan Africa. In 2003 Ghana's real

GDP growth accelerated to 5.2% (The budget statement, 2004). Progress was achieved in reducing inflation to 15% at the end of 2002, the lowest level in recent years. The budget deficit, including current grants, was 4.5 % of GDP in 2002. Ghana joined the World Bank's HIPC initiative and reached a Decision Point in February 2002. The debt relief provided under the HIPC Initiative would amount to US$ 215 million per year from 2002-2011 (The World Bank Group, 2003).

4.1.1.3: Agriculture

Ghana is an agricultural country. Agriculture accounted for 34.7% of GDP (including fishing and forestry) in 2002 with a growth rate of 4.4%. In 2003, the growth rate in the agriculture sector was 6.1% (The budget statement, 2004). The major cash crop is cocoa. Other principal crops are; rice, coffee, peanuts, cassava, corn, sheanuts and timber.

About 50% of Ghanaians are employed in the agriculture sector doing mostly subsistence farming. Agriculture in Ghana is mainly rain-fed. Any agriculture sector, like that of Ghana, that depends on weather is unpredictable. Thus the fate of most Ghanaian farmers depends on the weather. This exposes them to poverty and also explains why most subsistence farmers in Ghana are generally poor.

4.1.1.4: Health profile

Ghana is characterised by the prevalence of communicable diseases, under nutrition and poor reproductive health conditions, and access and utilization of health care services is generally low especially in the rural areas where more than 60% of the

population live. This has some implications for the health status of the population. Table 4 (below) describes some health indicators in Ghana from 1998 to 2002.

Table 4: Key health indicators

Indicator	1998	2001	2002
Life expectancy	***	55.9	54.9
Fertility rate (births per woman)	***	4.1	4.0
Infant mortality rate (per 1000 live births)	***	57.0	55
Under 5 mortality rate (per 1000 children)	***	100.0	***
Births attended by skilled health staff (% of total)	44.3	***	***
Child malnutrition (% of children under 5)	***	***	25
Child immunization, measles (% of under 12 mos)	73.0	81.0	***
Prevalence of HIV (female, % ages 15-24)	***	3.0	***
Access to an improved water source (% of pop)	***	***	73

Source: The World Bank Group: http://www.worldbank.org/data/

***Data not available.

The health indicators in Ghana are comparable to other countries in sub-Saharan Africa. Life expectancy in Ghana in 2002 was 55 and 46 in sub-Saharan Africa. Infant mortality (per 1000 live births) for the same period was 55 in Ghana and 105 in the sub-region. About 73% of Ghanaians had access to an improved water source in 2002 and only 58% of sub-Saharan Africans. Access to health care is however much lower than access to improved water. The Bulletin of Health Information (MOH, 2001-2002) reports that only

20% of Ghanaians have access to health care when they need it in the phase of the cash and carry (user fees) system.

Ghana is divided into ten administrative regions and the KND is in the Upper East Region.

4.1.2. The Kassena-Nankana District

This study was carried out in the Kassena-Nankana District (KND) of the Upper East Region of northern Ghana. The district covers an area of 1675km^2 within the northern Guinea savannah woodland. According to the Navrongo Demographic Surveillance System (NDSS, 2002), the population of the district is estimated at 141,926 with females constituting 53%. Over 70% of inhabitants in the KND have had little or no education and cannot read and write. The population is mostly rural, and live in dispersed settlements with close-knit extended families living in the same compounds. There are two main ethnic groups- the Kassenas who comprise 49% and the Nankanis 46% of the population. The minority ethnic groups are mainly Builsas and others.

The mainstay of the district is subsistence farming and rearing of livestock. Nearly 77% of the population depend on rain fed subsistence farming for their livelihood (NDSS, 2002). There are mainly two seasons, a short wet season (May to September) with a long dry season (October to April) with little or no rain. Seasonal migration of the youth and married adults to cities in the south to search for short-term jobs is common. Sexual activity may tend to be high if they are unable to find jobs and this places them at high

risk of contracting HIV/AIDS. When this people return to the district, the possibility of infecting partners/spouses is always high.

The health system in the KND is modelled along the district health care concept. The district has one government district referral hospital, four health centres, three clinics, numerous privately owned dispensaries/pharmacies and a good number of traditional health care providers (DHMT-report, 2003).

Figure 1 (below) shows the map of Ghana and the Kassena-Nankana District where this study was conducted:

Figure 1: Map of Ghana showing the Kassena-Nankana District.

4.2. Study Design

A household survey with household heads or adults (next person responsible for household affairs), focus group discussions and in-depth interviews with men and women were used to collect data on willingness to pay for VCT and NVP.

4.2.1. Sample selection

The Navrongo Health Research Centre (NHRC) operates a Demographic Surveillance System (NDSS) in the district. The NDSS has divided the district into 5 zones (east, west, north, south and central) and each zone is subdivided into sub-zones (total of 23 Sub-zones), then into clusters (total of 260 clusters) and clusters into compounds. There are about 14,951 compounds that have been enumerated and given unique compound numbers (COMP IDs). Members in each compound are given individual numbers (PERM ID) for easy identification, and their demographic characteristics are recorded and updated every three month.

A representative sample of 400 respondents aged between 15-60 years, covering the main ethnic groups, was drawn from the population. This study covered all the zones in the district with almost equal respondents in each zone. A multistage simple random sampling technique was used to draw the respondents.

A sampling frame of all clusters in the five zones was first generated from the NDSS database. A random sample of five clusters each from all the zones was selected. It should be noted that the sub-zones were redundant since clusters were used as sampling units. Secondly, a list of all compounds in the selected clusters was generated. Random

samples of twenty compounds were selected from each zone. This was because there is an average of four households in a compound in the district (Binka, 1997) and about eighty household heads/adults were interviewed in each zone. Thirdly, fieldworkers (one per zone) randomly selected a compound in which to start interviews from the list of selected compounds. For compounds that had more than four households, fieldworkers were instructed to interview a maximum of four household heads/adults in a compound because there are an average of four households in each compound. One fieldworker was assigned to work in a zone.

The focus group discussions (FGDs) were held among different groups: 15-24 years, males and females; 25-34 years, males and females; and 35-49 years, males and females. These groups constitute the most sexually active groups in the district. A multistage simple random sampling technique was also used. Two clusters each were randomly selected in each zone from the list of clusters. Each specified age and sex group was written together on two pieces of papers and put in a box. The fieldworkers drew two each randomly from the box for each of the zones. Lists of all members in the selected age and sex groups for the various clusters were generated and fifteen members each randomly selected for the FGDs. These lists were given to opinion leaders in the selected clusters who then invited the groups for the FGDs on specified days.

The in-depth interviews (IDIs) were conducted with pregnant women attending antenatal clinics. A purposive sample of two health centres in the north and east zones and the district hospital were used. The two health centres were the closest health facilities to Burkina Faso (where the prevalence of HIV/AIDS is higher) and also represented the two

dominant ethnic groups. The district hospital was used because it is the only referral health facility in the district. A systematic random sample of eight pregnant women was drawn from each selected health care facility on chosen antenatal clinic days for the IDIs. A random starting number was selected and every 5th woman was interviewed until the required number was reached.

4.2.2. Sample Size

Due to limitations imposed by time and resources, the entire population could not be interviewed. Therefore a representative sample of 400 household heads/adults was interviewed in the whole district. Since the focus of the study is to assess households' willingness to pay for VCT and NVP, the question of the sample size was addressed statistically. The formulae below, suggested by Kaewsonthi and Harding (1992) for calculating a sample size among a large number of households, was used to calculate the sample size (n).

$$n = \frac{t^2 (p * q)}{d^2}$$

Where:

n = sample size

t = probability level, 1.96 was used.

p = the variability of willingness to pay for VCT and NVP in the population. Since there is no reasonable estimate of p, then we use 50% (p=0.5). This maximizes the expected variance (pq=0.25) and ensures that a representative sample is used for the study.

q=1-p

d = the degree of acceptable difference between the estimated sample value and the true population value. An acceptance level was set at 5% (0.05).

$$n = \frac{(1.96)^2 (0.50 * 0.50)}{(0.05)^2} = 384 \text{ household heads/adults}$$

The formulae gave 384 respondents as the sample size. Due to the sensitive nature of HIV/AIDS and the stigma attached to it in the district, sixteen respondents were added to make up for refusals and those who will not be located. This brought the sample size to 400.

4.2.3. Unit of analysis

The household is the unit of analysis in the study. A household is defined as a group of people living in the same compound and sharing the same budget on food. These compounds are made up of a number of households, with an average of four households in a compound. In terms of accessing and financing health care in the

district, it is the household, instead of the individual, that decides because the household owns the resources of its members and not the individuals, and the household head or adult (next person responsible for household affairs) is perceived to know "best" about the health needs of the household. The interviews were mainly conducted with the household head/adult because he/she plays a crucial role in the health care decision-making and health seeking behaviour of members of the household.

4.2.4. Training and fieldwork

In consultation with some senior research officers in the NHRC, a training manual was developed and used for the training of the fieldworkers. The manual was adapted from existing training manuals from the NHRC. The training manual gave the background of the study, the role of the interviewer, aims and objectives of the study and strategies for community entry to conduct interviews. There was particular emphasis on how the bidding game works.

A two-week training was provided for five experienced field supervisors of existing projects in NHRC. A field supervisor is a person who has worked as a fieldworker for a long time, gained lots of experiences and has been promoted to supervise other fieldworkers. They were trained on the details of the questionnaire and how to ask the questions in English, and subsequently translate them into the local languages. Mock interviews were conducted during the training and a field pilot test, prior to the fieldwork to assess their competence and familiarity with the questionnaire, was carried out.

The researcher and a field assistant conducted the qualitative interviews. The field assistant was taken through one week of training on the FGDs and IDIs guides, the purpose of the questions and the local translations of the questions because the assistant had previous experience in conducting qualitative interviews.

4.2.5. Data Collection Techniques and the Survey Instrument

The primary objective of the study was to assess households' willingness to pay for VCT and NVP for the PMTCT of HIV. Thus an interviewer-administered structured questionnaire was designed and translated into the two languages to obtain information on the socio-economic and demographic characteristics of respondents; general knowledge of HIV/AIDS, VCT and NVP; and household consumption expenditures (see appendix III).

4.2.5.1. WTP questions and the scenario for valuation of VCT and NVP

WTP for VCT and NVP questions were hypothetical questions asking the respondents the maximum amount they were willing to pay. This was because VCT services and NVP had not yet been introduced in the district, even though some people mentioned that they had been screened for HIV during blood donations.

During the two-week training period, interviewers were trained on how to establish a good rapport with the respondents before the start of interviews. The aim was to minimise strategic and compliance biases which are associated with the CVM. The less sensitive questions on socio-economic and demographic characteristics, and general knowledge on HIV/AIDS were first asked. Scenarios were then presented on VCT and

NVP to the respondents to enable them make true valuations of their maximum WTP for them. The scenarios provided brief information on VCT and NVP: the usefulness of VCT, and safety and efficacy of NVP; disharmonies that VCT might create, and the side effects of NVP; and the reliability of VCT in determining peoples' HIV status, and the fact that no cure for HIV/AIDS exists.

The bidding game technique was then used in eliciting maximum WTP values after the presentation of each scenario. To minimise the starting point bias, which is common with the bidding game technique, interviewers were trained to allow the respondent to make the first bid. Consequently after presenting both scenarios separately, and reminding the respondent that any money spent on VCT and NVP would not be available to spend on other goods or services, the respondent was then asked if he/she would be willing to undergo VCT for HIV (or buy NVP for HIV positive pregnant mothers). If the respondent answered "yes", the interviewer then went ahead to ask for the amount he/she would be willing to pay. This first bid formed the basis for bidding up or down depending on the proposed figure. The bids were increased/decreased by ¢1000.00 for VCT and ¢2000.00 for NVP until the maximum WTP was established.

In a few situations respondents asked interviewers for the first bid. In such instances, interviewers were trained to quote any of three (low, medium and high) randomly allocated starting bids, and ask respondents if they were willing to pay the quoted bid. Those who answered "yes" to the starting bid were then asked about a higher bid and those who answered "no", were provided with a lower bid and asked about their willingness to pay again.

After a number of bids, the respondent was then asked about his/her maximum WTP as an open-ended question. The answer represented the maximum WTP value.

4.2.5.2. Ability to pay instrument

The maximum WTP values for VCT and NVP for each respondent were first summed up, and the respondent asked if he/she could afford to pay the total. Those who answered "no", were asked to state the prices they could afford to pay for VCT and NVP. They and those who could afford the total were then asked about the mode(s) of payment. Affordability of VCT services and NVP was assessed using household head/adult income, and basic and occasional consumption expenditure in the month preceding the survey vis-à-vis the mean maximum willingness to pay of households.

The monthly incomes of household heads/adults who were traders, artisans or civil servants were solicited directly from them. These monthly incomes were then multiplied by twelve for the estimation of the annual income. Incomes for farmers were got by first asking them about the kinds of crops that they cultivated in the last season. The quantities of each crop and the then ruling market prices were used to value the farm produce. Crops that were received in kind were also valued. A sum of all these values provided an approximation of the total income for the farmer for the season.

Household basic and occasional consumption expenditures for the previous month were also collected. Basic expenditures like those on food, soap, salt, water, health care and other basic things, and occasional expenditures on shoes, family celebrations and on capital goods (cars, motorbikes, bicycles and so on) were considered as the monthly

expenditures that households usually incur. The sum of the total basic expenditure was multiplied by twelve to get the basic annual expenditure. The occasional expenditures were taken as presented because mostly these are not incurred more than once in a year and multiplying them by twelve can be misleading, especially considering the fact that the data was collected during the Christmas and New Year festivities. Household expenditure is considered as a more appropriate proxy for income in household surveys, particularly in areas where people do not have regular incomes or do not provide accurate information on their incomes. People also feel comfortable telling others about their expenditure rather than incomes. However, information on incomes was used in the regression analysis for the determinants of maximum WTP for VCT and NVP.

4.2.5.3. Qualitative study

The qualitative part of this study explored in detail some of the social and other issues that are likely to affect the patronage of VCT services and NVP. In particular the stigma attached to HIV/AIDS and how HIV patients should be treated, and peoples' reactions to HIV positive results. The qualitative part involved the use of Focus Group Discussions (FGDs) and In-depths Interviews (IDIs).

A total of 118 persons were involved in the FGDs, comprising 48 women and 70 men. This discrepancy was mainly due to the fact that all the IDIs were conducted with women. Each FGD had an average number of twelve participants and took an average of one and half hours. Two FGDs were held in each zone comprising the following groups using a semi-structured guide: 15-24 years, males and females; 25-34 years,

males and females; and 35-49 years, males and females. These age groups were chosen because they represent the most sexually active groups that are more prone to infecting and getting infected with HIV and would most likely make use of VCT and NVP services.

Twenty-four pregnant women attending antenatal clinics in the selected health facilities on particular antenatal days were involved in in-depth interviews to get an insight into the determinants and barriers to accessing VCT services and NVP by pregnant women. All IDIs were held in the premises of the selected health facilities. There was the likelihood of facility bias but respondents were informed that whatever responses they provided would not in anyway affect their access to the health facility concern. Each IDI took an average of 35 minutes.

All FGDs and IDIs were tape recorded and later transcribed by (different) people who had a good knowledge of the local languages.

4.2.6. Quality control and data management

Pre-tested interviewer-administered structured and semi-structured instruments were used for the quantitative and qualitative interviews respectively. For easy detection of errors and inconsistencies, completed survey questionnaires were first checked by the field assistant and rechecked by the researcher. Randomly selected respondents were visited and re-interviewed during data collection to ensure reliability and that fieldworkers visited the selected compounds and interviewed the right people. A data manager of the NHRC developed the screens for data entry. All forms were put in

bundles of 50 and given batch and form numbers to avoid loss of forms. Two data entry clerks of the NHRC did double data entry and all queries were returned to the concerned fieldworkers for re-interview. The data manager rechecked the data to ensure that data entry was properly done after it was completed.

Tapes of one transcribed FGD and two IDIs were randomly selected and given to an independent person for re-transcription. The transcripts were compared to ensure consistency and reliability.

4.2.7. Data analysis

The Stata 8 statistical package has been used for the quantitative data analysis. Qualitative data was analysed manually. The qualitative transcripts were first read, coded and categorised into themes. The major themes were then connected, and finally the essential ideas were extracted.

4.2.8. Study limitations

- The study was not able to collect information on all sources of household incomes and possessions. Households may depend on multiple sources of income and not only on what is earned by the household head/adult interviewed.
- Household expenditures may be over-estimated because the data was collected during the Christmas and New-year festivities. Some occasional expenditure might have been incurred more than once in the year.
- Most respondents had problems recalling their incomes (non-salaried respondents) and expenditures for the previous month.

- People had to respond to hypothetical questions on VCT and NVP. They did not have any experiences of these services and had to value them based on the scenarios. There was the likelihood that biases associated with the CVM might be present, even though measures were taken to minimize these biases.
- There is no follow up of those who are willing to go for VCT and NVP to verify if they would actually express that demand when the services become available after this initial study.
- Women delivery at health facility is low in the district and since NVP needs to be administered at delivery, it has implications for the findings of this study.

4.2.9. Ethical issues

The study protocol received ethical clearance from the University of Cape Town and NHRC ethics committees before data collection started. Permission was also sought from the District Health Management Team (DHMT) for the use of some health facilities for the clinic based IDIs. Oral informed consent (see appendix VI for form) was sought from respondents before the start of all interviews. Respondents were also made aware of their rights to refuse to answer any question or to withdraw from the interview anytime during the study. The confidentiality of their responses was assured by limiting access to the information to only members of the study group, and there was no need for respondents to reveal their HIV status to qualify for this study. Interviewers were well trained to tone down questions that infringe on the respondent's privacy, especially questions on household expenditures, respondents income,

knowledge on HIV/AIDS, VCT and PMTCT of HIV. The results of this study will be used to price VCT services and NVP to make them accessible to people in the district.

