FACTORS ASSOCIATED