Chapter five

RESULTS

5. Introduction

This chapter gives a broad overview of the results of the study. It compares variations in willingness to pay (WTP) for voluntary counselling and HIV testing (VCT) and nevirapine (NVP) by the sex of respondents. The discussion section presents details and policy implications of the results.

The results of this study can only be appreciated when examined vis-à-vis the basic characteristics of the respondents. The next subsection therefore presents the demographic and socio-economic characteristics of the respondents.

5.1. Demographic and socio-economic characteristics of study population

Three hundred and eighty nine (389) respondents were successfully interviewed, of these 51.4% were females and 48.6% were males. The ages of respondents ranged from 16 to 60 years with a mean age of 40.5 years and a median of 41 years. Almost 74% of respondents were married, 17% widowed and the rest either never married, or were divorced or separated. About 51.2% of the respondents have never been to school while of the 48.8% with formal education, about 34.8% had only primary education, 34.2% had MSLC/JSS and 14.7% had tertiary education. Table 5 (below) shows basic descriptive statistics of the respondents.

Table 5. Basic descriptive and background characteristics of respondents (n=389)

Variable	Options	Frequency (%)		Total freq. (%)
		Females	Males	
Respondents	Adult	200 (51.4%)	189 (48.6%)	389 (100%)
Age	15-24	58.8%	41.2%	8.7%
n=389	25-34	46.2%	53.8%	23.9%
	35-44	50.0%	50.0%	27.8%
	45-60	53.9%	46.2%	40.1%
Ethnicity	Nankani	55.5%	44.5%	30.6%
n=389	Kassena	50.2%	49.8%	53.7%
	Bulsa	51.4%	48.6%	9.0%
	Other	42.3%	57.7%	6.7%
Marital status	Never married	17.7%	82.4%	4.4%
n=389	Married	43.4%	56.6%	73.5%
	Divorced	63.2%	36.8%	4.9%
	Widowed	90.9%	9.1%	17%
	Others	100%	0.0%	0.3%
Educational level	Primary	48.5%	51.5%	17.0%
	MSLC/JSS	44.6%	55.4%	16.7%
	Secondary	25.0%	75.0%	7.2%
	Tertiary	29.0%	71.0%	8.0%
	Never	61.8%	38.2%	51.2%

Religion	Traditional	38.9%	61.2%	35.7%
n=389	Christian	59.3%	40.7%	56.8%
	Muslim	53.6%	46.4%	7.2%
	Other	0.0%	100%	0.3%
Occupation	Student	33.3%	66.7%	0.8%
n=389	Farmer	46.2%	53.8%	57.3%
	Trader/artisan	77.4%	22.6%	27.3%
	Civil servant	25.9%	74.1%	13.9%
	Other	0.0%	100%	0.8%

From the table (above), most respondents were engaged in some sort of subsistence farming or petty trading. About 57% of them were farmers and 27% were petty traders or artisans. Less than 14% of respondents were in the formal sector employment. More females were into farming and trading/artisan compared to the males, and there were also more males in formal sector employment.

5.2. Knowledge of HIV/AIDS and prevention

All 389 respondents have heard about HIV/AIDS and eighty eight percent (343) of them spontaneously mentioned unprotected sex as a mode of transmission of HIV/AIDS, of whom 51.9% (178) were males. About 26.5% (103) and 73.3% (285) also spontaneously mentioned transfusion of infected blood and sharing needles or razor with an infected person as the other modes of transmission respectively. Less

than 2% (7) of respondents spontaneously mentioned mother-to-child transmission (MTCT) as a mode of HIV/AIDS transmission. Approximately 92% (358) mentioned MTCT after they were probed and only 6.2% (24) of the respondent did not know if MTCT is a mode of HIV transmission after probing. However, 2.1% (8) of the respondents mentioned that by touching a PLWHA one could contract the virus. With less than 2% of respondents spontaneously recognising MTCT, the second most common mode of transmission in the country, as a mode of transmission means that knowledge on MTCT is low among respondents.

Most respondents knew at least one opportunistic infection (OI) of HIV/AIDS. About 85.9% (334) and 68.4% (266) mentioned loss of weight and prolonged diarrhoea as OIs of HIV/AIDS respectively. Almost 16.5% (64) and 27% (105) mentioned prolonged dry cough (TB) and fever respectively as OIs of HIV/AIDS. The low knowledge of TB and fever as OIs may be due to the fact that, according to the DHMT report (2003), TB and malaria are the two most prevalent diseases (but under control) in the district, and people might not attribute them to HIV/AIDS.

Two hundred and forty seven (63.5%) respondents indicated that the best way to protect themselves from contracting HIV/AIDS is by being faithful to their partners. About 26.2% (102) and 8.5% (33) of the respondents mentioned abstinence and condom use respectively as the main means of protection against contracting HIV/AIDS. This is an indication of low condom use in the district. Condoms use in the district is mostly thought of as something for the youth and the unmarried. About 73.5% (286) of the respondents are married compared to 4.4% (17) who have never

married, and from the Panel survey reports (2002) 34% of all married women in the district are in polygamous marriages. This, coupled with low condom use, is likely to facilitate the rapid spread of the virus in the district. None mentioned the use of other contraceptives as a means of protection.

The in-depth interviews (IDIs) with the pregnant women showed that there was a good general knowledge about HIV/AIDS among participants. Most pregnant mothers recognised unprotected heterosexual contact as the main mode of HIV transmission. There were emphases on other minor modes of transmission such as the sharing of needles, blades and toothbrushes with an infected person. Female genital mutilation (FGM), which is still practiced at low rates in the KND, was identified as a possible mode of HIV transmission. FGM was a common practice in the district; a household survey among women in 1995 showed that 77% of women (aged 15-49) were circumcised and a clinic-based study revealed that 67% of antenatal clinic attendants were circumcised (FGM report, 2002). The rates have however gone down to 0.6% due to the intervention activities of the Navrongo Health Research Centre (NHRC) in the district. There was however little knowledge on MTCT as a main mode of HIV transmission and most respondents only mentioned it after being probed.

Most pregnant women were able to identify some opportunistic infections (OIs) of HIV; prolonged diarrhoea, fever and headache, drastic lose of weight and development of rashes. Few of them mentioned the severe prolonged dry cough as an opportunistic infection.

There was general knowledge of HIV/AIDS in the focus group discussions (FGDs). Both males and females were able to identify the main mode of HIV transmission (sex) but participants did not spontaneously identify MTCT as a mode of HIV/AIDS transmission. Both sexes also mentioned most OIs. Abstinence/faithfulness were mentioned as the most ideal ways of protecting oneself against the infection. There were however divided opinions on the use of condoms for protection especially among the married participants. While most married females indicated that condoms were good some married males felt it was not right to use condoms when having intercourse with their wives. This maybe due to the fact that females are mostly those taking the other contraceptives and are always given education on them, including the condom, when they go for family planning services or attend antenatal or child welfare clinics. Most women generally accused the men of aiding the spread of the disease. The following quotations from the FGDs confirm this finding:

Some husbands oppose the use of condoms and claim that they do not enjoy sex with their wives when they wear them. They often say that they cannot wear rubbers and have sex, if they will contract HIV/AIDS, they should (Female respondent-Saboro)

...the young boys can use them (condoms) but a married man like me cannot use those things. It is absurd to me and degrading, I either do not sleep with my wife or I will never wear a rubber (Male participant-Doba).

.....our husbands do not pay heed to what ever we tell them, they say they cannot be eating "palmnut soup" everyday (sleeping with the same woman every day), they need to eat "groundnut soup" (sleep with other women) too sometimes. He won't sleep at

home at all especially if you have a baby, so they go out and bring the disease to us (Female participant-Kajelo)

This might be an indication that the use of condoms is very low among couples in the district especially among men. This puts the married women more at risk of HIV/AIDS infection, especially if the risks associated with their unfaithful regular male partners are assessed. As mentioned earlier, the problem is worsened by the fact that 34% of women live in polygamous marriages in the district and culturally it is acceptable for a man to have concubines (Panel report, 2002).

From the qualitative and quantitative interviews, there is generally good knowledge on the main mode of HIV/AIDS transmission (unprotected sex) in the country. The level of knowledge on the second mode of transmission (MTCT) is generally low. This is comparable with the study by Cartoux, Msellati et al. (1998) in Ivory Coast and Burkina Faso where a vast majority of the respondents were not aware of vertical transmission and less than half knew that HIV infection could be asymptomatic. Respondents have a good knowledge on the OIs but most of them did not recognise TB and fever as major OIs of HIV/AIDS. The level of knowledge on the principal and most feasible means of protection (condom) against contracting HIV/AIDS, in sub-Saharan Africa, is low in the KND. Low condom use increases the risk of HIV transmissions especially among women and subsequently MTCT.

5.3. Mother-To-Child-Transmission (MTCT) of HIV/AIDS.

Most respondents in this study did not mention MTCT as a mode of HIV/AIDS transmission as already indicated. This maybe due to the fact that MTCT programmes are not common in Ghana and the emphasis is mainly on unprotected heterosexual transmission. This is likely to have a negative effect on the impending VCT and prevention of mother-to-child-transmission (PMTCT) of HIV programmes in the district.

Among respondents who mentioned MTCT as a mode of transmission (both spontaneously and after being probed), most of them identified at least one mode of MTCT. About 91% (333), 15.6% (57) and 7.1% (26) of respondents indicated that MTCT occurs during pregnancy, breastfeeding, and labour and delivery respectively. About 2% of them either did not know when MTCT occurs or mentioned that it occurs through physical contact between the mother and the newborn.

All respondents in the IDIs and FGDs did not know of any drug for the PMTCT. Most of them indicated that once any of the parents is HIV positive there is no way of preventing the neonate from contracting the virus. As mentioned earlier, this is due to the little emphasis on MTCT of HIV/AIDS in the district and in the country.

The success of any VCT programme, and therefore MTCT intervention, depends on the understanding of the people of the danger posed by the incubation period of the HIV virus and the various options available for knowing ones HIV/AIDS status.

5.4. Voluntary Counselling and HIV Testing (VCT)

About 87.7% (341) of the respondents identified that one could know his/her HIV status without suffering any OIs. Almost 84.2% (287) of them mentioned blood test (VCT) spontaneously as a way of knowing one's HIV status. Almost 14.1% (48) mentioned blood test after being probed.

Most participants with whom the IDIs and FGDs were conducted recognised that it was not easy to identify an HIV positive patient during the initial stages of the disease until they go for a blood test (VCT). They indicated that this was due to the incubation period of the virus. This compares well with the quantitative interviews where 87.7% (341) of the respondents explained that one could know his/her HIV status without suffering any OIs through VCT. This is a good background for the VCT programme since people know that there is a time lag between HIV infection and the emergence of clinical symptoms/OIs.

Once the study population recognized that it is not possible to identify an HIV infected person during the initial stages of the infection but only through a blood test, it is essential to assess how acceptable HIV tests would be and whether the respondents will be willing to go for it.

5.4.1. Acceptability and willingness to go for VCT

The initial willingness to go for VCT is used to assess the acceptability of a VCT programme. Approximately, 83% (322) of the respondents were willing to go for VCT, fairly balanced between males and females, 50.3% and 49.7% respectively. The

willingness to go for VCT increases with age from 10.3% (15-24 years) to 38.8% (45-60). This may be because the risk of infection increases with one being married and most people are married by age 40. The reasons for this willingness were stated; about 64.1% (207) indicated that they wanted to know their status so that they can protect themselves if they do not have the virus, 9% (29) wanted to protect their families and 6.2% (20) wanted to prolong their lives if they have the virus. The rest wanted to prevent MTCT and most respondents just wanted to know their status without giving any reason why.

After presenting the scenario for the bidding game technique, respondents were again asked if they would be willing to go for VCT. The acceptability dropped to about 82.3% (319) and the same reasons were mentioned for their willingness to go for VCT. May be after describing the benefits and risks involved in going for VCT and getting to know ones HIV status and the fact that the scenario indicated that there is no cure for the disease could have led to the drop (see appendix III for scenario)

Almost all the pregnant women in the IDIs were willing, in principle, to take an HIV test. The commonly cited reason for their willingness was to know their status and be able to live responsibly and not infect others if they are infected. The following excerpts from the IDIs point to this fact:

I will go for the test, it is better to know if I have the disease or not. This will help me protect myself if I don't have the disease and if I have it I will protect my husband and my children from also getting it because this disease has no cure (pregnant woman-War Memorial Hospital).

Why won't I like to know if I have the disease or not? Nobody is sure if himself/herself these days with regards to this disease and if there is a place to test to know I will go and do it. This will help me live my life well if I don't have it, and if I have it I will divorce my husband because I won't want to infect him too. (Pregnant mother-Page Health Centre)

Some also indicated that the HIV test would serve a dual purpose of helping them know their status and using that to judge whether their husbands have been sleeping with other women since they have not slept with any other men apart from their husbands.

Participants in the focus group discussions (FGDs) were willing to go for VCT generally for the following reasons; to protect themselves against contracting the disease, protect others from getting it if they have it, to prevent MTCT and the spread of the disease. Female participants in the FGDs insisted that their partners should be educated and encouraged by the health workers to always go with them for the HIV tests.

People's willingness to go for VCT was significantly influenced by some variables. Table 6 (below) shows the regression results of factors that significantly influenced the willingness to go for VCT. The F statistic shows significance ($p<0.001$) indicating that the model has a good fit. The R-square indicated that 74% of the variability in the willingness to go for VCT is explained by the model.

Ethnicity was highly significant in determining willingness to go for VCT. From Table 6 (below), Builsa (P=0.002, OR=0.01, 95%CI: 0.0005-0.1866), households were statistically more likely to be tested compared to households of other ethnic groups.

Table 6: Logistic regression results for households' willingness to go for VCT.

Variable	Odds Ratio	S E	P-value	95% CI
Builsa	0.0094223	0.0143538	0.002*	0.0004758-0.1865817
Traditionalist	0.5006834	0.6950585	0.618	0.032954-7.607077
Farmer	38.11239	47.43174	0.003*	3.324502-436.924
Cash payment	0.6509437	0.5885416	0.635	0.110647-3.829529
Primary education	0.6373058	0.6840407	0.675	0.777167-5.224503
45-60 age group	0.2108036	02035721	0.107	0.0317597-1.3999199
Partner HIV testing	0.0002968	0.0004895	0.000*	0.0000117-0.0075187
Married	56.61812	73.1207	0.002*	4.337618-723.4453
Unprotected sex	0.923184	0.8613815	0.932	0.1482758-5.74786
MTCT transmission	0.818093	0.142557	0.151	0.0026887-2.48924
Weight loss	0.7932091	0.6158289	0.763	0.173194-3.632792
Female	3.448869	3.005342	0.155	0.6250869-19.02887
Prob<0.0001				
R2=0.74				

* Significant at 5%

Religion also influenced willingness to go for VCT thought not statistically significant. Traditional believers (p=0.618, OR=0.50, 95%CI 0.03-7.61) were more likely to go for VCT compared to other believers.

Occupation emerged as a significant explanatory variable of willingness to go for VCT: farmers (P=0.003, OR=38.11, 95%CI 3.32-436.92) were statistically more likely to want to get tested compared to those in other occupations. This maybe because most farmers have low education, about 58.6% of them have had at most primary education, and therefore do not have good access to information on HIV/AIDS and hence think of going for VCT. They are more willing to go for VCT as against the civil servants who know the risks of going for VCT and the consequences of knowing one's HIV status without possible cure.

Marital status emerged as a statistically significant determinant of willingness to go for VCT. Married people (P=0.002, OR=56.62, 95%CI 4.34-723.45) were more likely to go for VCT compared to non-married respondents. People who were also willing to encourage their partners to go for VCT (P=0.000, OR=0.0003, 95%CI=0.00001-0.008) was highly significant and thus more likely to go for VCT than those who were not willing to encourage their partners to get tested for HIV. As indicated earlier, the risk of contracting HIV increases with marriage and therefore the married respondents were more likely to go for VCT.

From table 6 (above), ethnicity, occupation, encouragement of partner testing and marital status were all statistically significant in determining willingness to go for VCT. The other factors like religion, mode of payment for VCT, people in 45-60 years age group,

knowledge of unprotected sex and MTCT as a mode of HIV transmission, and sex of respondents influence willingness to go for VCT but are not statistically significant.

In spite of the high acceptability of VCT and willingness to go for it among the study population, there were others who were not willing to get tested for HIV if the service were available. It is important to highlight the reasons for the refusals and this might guide the implementation of the impending VCT programme in the district.

5.4.2. VCT refusals

VCT refusals in this study refer to those respondents who were unwilling to go for VCT if the service were available. About 17.2% (67) of the respondents were unwilling to go for VCT if the services were available and almost 56.1% of these were females. Three (0.77%) more females refused to go for VCT after the scenario was explained, bringing the total refusals to about 18% (70) of the respondents. There were more females unwilling to go for VCT may be because females do not take decisions when it comes to seeking health care in the household. For instance, when respondents were asked who might decide whether or not household members should go for VCT and NVP, 77.1% (300) said either the husband or the household head decides whether members should or should not go for VCT. Almost 83.3% (324) also mentioned the husband or the household head as those who decide whether or not HIV positive pregnant women in the household should be put on NVP. About 71.6% (50) and 17.9% (13) of the refusals were married and widowed respondents respectively. Almost 36.4% (25) of the refusals were people with secondary education. Interestingly, those with tertiary education had the same number of refusals (21.2%) compared to the remaining levels of education. The

refusal rate increases with age from 1.49% (15-24 years) to 46.27% (45-60 years). Almost 38.5% (27) of those unwilling to go for VCT thought they were not at risk and therefore there was no need to go for HIV testing, 18.5% (13) of them mentioned that they would go into depression if they were found to be HIV positive, and 15.4% (11) explained that once there was no cure for HIV then there was no need to test for it. The other reasons given included; financial and will die early or commit suicide if diagnosed HIV positive. Interestingly, increasing refusal rates with age was also documented in industrialised countries but not for the same reasons (Lindsay et. al., 1995; Sorin et. al., 1996).

Some pregnant women in the IDIs, stated that they would not go for a test if VCT services were made available. Most of them explained that they did not have the money to pay for the test. This may be because women are the most economically disadvantaged group in the KND, and also outright cash payment (user fees) is made upon receiving health care in all government health facilities and since they did not have the money they could not go for VCT. Others indicated that they would only go for the test with the consent of their husbands. As stated earlier, this is clearly due to the male dominance in health care decision-making in the household. Most of them expressed anxiety about the confidentiality of their test results since most of the nurses in the health facilities know them because they have been coming there for antenatal clinics. The KND is a fairly small district and most health service providers hail from the district or the region. In addition, pregnant women normally have several contacts with service providers before delivery, hence the concerns about the confidentiality of their test results. The following excerpts from the IDIs support this:

The test is very important but most of us have no work doing which can earn us something (money), and one pays for almost everything in the hospital these days. So since it involves money I won't lie that I can go and do it (Pregnant woman-Paga Health Centre).

You know my husband owns me and I cannot do such a thing without telling him. What if I do it and there are problems who is going to help me? So I will go and tell him first (Pregnant woman-K-N East Health Centre).

Some of us think that when we go for testing and we are found to have HIV/AIDS the nurses will tell many people that we have that disease. They would announce it as if they were beating drums (Pregnant woman-K-N East Health centre).

When pregnant women were asked what they thought would prevent other women from coming for the test, the following reasons were also given: financial, fear of being HIV positive, shame of being diagnosed HIV positive, and that the gods might not allow others to take the test specially if the gods are consulted prior to the test.

In the FGDs, some participants did not see the need to go for VCT. They mentioned the rude attitude of the nurses at the health facilities, the general stigma attached to HIV/AIDS in the community and the fact that HIV/AIDS has no cure in addition to some of the reasons discussed earlier as the reasons why they were unwilling to go for VCT. There were some people too who cannot go for the test because it is forbidden for other people to see their blood.

There is a traditional taboo that says that if you are a "tubga" (you have a totem of the dragonfly), people are not allowed to take your blood and there are many of those people around (Male participant-Kandiga).

Traditional religion is still the predominant religion (35.7% of respondents) in rural KND and these traditional beliefs are still held in high esteem in these areas.

There were also concerns among the FGDs participants about the confidentiality of their test results. Most suggested that VCT should be conducted by doctors and nurses from other areas who do not know the local people so that their test results would be kept secret. This concern is particularly important in areas like the KND where there is a very strong stigma against PLWHA or those affected by the virus. Confidentiality of test results has been a concern in most VCT studies in developing and developed countries, and these studies concluded that people were less concerned about confidentiality when dealing with providers not known by the local community (Kim, 1997; Irwin 1996). Thus confidentiality of test results will have to be ensured in the impending VCT programme in the district if patronage is to be encouraged.

The reasons for this unwillingness to go for VCT from the preceding sub-section include; low perceived susceptibility to HIV/AIDS, financial, the fear of being diagnosed HIV positive, the possibility of committing suicide if diagnosed positive, the rude attitude of the nurses, lack of urgency for VCT because HIV/AIDS has no cure, the power relation between men and women and the fear of lack of confidentiality surrounding test results. These reasons are all related in one way or the other to the fact that there is still so much stigma attached to the disease in the district. It is therefore

necessary to underline the common forms of stigma attached to this disease in the district. This will enable the implementers of the impending VCT programme to strategize to minimize the effects of this stigma.

5.4.3. Stigma attached to HIV/AIDS

Discussions from the IDIs and FGDs, highlighted that there is still much stigma attached to people infected or affected by HIV/AIDS in the district. The most common accusations were: name calling, finger pointing, blame, shame, isolation, judgment and rejection by communities. This is mainly due to the fact that people perceive HIV to be associated with immorality and unfaithfulness. Other forms of stigma were, gossiping, neglect and separation of PLWHA from others. Some participants thought these were the appropriate ways to treat HIV patients. Most female participants felt that PLWHA should be treated with love and should be given the needed palliative care during the terminal stages of the disease compared to the male respondents. This may be due to the fact that it is the females who provide the needed care in times of illness, and therefore are confirming this role. Women are also more affected by HIV/AIDS, hence their sympathetic and empathetic attitudes towards HIV/AIDS patients. Male respondents on the other hand, perceived HIV/AIDS to be a disease that those infected should not be sympathised with because they were careless with their lives. The following quotations from the FGDs support these assertions:

……before he gets back to the house, I would have given him a separate room, a cup, a pot for his drinking water and all his things packed to his new room. We cannot share anything with him again, what if he infects us? (Male respondent-Mayoro).

The health workers are helping the spread of this disease, I think if someone is tested positive they should let the chief know so that he can make a "roof top" announcement and inform the people so that they can avoid such a person, but you people keep quiet and those people are careless with the way they live (Male respondent-Natugnia).

……why won't we despise them? If he even eats and leaves some food in his bowl I will not give it to my dog. I think the solution is that all HIV patients should be quarantined in a special place, we will sell our animals and pay for their upkeep there, so that when they die we can go and take their bodies for burial, rather than allowing them to stay with us and infect others (Male respondent-Doba)

I will treat that person well but if the person uses a drinking cup, I will not use the same cup. If he/she eats and leaves some food, I will not eat it. Even if I cannot contract it through these things but I have to be careful because I do not know how it can get me too (Pregnant woman-K-N East Health Centre).

I will not associate with that person as I did in the past when he/she was not having the disease. Once I know the person has it, I have to get a separate drinking cup and eating bowl for him/her and ensure that he/she has a separate sleeping place because I don't know what he/she can do and I will get it too but I will treat them with respect (Pregnant woman-Paga Health Centre).

In this study population therefore, there is still much stigma against HIV/AIDS patients; neglect, rejection, blame, isolation, just to mention a few, are the ways that people think PLWHA should be treated. Women were generally sympathetic in the

way they would treat HIV/AIDS patients compared to the men. This sort of perception about HIV/AIDS patients has a lot of implications for the impending VCT programme in the district. As Gupta (2003) maintained, stigma and discrimination against those infected with or affected by HIV/AIDS facilitates the spread of the disease by undermining the success of AIDS testing and care efforts.

VCT results from antenatal clinics in most studies, such as Temmerman et. al. (1995), have caused social instabilities among spouses and have even led to the break up of families in some circumstances following HIV positive test results. It is therefore important to assess the perceptions of people in the KND in terms of encouraging their partners to go for HIV test before the take off of the VCT programme in the district.

5.4.4. Partner testing

Respondents were asked if they would encourage their partners to go for VCT. About 96% (257) of those who wanted to go for VCT and had partners were willing to encourage their partners to get tested too, and 56.6% (145) of these were males. About 54.7% (141) of them stated that it was good for them to know their status and 27.7% (71) so that they can protect themselves.

Eighty five percent (46) of those who were not willing to go for VCT and had partners were not also willing to encourage their partners to get tested, 51.7% (24) of these were females. Approximately 62.9% (29) of those who were not willing to encourage their partners to go for VCT mentioned that their partners too were not at risk and therefore there was no need going for VCT.

Only about 15% (7) of respondents who were not willing to go for VCT were willing to encourage their partners to get tested. This could be due to issues of infidelity.

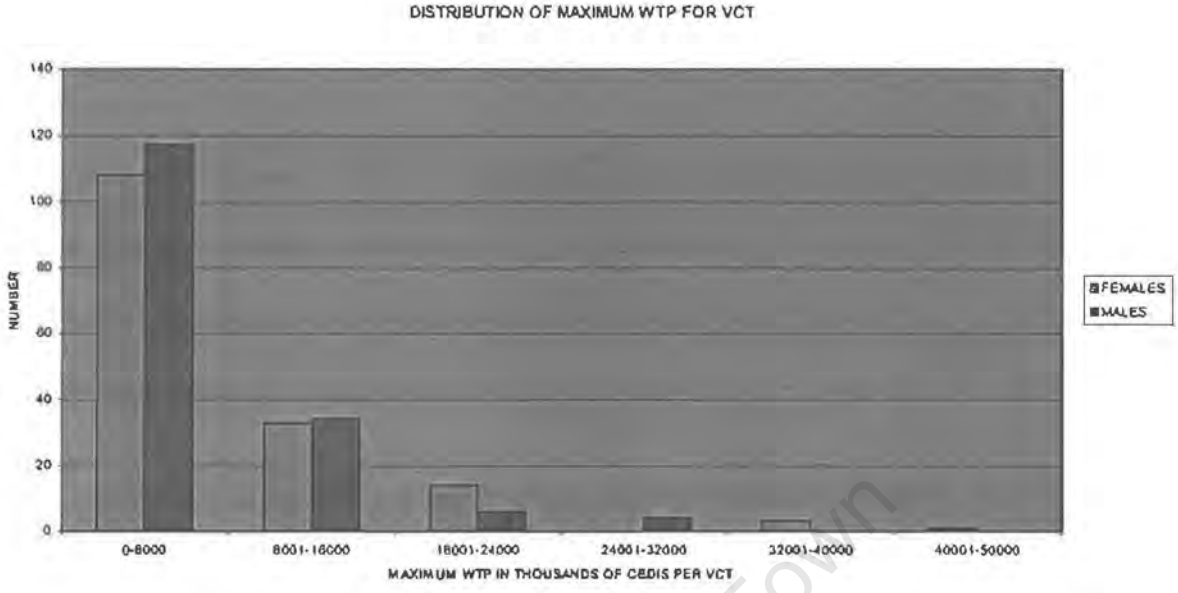
The decision for both partners to either go or not to go for VCT can be a good background in terms of social stability provided couples are concordantly seronegative and would stay faithful to each other. This is because single partner testing have had a lot of social consequences in some VCT programmes (Temmerman et. al., 1995).

For the sake of sustainability, VCT services cannot continue to be provided free of charge in the district after the trial period. It is therefore imperative to assess whether or not people will be willing to pay and how much they will be willing to pay for these services. The next subsection presents willingness to pay for VCT by sex of respondents.

5.4.5. Willingness to pay for VCT

Approximately 82.3% (320) of the respondents were willing to pay for the VCT services. The maximum willingness to pay varied slightly between the two sex groups. Figure 2 (below) shows the distribution of the maximum willingness to pay per VCT in Ghanaian Cedis for females and males.

Figure 2:

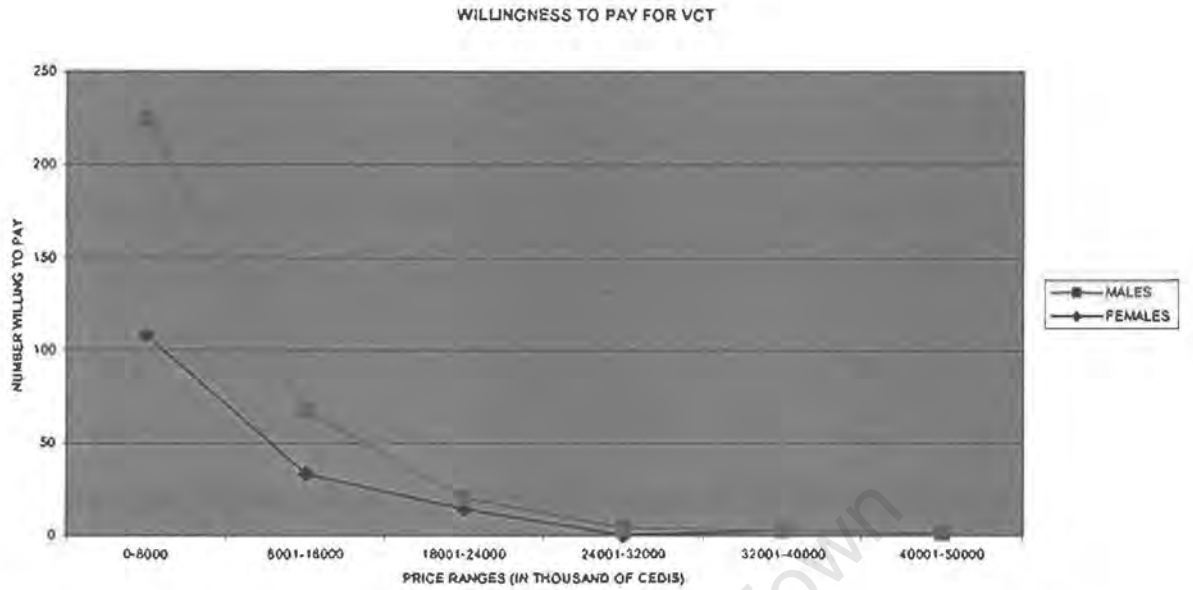


The WTP for VCT varies from paying nothing to 50,000.00 Cedis (US$6.25). The average WTP was 6,013.13 Cedis (US$0.75) and the median value was 5000 Cedis (US$0.63). As illustrated in Figure 1 (above), few respondents were willing to pay above the mean maximum WTP range, with 21.3% (68) of them not willing to pay anything. The mean maximum willingness to pay is in the range 0-8000 Cedis (US$0.00-US$1.00). Approximately 70.3% (225) of those willing to pay for VCT were willing to pay the mean range, of these 52% (117) were males. About 53.3% (120) of those willing to pay the mean range have never been to school. Of the 46.7% (105) with education, 37.1% (39) had primary education, 39.1% (41) had MSLC/JSS and 10.5% (11) had tertiary education.

About 60.9% (137) of those willing to pay the mean range were farmers. Almost 28.4% (64) and 9.3 % (21) were traders and civil servants respectively. Most civil servants, 61.8% (21), were willing to pay the mean range.

The price ranges and the number of respondents willing to pay the various ranges for VCT have been plotted in Figure 3 (below). In economic theory, consumers are assumed to be able to afford whatever they are willing to pay because they know how best to allocate their resources. This curve shows a downward sloping relationship between price and the number of respondents willing to pay for VCT like the normal demand curve, and at the mean price more males were willing to pay than females. This relationship shows that as the price of VCT increases, less and less people would be willing to pay. This WTP curve can help decision makers set prices for VCT because it provides information about the potential demand for VCT services. The price to be set will depend on the priorities of the decision makers. The full cost of VCT is about US$3.64 and policy makers are likely to set the price above the mean WTP if the interest is on financial sustainability, but if the interest is on coverage then the price is likely to be set at or below the mean WTP. Figure 3 (below) shows this relationship:

Figure 3:



The slopes of the curves show that the males are more responsive to price changes than the females; thus, the WTP (demand) curve for both males and females can be described as being price elastic. This implies that a unit change in price of VCT brings about a more than proportionate change in the number of people willing to pay. The number of males willing to pay for VCT compared to the females reduces significantly as the price of VCT increases. This implies price sensitivity on the part of males. Female respondents were significantly less willing to pay than the male respondents. This is important because it highlights the responses of people to the various price ranges and how this might affect VCT service utilization levels and patterns, and the financial sustainability of the VCT programme in a rural district like the KND where main incomes are generated from subsistence farming.

Table 7 (below) shows the regression results of factors that significantly influenced the maximum WTP for VCT. The F statistic shows significance ($p<0.0001$) indicating that the model has a good fit. The R-square signifies that 11% of the variability in the

maximum WTP for VCT is explained by the model. The regression coefficients show the predicted change in WTP for each unit change in each explanatory variable holding the other variables constant.

Table 7: Regression results for maximum WTP for VCT

Variable	Coefficients	SE	P-value
Intercept	1.182135	0.0607052	0.000*
Nankam	0.1703183	0.0418022	0.000*
Traditional	-0.1229449	0.0519402	0.018*
Civil servant	0.6306429	0.0744023	0.000*
Trading income	5.69e-09	1.47e-08	0.699
Salary	-2.93e-08	5.98e-09	0.000*
Occasional expenditure	-1.05e-07	4.75e-08	0.027*
Monthly expenditure	2.71e-08	6.79e-09	0.000*
Credit payment	-0.5900125	0.2347028	0.012*
Married	0.1110071	0.0455335	0.015*
45-60 age group	-0.226264	0.0439398	0.000*
Primary education	0.1756422	0.0453272	0.000*
Tertiary education	0.2311119	0.0631092	0.000*
Farm produce	1.34e-07	2.73e-08	0.000*
Male	-0.1882513	0.0442932	0.000*
Prob (F-statistic) <0.0001			
R2=0.11			

*Significant at 5%

Ethnicity has a highly significant positive influence on maximum willingness to pay for VCT. A Nankam's willingness to pay for VCT is higher than the WTP of other ethnic groups.

Religion of the household/respondent emerged as a significant explanatory variable of maximum WTP for VCT. Being a traditionalist is significant and negatively related to maximum WTP for VCT than believers of other religions. The traditionalists WTP is lower than other religious believers. This may be due to the fact that most traditionalists in the district have little or no education and are mostly subsistence farmers. Thus, they are among the lowest income earners in the district and their knowledge of the risk of HIV is low.

Another factor that influenced the difference in maximum WTP between households was the occupation of the respondents during the study. Occupation is positively and significantly related to maximum WTP for VCT. The civil servants WTP is higher than those in other occupations. This is because civil servants in the district are mostly educated and are among the highest income earners. Interestingly salary is significantly and negatively associated with maximum WTP for VCT, and a unit increase in salary is associated with a decrease in maximum WTP for VCT. People do not declare their actual salaries and this could be affecting the direction of change of maximum willingness to pay for VCT.

Trading income is positively associated with maximum WTP for VCT. A unit increase in trading income is associated with an increase in maximum WTP for VCT. This may

be because as trading income increases households are able to allocate more resources to health care and therefore to VCT.

Occasional and monthly expenditures have different effects on maximum WTP for VCT. A unit increase in occasional and monthly expenditures is associated with a decrease and an increase in maximum WTP respectively. This difference on maximum WTP may be because occasional expenditures are usually huge and might have a negative effect on WTP compared to monthly expenditures, which are smooth and perhaps constant over time.

Marital status is positively correlated with maximum WTP for VCT. Married respondents' maximum WTP is higher than non-married respondents. As indicated in the focus group discussions, married respondents, especially the females, perceive themselves at greater risk of contracting HIV because the men mostly have multiple sexual partners due to the polygamous nature of people of the district.

Age is negatively related to maximum willingness to pay for VCT. Respondents in the 45-60 years age group have a maximum WTP that is lower than respondents in other age groups. This may be because most of these people consider themselves as "old" and are not sexually very active again and therefore not at risk of getting HIV.

There are other factors that also played a role in determining the maximum amounts households were willing to pay for VCT as shown in the regression model in Table 7 (above). The mode of payment for VCT and sex of respondents were negatively related to maximum WTP for VCT with coefficients that are significantly different from zero.

There is a significant positive association between education and farm produce, and maximum WTP for VCT.

Since the impending VCT programme in the district has a component of prevention of mother-to-child transmission (PMTCT) of HIV using nevirapine (NVP), it is important to also assess if people would be willing to pay and how much they would be willing to pay for NVP for those pregnant mothers who would be diagnosed HIV positive.

5.5. Willingness to pay for NVP

Knowledge of MTCT as a mode of HIV/AIDS transmission was generally low. However, about 98.5% (383) of the respondents stated that there should be efforts made to prevent MTCT of HIV. About 86.7% (332) of these indicated that prevention of MTCT was necessary to protect the newborn, and 10.7% (41) mentioned that it would be good for the parents because the child would survive. Of the 1.5% (6) who stated that there should not be any effort to prevent MTCT, 66.7% (4) indicated that they do not believe that MTCT can be prevented.

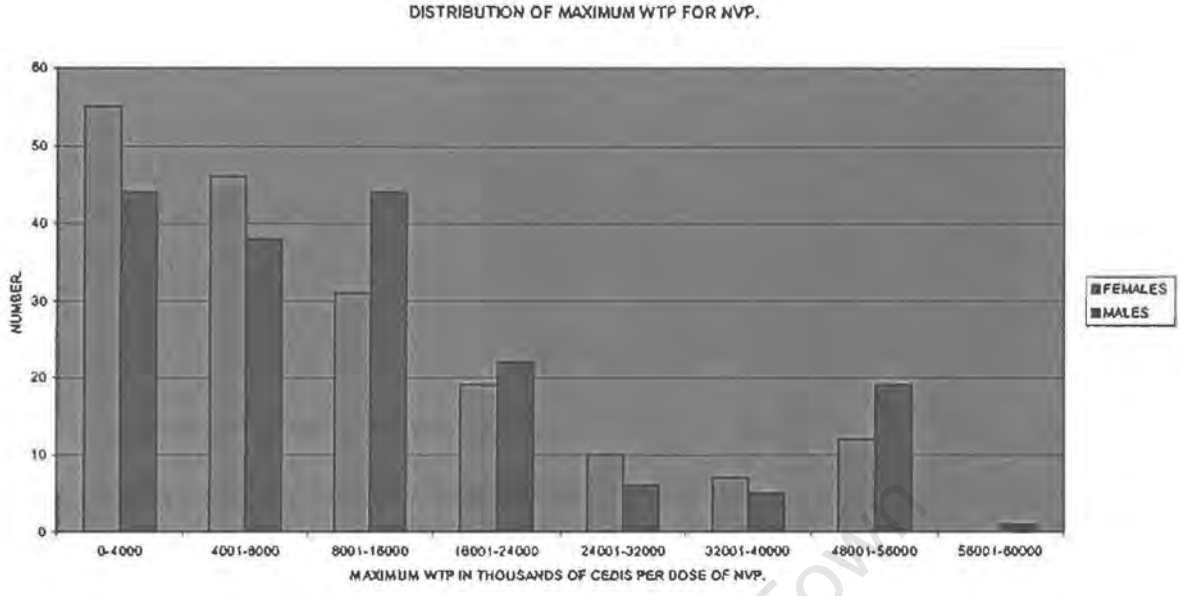
After the scenario for the bidding game was presented, 92.3% (359) of the respondents were willing to pay for NVP and of these 97% (348) stated that for the prevention of mother-to-child-transmission (PMTCT). Of the 7.7% (30) who were not willing to pay, 82.9% (25) stated financial reasons for their unwillingness. The scenario (in appendix III) included a clear description of a full dose of NVP, its safety and efficacy and the likely side effects, and the fact that no known cure exists for HIV/AIDS and therefore the need for prevention against contracting the disease.

Most pregnant women who were involved in the IDIs indicated that they were willing to pay for NVP if they were diagnosed HIV positive. The main reason was for the PMTCT because: when they die the protected child will "call their names", the child is innocent and should not get HIV/AIDS and that that will reduce the spread of HIV/AIDS. There were however a few women who indicated they will not go for NVP if they were diagnosed HIV positive. The main reason was that once they knew they were going to die there was no need for protecting the neonate because without breast milk and motherly care the child would suffer and might also die.

Generally, participants of the FGDs were willing to pay for NVP but the responses showed the same pattern as above where more females were willing to pay for NVP compared to the males.

The maximum WTP for NVP varies from paying nothing to paying 60,000.00 Cedis (US$7.50). One respondent wanted it free. The average WTP was 13,351.53 Cedis (US$1.67) and the median value was 6,000.00 Cedis (US$0.75). Figure 4 (below) shows the distribution of maximum WTP for NVP. Sixty-eight people and one person were willing to pay nothing for VCT and NVP respectively. The number of those willing to pay nothing for VCT and NVP are different because health services in the district are more clinical than preventative and people are not used to paying for preventative services but are used to paying for drugs. For instance, all child welfare, immunization, antenatal services are free preventative services in the district.

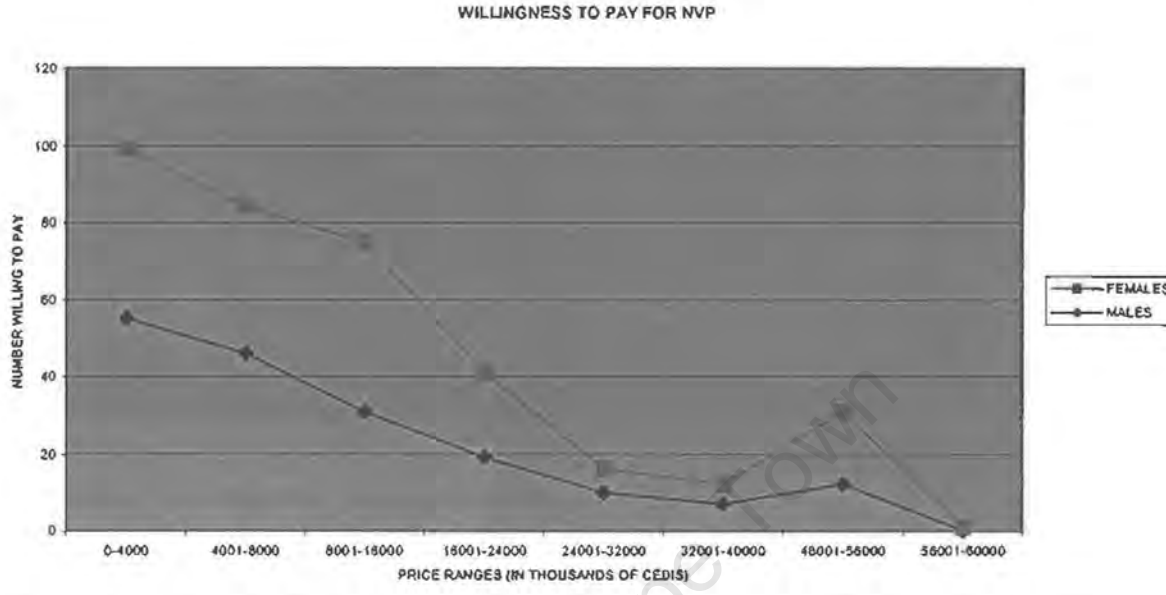
Figure 4.



As illustrated in Figure 4 (above), there are few people willing to pay more than the mean range, 8001-16000 Cedis. Almost 71.9% (258) of those willing to pay for NVP were willing to pay the mean range or below, and 51.2% (132) of these were females. The willingness to pay for NVP is higher at price ranges lower than 16,000.00 Cedis for both sex groups.

The price ranges and the number of respondents willing to pay the various ranges for NVP have been plotted in Figure 5 (below). This curve shows a downward sloping relationship between the price ranges and the number willing to pay for NVP like a normal demand curve. As the price of NVP goes up, the demand for the drug will decrease significantly at price ranges greater than 16,000.00 Cedis. Policy makers could set prices in the range of 4000-16000 Cedis to maintain an increase demand for NVP.

Figure 5:



The slopes of the curves are responsive to price changes and females are more sensitive to price changes than the males. The WTP (demand) curve for both males and females can be described as being generally price elastic. This implies that a unit change in the price of NVP brings about a more than proportionate change in the number of people willing to pay. The number of females willing to pay for NVP compared to the males reduces significantly as the price of NVP increases. Household economics (ownership of resources and when resources should be used) and some cultural issues about household health care decision-making might explain why the females demand for NVP compared to males reduces drastically as price increases.

From Figure 5 (above) about 9% (32) of those willing to pay for NVP were willing to pay between 48001-56000 as their maximum. Of these, 62.5% (20) were males, 93.8% (30) had tertiary education, 75% (24) were married and 53.13% (17) were in the 35-44 years age group. About 75% (24) of them are in at least the third expenditure quintile

group (see Table 14 below). These statistics suggest that these people are high-income earners and are in the reproductive age group and are therefore willing to pay more to prevent MTCT of HIV. This explains why at that point the demand curve is not smooth.

Table 8 (below) shows the regression results of factors that significantly influence the maximum WTP for NVP. The F statistic shows significance ($p<0.0001$) indicating that the model has a good fit. The R-square indicate that 12% of the variability in the maximum WTP for NVP is explained by the model. The regression coefficients indicate the predicated change in maximum WTP for NVP for each unit change in each explanatory variable while holding the other variables constant.

Table 8; Regression results for maximum WTP for NVP

Variable	Coefficients	SE	P-value
Intercept	2.675364	0.1671485	0.000*
Nankam	-0.7610601	0.1167785	0.000*
Traditionalist	0.5757737	0.1459408	0.000*
Civil servant	0.9688771	0.2008234	0.000*
Trading income	1.44e-07	4.08e-08	0.000*
Salary	-1.87e-08	1.65e-08	0.256
Occasional expenditure	-1.86e-07	1.23e-07	0.130
Monthly expenditure	4.14e-08	1.91e-08	0.030*
Credit payment	-0.6112064	0.6843768	0.372
Married	0.0838038	0.1228962	0.495
45-60 age group	-0.2462408	0.1178369	0.037*
Primary education	-0.2372422	0.1293391	0.067
Tertiary education	1.085373	0.1625248	0.000*
Farm produce	2.63e-07	7.83e-08	0.001*
Male	-0.2034546	0.1157343	0.079
Prob (F-statistic) <0.0001			
R2=0.12			

* Significant at 5%

Occupation influenced the maximum WTP for NVP among households. There is a significant and positive relationship between being a civil servant and maximum WTP

for NVP. Civil servants have a maximum WTP that is higher than respondents in other occupations. This is likely to be because civil servants, most of whom are educated, understand issues of MTCT better and have the resources to pay for NVP. Salary is statistically insignificant but negatively related to maximum willingness to pay for NVP. A unit increase in salary is associated with a decrease in maximum WTP for NVP. As indicated earlier, people do not disclose their full salaries and this might be what is influencing WTP negatively.

Trading income emerged as a significant explanatory variable of maximum WTP for NVP. A unit increase in trading income is associated with an increase in maximum WTP for NVP. This may be because as trading income increases households are able to allocate more resources to health care and hence to NVP.

From Tables 7 and 8, variables like occasional and monthly expenditures, mode of payment, marital status, respondents aged 45-60, tertiary education, farm produce and sex of respondents have the same effect (either positive or negative) but with different magnitudes on maximum WTP for both NVP and VCT.

However, ethnicity, religion and those with primary education have different influences on maximum WTP for VCT and NVP. Ethnicity (Nankam) and primary education have a negative influence on maximum WTP for NVP (but positive for VCT) though primary education is not statistically significant. This may be because of the low knowledge of HIV/AIDS and income among these groups. There are about only 10.1% and 6.1% of Nankams and people with primary education respectively in the top expenditure quintile group and this might have an influence on their maximum

WTP for NVP, which costs more than VCT. Religion (traditional) has a significant and positive influence on the maximum WTP for NVP. This may be due to the fact that traditionalists believe in the continuation of the lineage by children and once the survival of the child is involved, they were willing to pay for NVP to safe the life of the child compared to VCT, which involves only both parents.

Acceptability and willingness to pay for VCT and NVP are high but these alone would not ensure the successful implementation of the PMTCT programme in the district since fees are to be charged for the services. It is therefore appropriate to assess the ability of households to actually pay for these services.

5.6. Ability to pay for VCT and NVP.

The issue of affordability of health care by households remains very critical to health policy makers. A number of indicators are important when considering ability to pay for health care by households. Some of these indicators are discussed in this section and their potential impact on the use of VCT and NVP in the district.

5.6.1. Household expenditure and income, and ability to pay for VCT & NVP.

The incomes and expenditures of 370 respondents were used to assess ability to pay. There were nineteen missing values. The total annual incomes and expenditures were arrived at by multiplying the monthly incomes and the monthly basic expenditures figures by twelve months. The mean and median income and expenditure with their respective standard deviations (SD) and the percentages that would be spent on the mean VCT and NVP values are shown in Table 6 (below).

Annual incomes were below annual expenditures. This difference may be due to the fact that the data was collected on only the adult/household head interviewed. Contributions from spouses and other household members were not considered and this may explain the difference. Also, according to Russell (1994) this might happen because people may have other sources of income that are not always disclosed.

Table 9: Percentage of annual income and expenditure per VCT and NVP.

Variable	Mean	Median	SD	% (VCT)	% (NVP)	Total %
Income	2395907 (US$299.49)	1100000 (US$137.50)	3742520	0.15	0.34	0.49
Expenditure	3978611 (US$497.33)	2884000 (US$360.50)	3633881	0.25	0.56	0.81

Exchange rate 8000.00 cedis: US$1.00 (November, 2003)

From Table 12 (above), households spend 1.6% more than the stated income on basic items, and total expenditure is 16.1% in excess of stated incomes. Also, households spend 100% of their annual expenditure on occasional and basic items. As mentioned earlier, this excess expenditure over stated incomes might be due to the fact that households spent a lot on items for household members during those festive periods, which would not be the case under normal circumstances. Also, it is difficult to understand the intra-household resource allocation decisions. The household must be disaggregated to understand why non-essentials are given higher priority than necessities during festive periods.

When the annual expenditure is looked at by sex of respondents, it can be seen as before that the lower income group spend about 19.1% in excess of their annual expenditure on the selected occasional items compared to 85.4% by the higher income group as can be seen in Table 13 (below).

Table 13: Household basic and occasional expenditures as percentage of annual expenditure by sex of respondents.

Expenditure	Females	Males
Basic	(8.7)*	78
Occasional	10.4	7.4
Total	(19.1)**	85.4

* Females spend 8.7 more than their stated total income on basic items

**19.1% expenditure in excess of incomes stated by respondents.

This pattern of expenditure between males and females reinforces the fact that the males have higher incomes than the females in the KND. The females who are the low-income earners spend 19.1% in excess of their stated income on these items compared to 85.4% within stated incomes by the males who have comparatively higher incomes. Females are generally less educated and less likely to engage in lucrative income generating activities in the district compared to the men. This may also be due to the fact that females have no access to land in a purely patrilineal society such as the KND, and in addition to performing their motherly duties, females who are household heads have to play the roles of fathers thus leaving them little time to use for income generating activities.

Household basic and occasional expenditures on items in Table 14 (below) are as a percentage of annual expenditure by expenditure quintiles. All households in the first three quintiles spend more on basic items than their stated expenditure, with the lowest quintile spending as much as 0.5% in excess of their stated expenditure on basic items. As mentioned earlier, this might be due to the fact that information was not collected on the contribution of all members of the households.

Table 14: Household annual basic and occasional expenditure by expenditure quintile

Expenditure	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Basic items	(0.5)*	(4.0)*	(3.2)*	60.1	12.7
Occasional items	(6.7)*	15.6	9.8	5.7	1.2
Total	(7.2)**	19.6	13	65.8	13.9

*Households spend ( ) more than their stated income on basic items.

**Households spend 7.2% in excess of income stated by respondents.

About 65.4% (49) of those in the lower quintile were females. From Table 14 (above) all the quintile groups spend within the stated expenditure on occasional items except for the lower quintile group, which spent 6.7% in excess of their stated expenditure on occasional items compared to 1.2% by the upper quintile group. Interesting, the first three quintiles spend more than their stated expenditure on basic items. Except for the lower quintile group, all the quintile groups spend within their stated levels of total expenditure. The lower quintile spends 7.2% in excess of their stated total expenditure and the upper quintile spends only 13.9% of their stated total expenditure on basic and occasional items. It can be seen that the financial burden on the lower quintiles is enormous compared to the upper quintiles. The situation is exacerbated by the fact that the excess expenditures are on basic items mostly essential for the production of health.

As can be seen in Tables 13 and 14, the lower quintiles groups (the poor) allocate a greater proportion of their annual expenditures on basic and occasional items compared

to the upper quintile group (the rich). Of the poor group, the females spend about 19.1% in excess of their annual expenditure on these items compared to about 85.4% of stated annual expenditure by the males. It can therefore be concluded that the ability to pay any excess costs is lowest among the poor and the vulnerable group (females) who are already spending more than their stated expenditures on basic and occasional items.

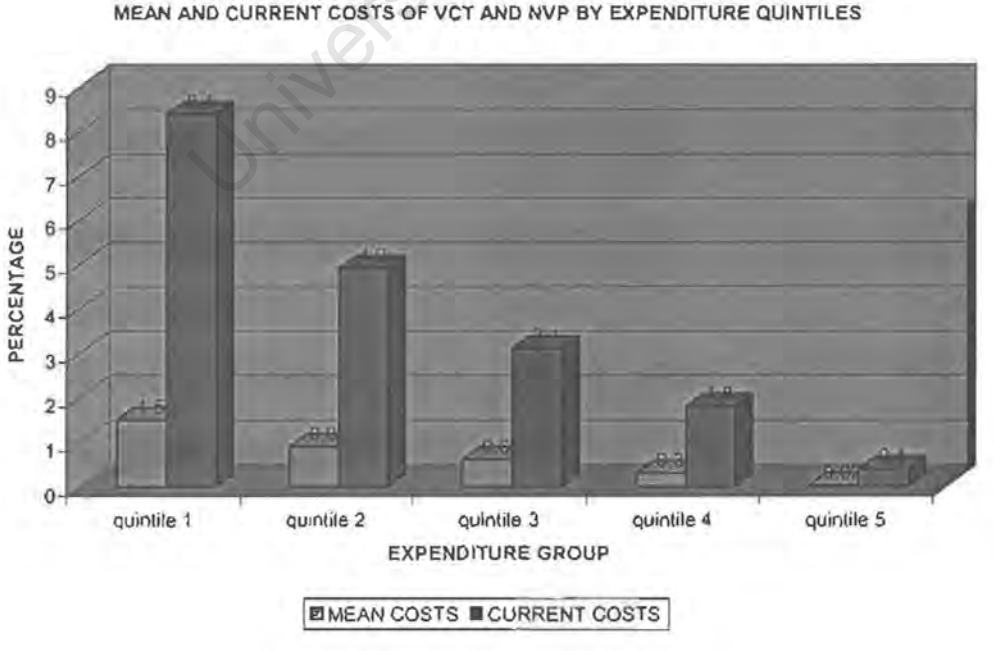
The mean WTP of the lower quintile group was 5872.87 Cedis (US$0.73) and 12211.27 Cedis (US$1.53) for VCT and NVP respectively which was below the average mean WTP of 6013.13 Cedis (VCT) and 13351.53 Cedis (NVP) respectively, compared to 6492.06 Cedis (US$0.81) and 13599.31 Cedis (US$1.70) by the upper quintile group. This implies that the lower and upper quintiles were willing to pay 18084.14 Cedis (US$ 2.26) and 20091.37 Cedis (US$2.51) respectively for an HIV pregnant woman to get tested and be put on NVP compared to the average mean of 19363.66 (US$2.42). Using the mean WTP, the lower quintile group would be paying 1.5% of their annual expenditure on a single pregnant woman to be tested for HIV and put on NVP compared to 0.07% by the top quintile group (see Figure 6 below).

According to the World Bank estimates, households in developing countries spend about 2-5% of their annual income on health care. Given that households in these countries pay for other health care services apart from VCT and NVP, which are just for one disease, it may be burdensome as the results show for low-income households to pay 0.5% of their annual expenditure per person to get tested and an extra 1.0% for an HIV positive pregnant woman to be put on NVP.

A recent study in Zambia (Kombe et al., 2003) found that the average cost of providing VCT per patient is US$3.64, and according to UNICEF it cost US$10.00 for a single dose and follow-up treatment with NVP. Thus, it costs US$13.64 per person for VCT and full treatment with NVP. This cost is higher than the combined mean maximum WTP of US$2.42 in this study for VCT and NVP.

Figure 6 (below) depicts the mean and current costs of VCT and NVP per woman to household as a percentage of total annual expenditure by expenditure quintiles, given that the combined mean cost of VCT and NVP in this study is 19,364.66 cedis (US$ 2.42) and the combined current cost is 109,120.00 cedis (US$ 13.64). The mean annual expenditure of the bottom poor (quintile 1) was estimated at 1,295,000.00 cedis (US$ 161.88) compared to 28,500,000.00 cedis (US$3,562.50) by the top rich (quintile 5).

Figure 6.



* Percentages of costs of VCT and NVP to households as a proportion of mean annual expenditure.

The cost of VCT and NVP is as much as 1.5% or 8.4% of total annual expenditure of the bottom 20% (quintile 1) of respondents, but only 0.07% or 0.4% of total annual expenditure of the top 20% (quintile 5) of respondents. Poor households, who are the majority, would need to spend an extra 6.9% of their annual expenditure to be able to afford VCT and NVP per person at the current cost. Even if poor household cut down completely their consumption of non-essential basic and occasional expenditures, which are not essential for the production of health, it is still doubtful if poor households would be able to afford for all members to go for VCT alone since the average household size in the KND is 5.6 persons (Akweongo, 1999). In the extreme, households may have to sacrifice other basic necessities such as food and education if they are to pay for VCT and NVP, which could also have short and long-term health consequences on the household.

Thus pricing VCT and NVP using the current cost is not feasible in a district where most incomes come from subsistence farming. Also, pricing VCT and NVP equally for poor and rich households and for males and females, particularly pregnant women, will be very regressive and might not represent ability to pay. This might even make VCT services and NVP inaccessible to the rural poor who are the target of the impending PMTCT intervention. From Figures 2 and 4 (above), VCT and NVP should not be priced beyond the 0-8000 and 8001-16000 price ranges respectively if good patronage is to be ensured.

5.6.2. Payment mechanisms for VCT and NVP

VCT and NVP are generally a one off health expenditure in a year but the costs involved might be a hindrance to many households' willingness and ability to pay for them. Different payment modes for VCT and NVP were included in this study. About 80.7% (257) and 15.8% (50) of the respondents indicated that they would pay cash and in kind (using farm produce to pay) respectively for VCT. Almost 57.7% (148) of those willing to pay cash for VCT were males. Also about 82.7% (297) and 13.7% (49) of the respondents were willing to pay cash and in kind respectively for NVP. Of those willing to pay cash, 83.1% (247) of them were males.

Most people were willing to pay cash for VCT and NVP not because of the availability of cash but because of the cash and carry system (user fees), people are used to paying cash for health care. More men were willing to pay cash for VCT (52.2%) and NVP (52.9%) compared to females.

Chapter six

DISCUSSION

6. Introduction

This chapter discusses the results of the study. This involves an assessment of the extent to which the research objectives have been realized.

The main purpose of this study was to establish households' willingness to pay for VCT and NVP for the PMTCT of HIV, by considering general knowledge on HIV/AIDS, determinants and barriers to VCT and the ability to pay for VCT services and NVP.

6.1. General knowledge on HIV/AIDS

There was generally a high knowledge of HIV/AIDS among respondents in both quantitative and qualitative interviews. All the respondents indicated they have heard about HIV/AIDS. Most also mentioned that it is not possible to tell if one has the virus during the initial stages of the infection because of the incubation period of the disease, and blood test is therefore the best way of knowing one's status. This may be due to the current media education on creating awareness about the virus in Ghana.

Most respondents spontaneously identified unprotected heterosexual contact as the main mode of HIV/AIDS transmission in the community. Baiden (2002) also found that 74.4% of the study population in the district mentioned sex as the main mode of HIV transmission. However, very few people in both the qualitative and quantitative (less than 2%) interviews spontaneously mentioned MTCT as a mode of transmission. This maybe because of the perception that people have about the disease in the district.

In the early days of the pandemic in the district, this disease was common with females who went to neighbouring Burkina Faso and Ivory Coast to work as prostitutes and returned with the disease. Thus people perceive HIV/AIDS to be associated with adults' promiscuity. Also, most adult HIV/AIDS patients normally have access to blood tests to know their HIV status, and most show some of the OIs during the terminal stages of the disease, but most neonates are not tested for HIV/AIDS and the rapid progression of the disease and death in the first two years of life is common in HIV-infected children (Dabis et. al., 2000). Thus people are likely not to relate early childhood deaths to HIV/AIDS.

Studies in the district (Baiden, 2002) and neighbouring Ivory Coast and Burkina Faso (Cartoux, Msellati et. al., 1998) also found low knowledge on MTCT of HIV among the study participants. MTCT rates are highest in breastfeeding populations (Kilewo et. al., 2001) like that of the KND and poor knowledge of MTCT can have adverse implications for the impending MTCT intervention programmes in the district. Education on MTCT should therefore be incorporated into antenatal, reproductive

health and community health education programmes to improve peoples understanding of MTCT of HIV.

There was general knowledge of the main opportunistic infections (OIs) of HIV/AIDS in both quantitative and qualitative interviews; prolonged diarrhoea, loss of weight and development of rashes. There were few respondents who identified prolonged dry coughs (TB) and fever as common OIs. As indicated in the previous chapter, this may be due to the fact that these two conditions are already prevalent (but under control) in the district and therefore people are less likely to consider them as main OIs of HIV/AIDS.

Respondents felt abstinence and faithfulness to partners were the best ways to prevent oneself from contracting the virus. Interestingly, condom use was seen as the third best option. This may be because condom use in the district is usually linked more to family planning than to HIV/AIDS prevention by many, as a result of the early exposure of the district to family planning programmes. This was also confirmed by the perception of married men on condom use in the FGDs. This has a lot of implications for HIV/AIDS prevention in a district where 34% of married women are in polygamous marriages and men are culturally allowed to have concubines, and considering the fact that abstinence and faithfulness have failed (in view of the high prevalence) as practical prevention strategies in most sub-Saharan African countries. It is seen as odd for a married man to use a condom on his wife. Steps need to be taken to allay the misconceptions of the use of condoms and to build trust among couples on the use of condoms.

6.2. Acceptability of VCT

The initial willingness to go for VCT has been used as a measure of its acceptability in most studies. In the KND about 82.3% of the respondents were willing to go for VCT, suggesting its high acceptability among the respondents. Studies in sub-Saharan Africa (Cartoux et. al., 1998; Kilewo et. al., 2001) and the KND (Baiden, 2002) showed VCT acceptability of between 70-95% among antenatal clinic attendants. This implies that the VCT acceptability among antenatal clinic attendants and households is generally high in the district. In the literature, it has been claimed that good counselling necessarily account for the number of people who get tested in VCT programmes (Dabis et. al., 1995; Kilewo et. al., 2001), but in the KND where VCT services are not available, and 82% of the population was willing to go for HIV testing puts to question this claim. However this should be interpreted cautiously since willingness to get tested does not necessarily mean getting tested.

Initial willingness is seen as an expression of intention, and the gap between peoples' intention and what they actually do demonstrates the danger of using measured initial willingness for priority settings. Follow up studies are therefore essential when the services become available.

The main motivating factors for going for VCT among households included: to protect themselves if they do not have the disease, to protect their families and to know how to

live their lives if they have the disease. Some females felt VCT would be a measure of faithfulness for their partners.

Some socio-demographic characteristics of the respondents appeared to be significantly associated with willingness to go for VCT. Ethnicity, occupation, marital status and willingness to encourage partner to get tested were all significantly associated with willingness to go for VCT. Other variables like religion, mode of payment for VCT, level of education, age group 45-60, knowledge of unprotected sex and MTCT as modes of HIV transmissions and sex of respondent influenced willingness to go for VCT but were not statistically significant.

6.3. VCT refusal

There are many barriers to VCT in rural communities and these need to be explored. Unwillingness to go for VCT if the service were available constitutes a VCT refusal in this study. Almost 18% of the respondents indicated their unwillingness to go for VCT if the services were available and 58% of these were females. As Cartoux , Msellati et al. (1998) explained, the negative attitude of women to VCT could be due to fear of loss of security and domestic violence. As Temmerman et. al. (1995) cautioned, before undertaking any MTCT programme, investigators should weigh the benefits for the women involved against the possible risk such as increase violence and loss of security. The introduction of family planning in the KND raised fears and anxieties among men and women. The fears of the women were mainly losing their husbands to concubines and men were concerned about possible infidelity of their wives. The introduction of the MTCT programme is also likely to raise some anxieties and

concerns. Thus the MTCT programme in the district should consider these concerns of women regarding testing for HIV and necessary steps should be taken to allay these fears through couple counselling. Unwillingness to go for VCT increased with age. This was also found in Abidjan and the refusal rate almost doubled at age 35 or more (Cartoux, Msellati et. al., 1998). Fylkesnes et. al. (1999) also found in Zambia that HIV test rates were lowest among the adolescents, suggesting a high unwillingness to go for VCT among this group.

Among the reasons for refusal was firstly, the perceived lack of risk among most respondents. The perceived low susceptibility to HIV among most respondents was most likely because they felt they were in good health and in stable relations. The second reason was financial. This is understandable in a setting were user fees are introduced in most health facilities and most peoples' incomes are generally low. Thirdly, the need to get consent from partner (male partners) was another reason, this could be a more socially acceptable reason to decline an offer of testing or may alternatively highlight a real dependence of women on their partners (Cartoux, Msellati et. al., 1998), and as Baiden (2002) indicated the influence of male partners can have an enormous impact on the willingness of their female counterparts to go for VCT, thus the need to involve males in VCT programmes. Fourthly, the fear of being tested positive was also mentioned for the unwillingness to go for VCT. This was also found by Cartoux, Msellati et. al. (1998) in Bobo Dioulasso and Abidjan and by Coulibaly et. al. (1998) in Abidjan among antenatal clinic attendants. This is understandable in setting where discrimination and stigma against PLWHA is common. This might even discourage those who perceive themselves at high risk from going for VCT. Those who

perceive themselves at high risk of already being infected would better be able to analyse the potential adverse consequences of testing and would be more likely to develop a negative attitude towards HIV testing. The fifth reason was the concern about going into depression and fear that this might accelerate the progression of the disease following an HIV positive test. This is believed to shorten life according to local beliefs. Other reasons for the refusals were the rude attitude of some of the health staff; the absence of cure for HIV/AIDS (Coulibaly et. al., 1998); and the tendency to commit suicide when tested positive (Baiden, 2002). All these reasons are comparable to those found with antenatal clinic attendants in previous studies.

The above reasons were given not just because of the fear of going for a test and being diagnosed positive but also because of the stigma attached to being diagnosed positive. There has been much stigma expressed against PLWHA among the study population. There were strong positions by participants (most of them males) that PLWHA should not be incorporated into the community. The forms of stigma expressed included: finger pointing, blame, isolation, judgment and neglect. This might be because Ghana's first HIV/AIDS control efforts projected this disease in the national and local media as a frightful disease that has no cure and can be prevented by living responsibly. This influenced people to perceive HIV positive patients as people who have "caused" the disease on themselves. This projection of the disease needs to be changed and people encouraged to participate in HIV/AIDS awareness and prevention programmes, and this might help reduce the stigma attached to it. It is worth noting that the Ghana AIDS Commission and the MOH have embarked on national campaigns using national media to destigmatize HIV/AIDS and to encourage people to treat PLWHA humanely and

with compassion. This is essential because, as Gupta (2003) maintained, stigma and discrimination against those infected with or affected by HIV/AIDS facilitates the spread of the disease by undermining the success of HIV/AIDS prevention efforts.

There were very strong concerns about the confidentiality of test results especially, when conducted by local medical staff. This concern was expressed in another study in the district (Baiden, 2002) and in other studies in sub-Saharan Africa (Kim et. al., 1997; Coulibaly et. al., 1998; Fylkesnes et. al., 1999; Pool el al., 2001). Concerns about privacy seem to represent an important factor encouraging unwillingness to go for VCT especially when conducted by known medical staff in the district. These concerns are expressed not just because of people knowing the test results per se, but because of the stigma and discrimination that those tested positive would suffer in the community. Thus, protection of confidentiality is likely to promote willingness to go for VCT in a setting like the KND where there is much stigma against HIV/AIDS patients. And as Kim et al. (1997) note people have less reason to be worried about confidentiality when dealing with providers not known by the local community. As intended in the district, the use of lay community counsellors can increase willingness to go for VCT but care must be taken to ensure that medical staffs known in the community are not involved in conducting the HIV tests or do not have access to the test results.

6.4. Are households willing and able to pay for VCT and NVP

Willingness and ability to pay have often been taken as synonymous in some studies, but the findings and results of this study show that the two are different. The willingness of households to pay for VCT and NVP were about 82% and 92%

respectively but the ability to pay was determined by using household annual income and expenditure. The mean willingness to pay for VCT and NVP were 6013.13 Cedis (US$ 0.75) and 13351.53 Cedis (US$ 1.67) respectively which are below the current costs of VCT (US$ 3.64) and NVP (US$ 10.00) in health facilities and pharmacies. The mean value for VCT is comparable to what Baiden (2002) found in the district (US$ 0.25) and what Sweat et. al. (2000) found in Kenya (US$ 0.50) and Tanzania (US$ 1.00), but none of these studies attempted to assess ability of respondents to pay the amounts that they were willing to pay.

There were some variables that influenced the maximum willingness to pay (WTP) for VCT and NVP; occupation, trading income, monthly expenditures, marital status, tertiary education and farm produce influenced maximum willingness to pay for VCT and NVP positively with different magnitudes. While salary, occasional expenditures, mode of payment, age 45-60 years, and sex of respondent influenced maximum willingness to pay for VCT and NVP negatively with different magnitudes. However, ethnicity and primary education have negative influence on maximum willingness to pay for NVP but positive association with maximum WTP for VCT. On the other hand, religion has a positive influence on maximum WTP for NVP but a negative influence on maximum WTP for VCT.

Women are most likely to be the first to go for VCT by virtue of the fact that they go for antenatal and child welfare clinics, especially if VCT is provided in the health centres. Subsequently, other members of the household would go for VCT. Undoubtedly, the initial financial outlay for members of the household to go for VCT

can be a major restriction. The financial burden would be worsened if pregnant women are tested positive or when an HIV positive woman in the household becomes pregnant and has to be put on NVP. Most households might not access these services at all if they consider the financial burden to be enormous and perceive themselves at low risk of HIV infection.

The vulnerable group (the females) and the poorer households already spend a higher percentage of their annual expenditure on basic and occasion consumption. At the mean prices, the poorer household may need to allocate 1.5% of their annual expenditure to paying for a full NVP treatment per person. If the prices of VCT and NVP are set at the current prices, the poorer household will need 8.4% of their annual expenditure per full NVP treatment. If this group stops spending on items like tobacco/kola and drink, which are not essential for the production of health, they still have to find extra resources to be able to pay for VCT and NVP for household members. This points to the fact that VCT and NVP may not be affordable to large numbers of the vulnerable group and the poorer population who form majority of the at risk group in sub-Saharan Africa.

Also from figures 3 and 5 (above), the demand for VCT and NVP can be described generally as being price elastic. This implies that any attempt to increase prices of VCT and NVP above the mean prices will lead to a more than proportionate fall in demand. Furthermore, the demand for VCT and NVP will also be influenced not merely by the prices of VCT and NVP but rather by the relation between total expenditure on VCT and NVP and the budget of the potential consumers of these services. Since VCT and

NVP are just one aspect of health and would be taking about 1.5% (at the mean prices) of poor households annual expenditures per person, any increase in the prices will impose a greater financial burden on the poor households and most likely lead to a fall in the demand for VCT and NVP by this group. In addition, since VCT and NVP are generally preventative they can be described as "durables" as their consumption is postponable. Once households can postpone such expenditures, it is expected that an increase in the prices above the mean prices will serve as an incentive for households to keep on postponing the consumption of these services, hence low demand will be experienced. The study results suggest that using the mean prices can enhance demand or reducing prices below the mean prices will most likely result in a more than proportionate increase in demand for VCT and NVP.

In conclusion, with about a fifth of those willing to go for VCT willing to pay nothing, and about 70% and 72% of those willing to pay for VCT and NVP respectively willing to pay the mean values as the maximum, it is doubtful if any significant cost recovery in the impending MTCT programme will be sustainable in the district. Any attempt at full cost recovery is likely to create a significant disincentive for people to go for VCT and for HIV positive mothers to subsequently be put on NVP. The results of this study suggest that patronage of VCT services and NVP can only be encouraged in the district if the mean values are implemented as the respective prices for VCT and NVP.

Chapter seven

CONCLUSIONS AND RECOMMENDATIONS

One of the least examined areas in the HIV/AIDS prevention programmes is the willingness of households to pay for these interventions. In particular previous studies have not made an assessment of households knowledge on HIV/AIDS and their acceptability or otherwise of HIV/AIDS intervention programmes in rural settings, like the KND, where they are implemented. This study therefore attempted to estimate households acceptability, willingness and ability to pay for VCT and NVP in the KND.

There was considerable good knowledge among the study population of the main mode (unprotected heterosexual contact) of HIV/AIDS transmission among adults in the country and some of the opportunistic infections of the disease. There was however, poor knowledge of the main mode of HIV/AIDS transmission in children (MTCT), some of the major OIs (TB and fever) of the disease and the feasible method of protection (condom use) against HIV/AIDS. It is therefore recommended that health education needs to be designed to inform and educate people on the main mode of HIV/AIDS transmission in children and to highlight the main ways through which this transmission occurs. Furthermore, the impact of HIV/AIDS on the human immune system should be underscored and the major OIs commonly associated with the disease stressed. Also, condom use could also be promoted as the most feasible method of protection against HIV/AIDS in a community, such as in the KND, where sexual

multipartnerships are culturally allowed. Sensitizing communities to see condoms as acceptable among married couples would help to make condom use as a feasible prevention measure in the district.

There was high acceptability of VCT among the study population with an increasing acceptance with age. Most people considered going for an HIV test as an essential means of knowing ones HIV status so as to take precautionary measures if test is seronegative or be careful not to infect others if test is seropositive. This is very encouraging and it is recommended that there should be a district wide education to inform the larger populace about VCT and NVP before the take off of the impending programme.

Unwillingness to have an HIV test was expressed by some people in the study population. The main reasons for this unwillingness centred on issues of inability to pay for the cost of VCT, the fact that the disease has no cure, the stigma attached to the disease, the need for the consent of partners and the confidentiality of their test results. The following policies are recommended to encourage people to go for HIV testing:

- There should be health education on the fact that HIV/AIDS has no proven cure but there are known ways of protection against contracting the disease or prolonging life if already infected. These include: condom use, single sexual partnership and patronage of VCT services, and the use of ARVs for those already infected and for the PMTCT. VCT in particular is known to be effective in changing the sexual behaviours of those tested positive or negative.

It is also hoped that after the trial period more people would have cultivated the habit of going for VCT.

- Furthermore, there need to be public campaigns to destigmatize HIV/AIDS in the communities and to encourage people to live with and treat PLWHA with compassion and love. Even though the Ghana AIDS Commission has taken steps in this direction, it is still essential for local sensitization programmes to be put in place to cater for the special situation of high stigmatisation in the district. Respected opinion leaders in the communities can be used to champion these campaigns. If possible, PLWHA can play a role in this campaign. In addition, accessible and affordable VCT services can also help destigmatize HIV if many people have access to testing and becoming aware of their status. The combined effect of community sensitisation and accessibility to VCT services is expected to change perceptions about the disease.
- Also, sexual partner involvement in VCT programmes is very essential. Since this intervention in the district is most likely going to be clinic-based, it runs the risk of becoming "something for the women". There is therefore the need to involve partners in VCT, with the objective of increasing awareness of the benefits of HIV testing, reducing HIV transmission, and helping couples to cope with HIV seropositive status. Thus, efforts should be made to involve sexual partners as early as possible in the counselling process. Thus, male-friendly programmes that attract partners to go for VCT in the clinics should be promoted. Partner involvement in VCT can also serve as an encouragement for

women to take the test without any fear of violence from their partners. The support of men should be solicited at both individual and community levels through male-targeted public health education campaigns.

- Finally, before the implementation of the VCT programme, much has to be done to ensure confidentiality of test results. Pre-test counselling can be undertaken by locally trained counsellors, and post-test and follow-up counselling done by people not known in the community. If possible, medical staff who are not known in the community should perform HIV tests. If local medical staffs are to conduct the tests, they should be educated on the need to be professional in handling test results and how lack of confidentiality can defeat the purpose of the whole intervention programme. Possibly they should be blinded to the test results.

Almost all the study participants had no knowledge of any drug for the PMTCT of HIV/AIDS, but most of them indicated that there should be efforts to prevent MTCT. When the safety and efficacy, and side effects of NVP was explained in the bidding game, about 92% of the study population was willing to pay for NVP for preventing MTCT. It is therefore recommended that there should be education on the possibility of preventing MTCT using NVP and other ARVs before the implementation of the MTCT intervention in the district. The availability of these drugs at the hospital can contribute significantly to changing perceptions about the disease and enhance the disease-control efforts. Furthermore, the low antenatal attendance and delivery in health facilities in the district should be discouraged since VCT and NVP are to be administered in the health facilities. According to the Panel report (2002), 30% of

women deliver in health facilities in the district even though 80% of then attend antenatal clinics. It is hoped that since antenatal services are now free of charge in government health facilities, delivery in the health facilities will be improved. Delivery in facilities could even be further encouraged by subsidizing delivery services or even making them free of charge since the main reason for the current low deliveries in the health facilities is financial. These would ensure that all mothers tested positive have access to NVP.

Residents in the district have more access to radio information than any other means of communication in Ghana. It is therefore recommended that the general health education on HIV/AIDS, VCT and NVP can be promoted using the local radio for the population as a whole. Community *dubars* (a gathering of chiefs, opinion leaders and community members) can also be organised to deliver health education in specific communities. As indicated earlier, education on HIV/AIDS, VCT and NVP to the youth can also be incorporated into the school health education programme currently being undertaken by the DHMT in the district. The combined effect of these series of education may increase the patronage and hence the potential demand for VCT and NVP.

The willingness to pay for VCT and NVP does not necessarily mean ability to pay unless these services are made affordable. General health service utilization is currently low in the KND and most HIV-infected people are not on ARV treatment (only available in four hospitals in the country) because of the unavailability of ARVs in the district and inability to pay for ARVs from other health facilities in the country.

The current price of 29,120.00 Cedis (US$ 3.64) for VCT and 80,000.00 Cedis (US$ 10.00) for NVP are far above the mean willingness to pay of 6,013.13 Cedis (US$ 0.75) and 13,351.53 Cedis (US$ 1.67) for VCT and NVP respectively in this study. At these current prices the poor household will be paying 2.2% and 6.2% of their annual expenditure for VCT and NVP treatment respectively. To spend a total of 8.4% of household annual expenditure for a single HIV test and NVP treatment cannot be considered ability to pay since other essentials, like food and education which are vital for the production of health, may have to be sacrificed and this may subsequently have greater adverse health impact on the household. Thus willingness and ability to pay in this study are not the same as has often been advocated in other studies.

Furthermore, the willingness of households in this study to pay cash for VCT and NVP should not be taken as the ability to pay but as a confirmation that cash payments (user fees) are made for health care in health facilities in the country. It is recommended that exploring other payment schemes in the communities or within health facilities where VCT and NVP would be offered could improve the ability of households to access these services. Community prepayment schemes and a revolving fund for NVP, coordinated by the Community Health Officers (CHOs) already resident in most communities in the district may be feasible.

It is hoped that when the National Health Insurance Scheme in Ghana is finally implemented, access to VCT and NVP by the poor and vulnerable groups will be enhanced.

Government could also subsidize VCT service for the vulnerable group and the supply of NVP made free to all HIV positive pregnant mothers. Other studies have also recommended that MTCT intervention programmes can only be implemented sustainably in sub-Saharan Africa with substantial subsidy.

Thus, for the purpose of good coverage of the VCT and NVP programme in the district, it is recommended that VCT and NVP should not be priced at more than 8000 Cedis (US$ 1.00) and 16,000 Cedis (US$ 2.00) respectively from the study results. This would encourage as many people as possible to go for VCT and for HIV positive pregnant women to have access to NVP.

7.1. Suggestions for further research

While this study has provided valuable information on the acceptability, willingness and ability to pay for VCT and NVP, further research is required to facilitate the implementation of the PMTCT programme in the district. For further research in this area, the following are recommended:

Firstly, perform a full economic evaluation to ascertain the full cost of implementing PMTCT programme in the KND. Such a study could explore different options of implementation, whether to create stand-alone facilities for implementation or to have the programme incorporated into the main health delivery system. It could also investigate whether staff should be brought from outside to run the programme or should the routine medical staff be trained to run the programme. The cost implications and effects of these options on service utilization can be assessed. The results of such a

study could also influence the implementation design and pricing of VCT and NVP in the district.

Secondly, after implementation of the PMTCT programme, there should be a follow-up research on those willing to go for VCT and subsequently NVP to assess if they actually expressed the initial demand at the recommended prices.

Finally, the study revealed that the mode of payment influenced the willingness to pay for VCT and NVP. Thus a research on what payment mechanisms will be appropriate and affordable to households, their effectiveness and feasibility and the cost involved in implementing them is needed.

7.2. Conclusion

VCT and the PMTCT of HIV is becoming part of the international and national public health response to the HIV/AIDS pandemic in developing countries. Their implementation, therefore, could ultimately result in slowing down of the HIV paediatric pandemic, especially in the KND, which is predisposed to a rapid spread of the disease because of its geographic location. A comprehensive approach to VCT and to preventing MTCT offers an opportunity to boost sexual behaviour change, improve basic health and MCH services and reduce maternal and child morbidity and mortality in the district. Health education is therefore necessary to create awareness about the disease and the intervention programmes available. It is hoped that after the trial period more awareness would be created about the disease, VCT and NVP. The prices of VCT and NVP should also be set at levels that would ensure good coverage and patronage. It

Barner JC, Masson HL, Murray MD (1999). Assessment of asthma patients' willingness to pay for and give time to an asthma self-management program. *Clinical Therapy*; 21:878-94.

BBC news htt://news.bbc.co.za (28/11/2000) retrieved: on 05/03/2004.

Bertolli J, St. Louise ME, Simonds RJ, et al. (1996). Estimating the timing of mother-to-child transmission of human immunodeficiency virus type 1 (HIV-1) transmission by use of Markov model. *Am J Infect Dis* 1996. 174(4) 722-6.

Bhatia MR, Fox-Rushby JA (2002). Willingness to pay for treated mosquito nets in Surat, India: the design and descriptive analysis of household survey. *Health Policy and Planning*; 17(4):402-411.

Binka FN (1997). The cost effectiveness of permethrin impregnated bednets in preventing child mortality in the Kassena-Nankana district of northern Ghana. *Health Policy* 41, 229-239.

Bloom D (1998). *The burden of AIDS in Africa*. Harvard Institute for International development. Boston.

Bonu S, Rani M, Bishai D (2003). Using willingness to pay to investigate regressiveness of user fees in health facilities in Tanzania. *Health policy and Planning*; 18(4): 370-382.

Bulletin of Health Information (2001-2001). Ministry of Health, Ghana.

Cartoux M, Meda N, Van de Perre P, Newell ML, De Vincenzi I, Dabis F (1998). Acceptability of voluntary HIV testing by pregnant women in developing countries: an international survey. Ghent International Working Group on Mother-to-Child Transmission of HIV. *AIDS* 1998, 12:2489-2493.

Cartoux M, Msellati P, Meda N, Welffens-Ekra C, Mandelbrot L, Leroy V, Van de Perre P, Dabris F (1998). Attitude of pregnant women towards HIV testing in Abidjan, Cte D'Ivoire and Bobo Dioulasso, Burkina Faso. DITRAME Study Group (ANRS 049 Clinical Trial). *AIDS* 1998, 12:2337-2344.

Clark J, Burgess J, Harrison CM (2000). "I struggled with this money business": respondents perspectives on contingent valuation. *Ecological Economic* 33, 45-62.

Coovadia HM (2000). Access to voluntary counselling and testing for HIV in developing countries. *Ann NY Acad Sci* 2000 Nov;918:57-63.

Coulibaly D, Msellati P, Dedy S, Welffens-Ekra C, Dabis F (1998). Attutide and behaviour of pregnant women towards HIV screening in Abidjan, Cte D'Ivoire. *Sante* 1998; 8:234-8.

Dabis F, Msellati P, Newwell ML et. al. (1995). Methodology of intervention trials to reduce mother-to-child transmission of HIV with special reference to developing countries. *AIDS*; 9(suppl. A): S67-74.

Dabis F, Newell ML, Fransen L, Saba J, Lepage J, Leroy V, Cartoux M, Meda N, Whynes DK, Peckham C, Nduti R, Msellati P, De Vincenzi I, Van de Perre P (2000). Prevention of mother-to-child transmission of HIV in developing countries: recommendations for practice. The Ghent International Group on mother-to-child transmission of HIV. *Health Policy and Planning*; 15(1): 34-42.

Diener A, O'Brien B, Gafni A (1998). Health care contingent valuation studies: a review and classification of the literature. *Health Economic* 7:313-326 (1998).

Disease Control Unit (DCU), Ministry of Health. HIV/STD sentinel surveillance report, 2002.

Disease Control Unit (DCU), Ministry of Health. HIV/STD sentinel surveillance report, 2003.

Donaldson C, Shackley P. (1997). Does "process utility" exist? A case study of willingness to pay for laparoscopic cholecystectomy. *Social Science and Medicine* 44:699-707.

Dong H, Kouyate B, Snow R, Mugisha F, Sauerborn R (2003). Gender's effect on willingness-to-pay for community-based insurance in Burkina Faso. *Health Policy* 64(2003) 153-162.

Evans D, Hurley S (1995). *The application of economic evaluation techniques in the health sector: the state of the art,* Journal of International Development 7(3): 503-524.

Family Health Internatinal (2001). *Reducing mother to child transmission of HIV.* A strategic framework. Retrieved: July 27, 2003, from <http://www.fhi.org>

Female Genital Mutilation Project Report (2002). Key findings. Community Health and Family Planning Project documentation note 48. Navrongo Health Research Centre.

Forsythe S, Arthur G, Ngatia G, Mutemi R, Odhiabo J, Gilks C (2002). Assessing the cost and willingness to pay for voluntary counselling and testing in Kenya. *Health Policy and Planning* 2002; 17(2):187-195.

Fylkesnes K, Haworth A, Rosensvard C, Kwapa PM (1999) HIV counselling and testing: overemphasizing high acceptance rates a threat to confidentiality and the right not to know. *AIDS* 1999, 13:2469-2474.

Guay LA, Musoke P, Fleming T, Bagenda D, Allen M, Nakabiito C, Sherman J, Bakaki P, Ducer C, Deceyve M, Emel L, Mirochnick M, Fowler MG, Mofenson L, Miotti P, Dransfield K, Bray D, Mmiro F, Jackson JB (1999). Intrapartum and neonatal single dose nevirapine compared with zidovudine for prevention of mother to child transmission of HIV-1 in Kampala, Uganda: HIVNET 012 randomised trial. *Lancet* 1999;354:795-802.

Gupta GR (2003). Lessons from the past, challenges for the future: An overview of HIV/AIDS in Africa. Plenary presentation, HIV/AIDS in Africa: what works. Organised by Centre for Global Development and John Snow, Inc.

Irwin KL, Valdiserri RO, Holmberg SD (1996). Acceptability of HIV antibody testing in the United Sates: a decade of lessons learned. *AIDS*; 10: 1707-1717.

Jackson JB, Musoke P, Fleming T, Guay LA, Bagenda D et al (2003). Intrapartum and neonatal single-dose nevirapine compared with zidovudine for prevention of mother-to-child transmission of HIV-1 in Kampala, Uganda: 18-month follow-up of the HIVNET 012 randomised trial. *Lancet* 2003; 362: 859-68.

Johannesson M., Jonsson B. and Borgquist L (1990). *Willingness to pay for hypertensive therapy-results of Swedish pilot study*. Paper presented at the 11th Nordic Health Economists' study group meeting in Stockholm.

Johannesson M. and Jonsson B (1991). Economic evaluation in health care: is there a role for cost-benefit analysis? *Health Policy* 17:1-23.

Johannesson M (1996). *Theory and methods of economic evaluation of health*. Kluwer Academic Publishers, Dordrecht / Boston / London. Pg 76.

Kaewsonthi S, Harding AG. (1992). *Starting, managing and reporting research*. Chulalongkorn University Press, Thailand.

Kassena-Nankana District Health Administration (U/E/R)-MOH, Performance Report-2003.

Kilewo C, Massawe A, Lyamuya E, et al. (2001). HIV counselling and testing of pregnant women in sub-saharan Africa- Experiences from a study on prevention of mother-to-child HIV-1 transmissions in Dar es Salaam, Tanzania: *JAIDS* J Acquir Immune Defic Syndr 2001; 28:458-62.

Kim YM, Marangwanda C, Kols A. (1997). Quality of counselling of young clients in Zimbabwe. *East Afr Med J*; 74:514-518.

Kinghorn A (1998). Projections of the costs of antiretroviral interventions to reduce mother-to-child transmission of HIV in South African public sector. Johannesburg: HIV management services, cited in Marseille E, Kahn JG, Mmiro F, Guay L, Musoke P, Fowler MG, Jackson JB (ed) 1999. Cost-effectiveness of single-dose of nevirapine regimen for mothers and babies to decrease vertical HIV-1 transmission in sub-saharan Africa. *The Lancet* 1999; 354: 803-09.

Klose T. (1999). The contingent valuation method in health care. *Health Policy* 47: 97-123.

Kombe G, Smith O (2003). *The cost of antiretrovirals treatment in Zambia*. MOH publication.

Ladner J, Leroy V, Msellati P, et al (1996). A cohort study of factor associated with failure to return for post-counselling in pregnant women: Kigali, Rwanda. *AIDS* 1996; 10: 69-75.

Laver SM (2001). Voluntary testing and counselling for HIV. "Are adults in rural communities ready to test ?" A descriptive survey. *Cent Afr J Med* 2001;47(4):92-7.

Lindsay MK, Adefris A, Peterson HB, Williams H, Johnson J, Klein L (1991). Determinants of acceptance of routine voluntary human immunodeficiency virus testing in an inner-city prenatal population. *Obstet Gynecol;* 9:78:678-680.

Marseille E, Kahn JG, Saba J (1998). Cost-effectiveness of antiviral drug therapy to reduce mother-to-child HIV transmission in sub-saharan Africa. *AIDS* 1998; 12:939-48.

Marseille E, Kahn JG, Mmiro F, Guay L, Musoke P, Fowler MG, Jackson JB (1999). Cost-effectiveness of single-dose of nevirapine regimen for mothers and babies to decrease vertical HIV-1 transmission in sub-saharan Africa. *The Lancet* 1999; 354: 803-09.

Ministry of Health, (2001). HIV/AIDS in Ghana, background, projections, impacts, interventions and policy. MOH. NACP. Accra.

Moodley D, Moodly J, Coodavia H, McIntyre J, Hofmyer J,Nikodem C, Hall D,Gigliotti M, Robinson P, Boshoff L, Sullivan JL (2000). A multicenter randomised controlled trial of nevirapine versus a combination of zidovudine and lamivudine to reduce intrapartum and early postpartum mother-to-child transmission of Human Immunodeficiency Virus Type 1. *The Journal of Infectious Diseases* 2003;187:725-735.

Morrison G. and Gyldmark M (1992). Appraising the use of contingent valuation, *Health Economics* 1:233-243.

Nabila JS, Antwi P, Yeboah K, Kwankye SO (2001). " *A study of the economic impact of HIV/AIDS on selected business organizations in Ghana*". Policy project, Accra, Ghana.

Navrongo Demographic Surveillance System. Community Health and Family Planning Project Documentation Note Number 47 (2002). Navrongo Demographic Surveillance System. Navrongo.

Narbro K, Sjostrom L (2000). Willingness to pay for obesity treatment. *International Journal of Technology Assessment in Health Care*, 16:1 (2000), 50-59.

Onwujekwe O, Nwagbo D. (2002). Investigating a starting-point bias: a survey of willingness to pay for insecticides-treated nets. *Social Science and Medicine* 55:2121-30.

Panel Survey Report (2002). Key findings. Community Health and Family Planning Project documentation note 48. Navrongo Health Research Centre.

Petra Study Team (2002). Efficacy of three short course regimens of zidovudine and lamivudine in preventing early and late transmission of HIV-1 from mother-to-child in Tanzania, South Africa, and Uganda (Petra study): a randomised double-blinded, placebo-controlled trial. *Lancet* 359:1178-86.

Pool R, Nyanzi S, Whitworth JA (2001). Attitude to voluntary counselling and testing for HIV among pregnant women in rural south-west Uganda. *AIDS Care* 13: 605-15

Public Health Service Task Force. *Recommendation for use of ARV drugs in pregnant HIV-1 Infected women for Maternal Health and Intervention to Reduce Perinatal HIV-1 transmission in USA*, June 16, 2003. Retrieved: July 23, 2003, from http://AIDSinfo.nih.gov.

Radall A., Ives B.C. and Eastman C (1974). Bidding game for valuation of aesthetic environmental improvement. *Journal of Environmental Economics and Management* 1:132-149, cited in Johannesson M (ed) 1996. *Theory and methods of economic evaluation of health*. Kluwer Academic Publishers, Dordrecht / Boston / London. Pg 76.

Russell S (1994). Measuring the potential for a prepayment scheme in the catchment area of a private (not for profit) hospital in Mexico city: the case of CIMIGEN. Guidelines for the design of a willingness to pay study. Unpublished report. Health Policy Unit, LSHTM, UK.

Russell S, Fox-Rushby J, Arhin D (1995). Willingness and ability to pay for health care: a selection of methods and issues. *Health Policy and Planning* 10(1):94-101.

Russell S (1996). Ability to pay for health care: concepts and evidence. *Health Policy and Planning,* 11(3): 219-237.

Sahlu T, Agonafir AT, Tsegaye TA, et al (1998). Factors associated with attendance at HIV post-counselling in Ethiopia. XII World AIDS Conference. Geneva 1998 (33280).

Sangiwe G. (2003). The evaluation of voluntary counselling and testing and implications for programs. MAQ-mini University presentation.

Smith RD (2000). The discrete-choice of willingness to pay question format in health economics: should we adapt environmental guidelines? *Medical Decision Making* 20, 194-206.

Sorin MD, Tesoriero JM, LaChance-Mccullough ML (1996). Correlates of acceptance of HIV testing and post-test counselling in the obstetrical settings. *AIDS Educ Prev*; 8:72-85.

Sweat M, Balmer D, Sangiwe G (1999). Cost to clients and willingness to pay for HIV counselling and testing in Kenya and Tanzania: results from the voluntary HIV counselling and testing study. XII international conference on AIDS. *Geneva* 1998 (abstr 23135).

Sweat M, Gregorich S, Sangiwa G, et al (2000). Cost-effectiveness of voluntary HIV-1 counselling and testing in reducing sexual transmission of HIV-1 in Kenya and Tanzania. *The Lancet* 2000; 356:113-86.

Temmerman M, Ndinya-Achola J, Ambani J, Piot P (1995). The right not to know HIV-test results. *Lancet* 1995; 345:969-970.

The budget statement and economic policy of the government of Ghana for 2004 financial year, presented to parliament on 5th February 2004 by Hon. Yaw Osafo-Maafo, Minister of finance and economic planning on the authority of His excellency John Agyekum Kufuor, president of the republic of Ghana.

UNAIDS (2003) AIDS epidemic updates, December.

UNAIDS (2002) AIDS epidemic updates, December.

UNAIDS (2002) "Report on the global HIV/AIDS epidemic", July

UNFPA (2004). Integrating HIV voluntary counselling and testing services into reproductive health setting. Stepwise guidelines for programme planners, managers and service providers.

National Institutes of Health news- US Department of Health and Human Service. Released Thursday, September 11, 2003, 6:30 PM. ET.

USAID's efforts to prevent mother-to-child transmission of HIV, (n.d). retrieved: July 22, 2003, from www.usaid/gov/pop health/aids/techArea/mtctfactsheet.html.

Weaver M, Ndamobissi R, Kornfield R, Blewane C, Suthe A, Chopko M. (1996). Willingness to pay for child survival: results of a national survey in Central African Republic. *Social Science and Medicine* 29:35-42.

Whynes DK, Frew E, Wolstenholme JL (2003). A comparison of two methods for eliciting contingent valuations of colorectal cancer screening. *Journal of Health Economics* 22 (2003) 555-574.

World Bank (1994). Better health in Africa: experience and lessons learned. World Bank, Washington, D.C.

Zarkin GA, Cates SC, Bala MV (2000). Estimating the willingness to pay for drug abuse treatment. *Journal of Substance Abuse Treatment* 18:149-59.

APPENDIX I.

DESCRIPTIVE STATISTICS

VARIABLE	FREQUENCY	PERCENTAGE
KNOWLEDGE OF HIV/AIDS		
Ever heard about HIV/AIDS	389	100
Modes of HIV/AIDS contraction.		
Unprotected sex (spontaneously)	343	88.2
Transfusion of infected blood (spontaneously)	103	26.5
Sharing needle or razor with infected person (spontaneously)	285	73.3
MTCT (spontaneously)	7	1.8
MTCT (probed)	358	92
Others	23	6
Opportunistic infections/symptoms of HIV/AIDS		
Prolonged dry cough (TB)	64	16.5
Prolonged diarrhoea	266	68.4
Prolonged fever	105	27
Loss of weight	334	85.9
Itching skin infections	87	22.4
Others	47	12.1
Protection against contracting HIV/AIDS		
Condom use	33	8.3
Abstinence	102	26.2
Being faithful	247	63.8
Others	6	1.5
KNOWLEDGE OF VCT.		
Possibility of knowing one's HIV status	341	87.7
Ways of knowing one's HIV status		
Blood test-VCT (spontaneously)	287	84.2
Blood test-VCT (probed)	48	14.1
Others	54	15.8
Acceptability of VCT		
Willingness to go for VCT	319	82
Reasons for willingness to go for VCT		
Protect myself if not infected	207	64.4
Prolong my life if infected	20	6.3
Protect my family	29	9.1
Others	63	19.7
VCT refusals		
Unwillingness to go for VCT	70	18
Reasons for unwillingness to go for VCT		
Go into depression	13	18.5
Will die early	9	12.9
Tendency of committing suicide	8	11.4
There is no cure for HIV/AIDS	11	15.4
Low perceived risk of infection	27	38.5
Others	2	2.9

Willingness to pay for VCT		
Males	161	50.3
Females	159	49.7
MOTHER-TO-CHILD-TRANSMISSION OF HIV		
Identification of MTCT as a mode of transmission	365	94
Occurrence of MTCT		
During pregnancy	333	91
During labour and delivery	26	7.1
During breastfeeding	57	15.6
Through physical contact	2	0.5
Others	29	7.9
WILLINGNESS TO PAY FOR NEVIRAPINE (NVP)		
Males	179	49.9
Females	180	50.1
Reasons for willing to pay for NVP		
Prevent MTCT	348	97
Satisfy partner	5	1.4
Others	6	1.7
Mode of payment for NVP		
Cash	297	82.7
Credit	13	3.6
In kind	49	13.7
Mode of payment for VCT		
Cash	257	80.6
Credit	10	3.1
In kind	50	15.8
Others	2	0.6

APPENDIX II

Definition of Variables

Dependent Variables	**Variable Descriptions**
VCTSTATU	Respondent willing to go for VCT=1 Otherwise=0
MAXWTP1	Maximum amount respondent is willing to pay for VCT
MAXWTPN1	Maximum amount respondent is willing to pay for NVP.
Explanatory Variables	
GENDER	Female=1 Male=0
AGEGROUP1	15-14 years, 45-60 years=1 Otherwise=0
ETHNIC1	Bulsa, Nankam=1 Otherwise=0
CURRMAR	Married=1 Otherwise=0
EDUC1	Primary education, tertiary education=1 Otherwise=0
RESRELI	Traditional religion=1 Otherwise=0
OCCUP	Farmer, Civil servant=1 Otherwise
TINC	Trading income
CINC	Salary
SYMPHIV1	Loss of weight=1 Otherwise=0
GETHIV	Unprotected sex, mother-to-child-transmission=01 Otherwise
HASHIV	VCT=1 Otherwise=0
ENCOPAT	Encourage partner to go for VCT=1 Otherwise=2
PAYMOVCT	Mode of payment to use to pay for VCT are credit, cash=1 Otherwise=0
PAYMONVP	Modes of payment to use to pay for NVP are credit, cash=1 Otherwise=0
FTOTAL	Total value of farm produce
TOEXP	Monthly expenditures, occasional expenditures=1 Otherwise=0

APPENDIX III

WILLINGNESS TO PAY FOR VCT AND NEVIRAPINE SURVEY. HOUSEHOLD HEAD/ADULT INDIVIDUAL QUESTIONNAIRE.

SECTION 1: IDENTIFICATION

Name of respondent _____ HHHNAME

COMPOUND NAME/ID		COMPID
DATE OF INTERVIEW		HDAINT
SEX OF HOUSEHOLD RESPONDENT		SEX
FIELDWORKER CODE		FWCODE
FIELD SUPERVISOR CODE		FSCODE
RESULTS OF INTERVIEW: COMPLETE INTERVIEW	1	HRESULT

SECTION 2: Socio-economic and demographic characteristics of respondent:

NO.	QUESTIONS	CODING CATEGORIES	CODES
1.	How old are you now? **Age in completed years.**		AGE
2.	What is your ethnic origin?	Nankani.....1 Kassena.....2 Bulsa.....3 Other (specify).....4	ETHNIC
3.	What is you marital status now?	Never married.....1 Married.....2 Divorced.....3 Widowed.....4 Other (specify).....5	CURRMAR
4.	Have ever attended school?	Yes.....1 No.....2 →	HHSCHO Go to 7
5.	What level of education do you have?	Primary.....1 MSLC/JSS.....2 Secondary.....3 Tertiary.....4 NA.....8	EDUC
6.	How many years did you attend at that level?	NA.....8 DK.....9	HHYEAR
7.	What is your religion?	Traditional.....1 Christian.....2 Muslim.....3 Others (specify).....4	RESRELI
8.	What is your occupation? (if 2	Student.....1 Farmer.....2 →	OCCUP **Section 6.**

	continue from section 3 after section 6)	Trader/artisan.....3 → GO TO 9 Civil servant.....4 → GO TO 10 Other (specify).....5 → GO TO 11	
9.	What is your monthly trading income?	[ ] NA.....8 DK.....9	TINC **Go to 12**
10.	What is your monthly salary? (in cedis)	[ ] NA.....8 DK.....9	CINC **Go to 12**
11.	How much did you earn from this other specified? (in cedis)	[ ] NA.....8 DK.....9	OINC **Go to 12**

SECTION 3: General knowledge and causes of HIV/AIDS.

12.	Have you ever heard of HIV/AIDS?	Yes.....1 No.....2 → End interview		HEARDHIV
13.	What are some of the symptoms/opportunistic infections of HIV/AIDS? **(circle all mentioned)**	Prolonged dry coughing (TB).....01 Prolonged diarrhoea.....02 Prolonged fever.....03 Loss of weight.....04 Swellings around private parts.....05 Oral thrush.....06 Itching skin infections.....07 Other (specify).....08 NA.....88 DK.....99		SYMPHIV
		Spontaneous responses	**probe responses**	
14.	How can one get or contract HIV/AIDS? **(probe for MTCT if not mentioned)** **circle all mentined**	Unprotected sex.....01 Transfusion of infected Blood.....02 Sharing needle or razor With infected person.....03 MTCT.....04 Through witcraft.....05 Through a curse.....06 Mosquito bites.....07 Touching an infected Person.....08 Others (specify).....09 NA.....88 DK.....99	unprotected sex.....11 transfusion of infected blood.....12 sharing needle or razor with infected person.....13 MTCT.....14 through witcraft.....15 through a curse.....16 mosquito bites.....17 touching an infected person.....18 others (specify).....19 NA.....88 DK.....99	GETHIV
15.	Is there any way that one can know his/her HIV status without suffering any opportunistic infections?	Yes.....1 No.....2 DK.....3 → 17		KSTATUS
		Spontaneous responses	**probe responses**	
16.	From what source would you know your	Blood test (VCT).....01 Partner has HIV.....02 Had unprotected sex	blood test (VCT).....11 Partner has HIV.....12 Had unprotected sex	HASHIV

	status? (**probe for VCT if not mentioned**)	With infected person...03 Consult a soothsayer...04 Symptoms.....05 Trained counselor.....06 Other(specify).....07 NA.....88 DK.....99	with infected person.... 13 consult a soothsayer.....14 symptoms.....15 trained counselors.....16 other(specify).....17 NA.....88 DK.....99	
17.	You mentioned MTCT as one of the causes of HIV in question 14, when can MTCT occur? **Circle all mentioned**	During pregnancy.....1 During labour and delivery.....2 During breastfeeding.....3 Through physical contact.....4 Other (specify).....5 NA.....8 DK.....9		MTCTOCC
18.	What is the best way one can protect him/herself from contracting HIV/AIDS?	Condom use.....1 Abstinence.....2 Use other contraceptives.....3 Being faithful.....4 Other (specify).....5 NA.....8 DK.....9		PHIVAIDS
19.	Would you be willing to go for VCT to know your status?	Yes.....1 No.....2		KSTATU Go to 21
20.	If yes, what is the main reason why you will like to know your statu?	To protect myself if not infected.....1 Know how to live if infected.....2 Access support services.....3 Cater for family before dying.....4 Protect my family.....5 Other (specify).....6 NA.....8 DK.....9		RKSTATUS **Go to bidding game**
21.	If no, what is the main reason why you will not like to know your HIV/AIDS status?	Will go into depression.....1 Will die early.....2 Will commit suicide if infected.....3 There is no cure for HIV.....4 Family will abandon me if infected....5 Other (specify).....6 NA.....8 DK.....9		RNKSTATS
	Use bidding game approach to ask for maximum amount respondent is willing to pay for VCT.			

Bidding Game Technique

For those who want to know their status

Scenario: there is a facility available if you want to know your HIV/AIDS status. This facility or service is called voluntary counseling and HIV testing (VCT). VCT is a confidential dialog

between a client and a provider aimed at enabling the client to make a personal decision related to HIV testing. This involves pre-test, post-test and follow-up counseling offered on voluntary basis.

VCT is an important component of HIV prevention and care efforts. Knowledge and acceptance of serostatus can: facilitate behaviour change, reduce the risk of MTCT of HIV for pregnant women, help in making informed decisions about future pregnancies, "destigmatize" HIV in communities if many people have access to testing and become aware of their status.

VCT can also: create disharmony in the family, increase the risk of abandonment or violence against partners who test HIV-positive, and cause blame and stigmatization of HIV positive people by both the community and family.

You are also aware that there are no reliable ways of knowing one's HIV/AIDS status apart from going for a blood test. In addition, you know there is no known cure for HIV/AIDS. The questions that follow are to establish whether you will be willing to go and pay for VCT.

For those who do not want to know their status.
Scenario: Repeat the scenario above.

You earlier on said you do not want to test for HIV/AIDS, however looking at the benefits and the risks; will you want to test for HIV/AIDS now?

The questions that follow are to establish whether you will be willing to go and pay for VCT
(for those who now want to know their status)

22.

BIDDING QUESTIONS	YES	NO	If no, skip to question 24.
Would you be willing to go for VCT?			
How much will you be willing to pay for HIV testing?			
Would only go for VCT if it is for free **(mark yes if respondent says so)**			
Would you be willing to pay ¢ 2,000.00?			
Would you be willing to pay ¢ 3,000.00?			
Would you be willing to pay ¢ 5,000.00?			
Would you be willing to pay ¢ 6,000.00?			
Would you be willing to pay ¢ 8,000.00?			
Would you be willing to pay ¢ 9,000.00?			
Would you be willing to pay ¢ 11,000.00?			
Would you be willing to pay ¢ 13,000.00?			
Would you be willing to pay ¢ 15,000.00?			
Would you be willing to pay ¢ 17,000.00?			
Would you be willing to pay ¢ 20,000.00?			
Would you be willing to pay ¢ 25,000.00?			
Would you be willing to pay ¢ 30,000.00?			
Would you be willing to pay ¢ 35,000.00?			
Would you be willing to pay ¢ 40,000.00?			
Would you be willing to pay ¢ 45,000.00?			
Would you be willing to pay ¢ 50,000.00?			
What is the maximum you are willing to pay? ¢			MAXWTP

23.	Why would you be willing to pay X to go for VCT? **Circle all mentioned**	Protect myself.....1 Protect my partner.....2 Prevent MTCT.....3 Know my status.....4 Other (specify).....5 NA.....8 DK.....9	WTPVCT
24.	Why would you not be willing to go for VCT? **Circle all mentioned**	Financial.....1 Don't know VCT.....2 Avoid stigmatization.....3 Not necessary.....4 Other (specify).....5 NA.....8 DK.....9	NOTVCT
25.	Would you be willing to encourage your partner to go for VCT?	Yes.....1 No.....2 → 28 NA.....8	ENCOPAT
26.	What is the main reason why you will want to encourage your partner to go for VCT?	Self protection.....1 Partner protection.....2 Prevent MTCT.....3 Know his/her status.....4 Prolong his/her life.....5 Other (specify).....6 NA.....8 DK.....9	ENNCOPAT
27.	**(If answer to question 25 is yes, use bidding game technique)**		MAXWTPP
28.	What is the main reason why you will not be willing to encourage your partner to go for VCT?	Financial.....1 Don't know VCT.....2 Avoid stigmatization....3 Not necessary.....4 Other (specify).....5 NA.....8 DK.....9	NOTPART

SECTION 4: Determinents of and willingness to pay for Nevirapine

For those who will mention MTCT and those who will not. Another source of contracting HIV is through the mother passing it to the unborn child during pregnancy, labour and delivery or through breastfeeding. Currently there are drugs available to protect the unborn child from getting infected with the virus. Nevirapine is one of those drugs. During labour and three days after delivery the mother and the child respectively will receive this drug to protect the child from getting the virus **(for interviewer).**

29.	Should there be efforts to prevent MTCT of HIV?	Yes.....1 No.....2 → Go to 31	EFFMTCT
30.	What is the main reason why MTCT of HIV should be prevented?	It protects the child.....1 Good for the parents.....2 Other (specify).....3	PREVMTCT Go to 32

		NA.....8 DK.....9	
31.	What is the main reason why MTCT of HIV should not be prevented?	Not worth it.....1 May be side effects.....2 Don't believe in it.....3 Child maybe a spirit child and should not be protected...4 Other (specify).....5 NA.....8 DK.....9	MPREMTCT
32.	In case of VCT, who is likely to decide whether household members should or should not go for VCT?	Individual.....1 Wife.....2 Husband.....3 Household head.....4 Other (specify).....5 DK.....8	DEVCTVCT
33.	In case of an infected pregnant woman, who decides whether she should or should not go for NVP?	Woman herself.....1 Household head.....2 Husband.....3 Other (specify).....4 DK.....9	DEVCTNVP

BIDDING GAME TECHNIQUE

Scenario: one of the tragic consequences of the HIV/AIDS pandemic is the MTCT. This happens during pregnancy, labour and delivery, and/or breastfeeding. There are drugs (ARVs) that can be taken to reduce the risk of MTCT of HIV. Nevirapine (NVP) has been proven to be the most affordable and feasible of these ARVs. A single dose of oral NVP given to the mother at the onset of labour and NVP syrup to the newborn child within three days of birth can half the risk of MTCT of HIV. A full dose of NVP combined with formula feeding or exclusive breastfeeding and elective caesarian section can reduce MTCT to almost nil. NVP is taken only to reduce MTCT but not to cure the infected mother.

There are minor potential side effects of NVP especially on the mother. These include: rash, headache, diarrhoea, nausea, fever, abdominal pains and muscle pains (myalgia). But these usually disappear after few weeks. The most serious side effects are liver failure, severe skin reactions and development of resistance.

As you are aware, there is no known treatment for HIV/AIDS yet, hence the need for prevention. With this information;

34.

BIDDING QUESTIONS	Yes	No	If no, skip to 35
Would you be willing to pay for NVP for the PMTCT?			
How much will you be willing to pay? **Bid respondent up or down till you attain the maximum price.**			
Would you be willing to pay ¢2, 000.00?			
Would you be willing to pay ¢4, 000.00?			
Would you be willing to pay ¢8, 000.00?			
Would you be willing to pay ¢10, 000.00?			
Would you be willing to pay ¢12 000.00?			
Would you be willing to pay ¢14 000.00?			
Would you be willing to pay ¢16, 000.00?			
Would you be willing to pay ¢18, 000.00?			
Would you be willing to pay ¢20, 000.00?			
Would you be willing to pay ¢25, 000.00?			
Would you be willing to pay ¢30, 000.00?			
Would you be willing to pay ¢35, 000.00?			
Would you be willing to pay ¢40, 000.00?			
Would you be willing to pay ¢50, 000.00?			
Would you be willing to pay ¢60, 000.00?			
Would you be willing to pay ¢70, 000.00?			
Would you be willing to pay ¢80, 000.00?			MAXWTPN
What is the maximum you are willing to pay for NVP? ¢			

35.	What is the main reason why you will not be willing to pay for NVP?	Financial.....1 Not effective.....2 Dangerous.....3 Other (specify).....4 NA.....8 DK.....9	NOTNVP
36.	What is the main reason why you will be willing to pay for NVP?	Prevent MTCT.....1 Satisfy partner.....2 Other (specify).....3 NA.....8 DK.....9	WILLING

SECTION 5: determinants of ability to pay for VCT and NVP.

37.	You said you are willing to pay X (add amounts for VCT and NVP), will you be able to afford the amount?	Yes.....1 → 39 No.....2 → 38 NA.....3	TOCOST
38.	How much can you afford? (In cedis) VCT ← NVP ←	NA.....8 DK.....9	CANAFFOD

39.	What mode of payment will you like to use to pay for VCT?	Cash……..1 Credit……..2 In kind……..3 Other (specify)……..4 NA……..8 DK……..9	PAYMODVCT
40.	What mode of payment will you like to use to pay for NVP?	Cash……..1 Credit……..2 In kind……..3 Other (specify)……..4 NA……..8 DK……..9	

SECTION 6: Farm produce

In the last farming season how much of the following farm produce did you get?

ITEM	How many bowls did you get?	How much did that cost in the market?	Did you receive any in kind? Yes……1→ No…….2	How much will what you received in kind cost?	TOTAL	
1. Early millet						EMILLET
2. Late millet						LMILLET
3. Guinea corn						GCORN
4. Rice						FRICE
5. Groundnuts						FMAIZE
6. Maize						FGRNUTS
7. Beans						FBEANS
8. Bam. beans						FBAMBA
Others (specify) a b. c.						FOTHER
8. Grand total						FTOTAL

SECTION 7: Consumption expenditure

Household Consumption expenditure					
In the last month, did you spend money on any of the following items?	How much did you pay?	Are there things you received in kind? Yes.....1 → No.....2	How much did you get in kind?	Total	FIELDS
A. Rent					Crent
B. Food					Cfood
C. Soap					Csoap
D. Salt					Csalt
E. Clothing					Ccloth
F. Shoes/sandals					Csandals
G. Kerosene/cooking gas					Ckcook
H. Wood/Charcoal					Cwoochar
I. Water					Cwater
J Electricity					Celect
K. Houseware					Chseware
L. Gifts					Cgifts
M. School fees					Cschfees
N. Transport					Ctrans
O. Bicycle/car/motorbike					Cvehicle
P. Radio					Cradio
Q. Repay debt					Crepay
R. Petrol					Cpetrol
S. Taxes					Ctaxes
T. Drink					Cdrink
U. Tobacco/kola					Ctobkola
V. Family celebration					Ccelebra
W. Health care generally					Chealth
X. Others (specify)					Cothers
Total expenditure					TOEXP

APPENDIX IV

FOCUS GROUP DISCUSSION GUIDE FOR WILLINGNESS TO PAY STUDY.

Introduction……..

1. What can you tell me about HIV/AIDS?

2. Can you tell if a person has HIV/AIDS? **(Question refers to symptoms and opportunistic infections).** What will show that a person has HIV/AIDS?
   (probe for more symptoms of HIV/AIDS)

3. How can one get or contract HIV/AIDS?
   (Probe for MTCT)

4. In this community, what do people think about those who get HIV/AIDS?

5. If a person is not sure whether he/she has HIV/AIDS, is there a way he/she could find out? How could he/she find out if yes? **(Probe for VCT).**

6. Do people go for HIV testing? If yes, why do they go?
   If no, why do they not go?

   If there were to be a voluntary confidential programme where people can go for counseling and testing to know their HIV/AIDS status.

7. Are there people in this community who will be willing to go for VCT? If yes, why?

8. If no, why will they not want to know their HIV/AIDS status?

9. Do you think people will be willing to pay for the VCT services? Why will people be willing to pay or otherwise?

10. What are some of the things that may prevent one from going for VCT in this community?

11. How can people prevent themselves from getting HIV/AIDS?

12. How do community members live with/treat those who have contracted the disease?

13. You mentioned MTCT of HIV as one mode of transmission, what are your perceptions about preventing MTCT of HIV/AIDS?

14. Do you think people know about MTCT?

15. Are there ways that the unborn child can be prevented from getting HIV/AIDS from the mother?

There is a drug that can be taken to reduce the risk of MTCT of HIV/AIDS. This drug is affordable and feasible to poor communities. A single dose to the mother during labour and to the neonate within 3 days of birth can half the chances of MTCT. This drug only reduces the chances of the neonate getting HIV but does not cure the infected mother.

16. Would people in this community be willing to pay for this drug for HIV positive pregnant Mothers to prevent MTCT? Why should HIV positive pregnant mothers be put on this drug or otherwise?

Any additional comments on what we have been discussing so far?

That is the end of our discussion, thank you very much for your time and cooperation.

APPENDIX V

IN-DEPTH INTERVIEW GUIDE FOR WILLINGNESS TO PAY STUDY.

Introduction……..

1. What can you tell me about HIV/AIDS?

2. Can you tell if you have HIV/AIDS? **(Question refers to symptoms and opportunistic infections).** What will show that you HIV/AIDS?
   (probe for more symptoms of HIV/AIDS)

3. How can you get or contract HIV/AIDS?
   (Probe for MTCT)

4. In your community, what do people think about those who get HIV/AIDS?

5. If you are not sure whether you have HIV/AIDS, is there a way you could find out? How could you find out if yes? **(Probe for VCT).**
6. Do you go for HIV testing? If yes, why do you go?
   If no, why do you not go?

   If there were to be a voluntary confidential programme where you can go for counseling and testing to know your HIV/AIDS status.

7. Will you be willing to go for VCT? If yes, why?

8. If no, why will you not want to know your HIV/AIDS status?

9. Will you be willing to pay for the VCT services? Why will you be willing to pay or otherwise?

10. What are some of the things that may prevent you from going for VCT now?

11. How can you prevent yourself from getting HIV/AIDS?

12. How would you live with/treat those who have contracted the disease?

13. You mentioned MTCT of HIV as one mode of transmission, what are your perceptions about preventing MTCT of HIV/AIDS?

14. Do you think people know about MTCT of HIV?

15. Are there ways that the unborn child can be prevented from getting HIV/AIDS from an infected mother?

    There is a drug that can be taken to reduce the risk of MTCT of HIV/AIDS. This drug is affordable and feasible to poor communities. A single dose to the mother during labour and to the neonate within 3 days of birth can half the chances of MTCT. This drug only reduces the chances of the neonate getting HIV but does not cure the infected mother.

16. Would you be willing to pay for this drug if diagnosed HIV positive to prevent MTCT? Why would you want to be put on this drug or otherwise?

Any additional comments on what we have been discussing so far?

That is the end of our discussion, thank you very much for your time and cooperation.

APPENDIX VI.

ORAL CONSENT FORM

WILLINGNESS TO PAY FOR VCT AND NEVIRAPINE FOR THE PREVENTION OF MOTHER-TO-CHILD TRANSMISSION OF HIV IN THE KASSENA NANKANA DISTRICT OF NORTHERN GHANA.

PURPOSE OF THE STUDY

We are inviting you to take part in a study, which is being conducted by the Department of Public Health and Primary Healthcare of the University of Cape Town and the Navrongo Health Research Centre. There is an impending VCT and NVP programme in the Kassena-Nankana district. The main purpose of the study is therefore to assess people's willingness and ability to pay for VCT and Nevirapine for the prevention of vertical transmission of HIV/AIDS in the district. A random sample of people (specify category) in this community to take part in this study was done and you happened to be one of those selected. We hope that the results of this study will be used to inform the district directorate of health and FHI on people's willingness and ability to pay for VCT and Nevirapine for HIV-positive pregnant women.

PROCEDURE

If you agree to take part in this study, one of our trained staff will interview you (or would be interviewed with others [FGDs]. The interview will be about one hour long and you will be asked questions on your knowledge of HIV/AIDS and your willingness and ability to pay for VCT and Nevirapine. There are no correct answers to these questions. You can choose not to answer any question you do not want to answer.

RISKS/DISCONFORTS

You will not be exposed to any physical danger when you take part in this study. However, there is the inconvenience of the interview taking one hour of your time, you being asked private questions on your consumption expenditure and income. If at any time you do not want to answer any question you are not obliged to do so.

BENEFITS

Your participation in this study will help inform the district directorate of health and FHI on the pricing of VCT services and Nevirapine to make them accessible and affordable to people who need them.

CONFIDENTIALITY

The information you give us will be kept confidential. The information will be kept in a locked file cabinet and will only be available to the researcher. The FGDs and IDIs will be tape recorded with voices only. The audiotapes will only be used so that the researcher will have an accurate record of what was said instead of the moderator trying to write down everything that will be said. A note taker will record important things about the discussions that may not be captured on the audiotape. The audiotapes of the interviews and discussions will be destroyed after we have worked with them.

VOLUNTARINESS AND RIGHT TO WITHDRAW

Your participation is completely voluntary. You can ask questions on anything that you don't understand. You have the right to withdraw from the study at any time, or to decline to answer any question. If you decide not to take part in this study, your decision will not affect your relationship with the interviewers and the NHRC in anyway.

If you want to talk to any one about this study, you should contact the leader, Mr. George Bruno Akanlu, who will be at the NHRC. You can also call him on 0742-22310 or e-mail to akanlu@yahoo.com

---

Consent form to be signed by interviewee

The interviewer has reviewed the consent form with me and I fully agree to take part in this research.

Name: _____

Signature/thumbprint: _____

Date: _____

Witness:

Name: _____

Signature/thumbprint: _____

Date: _____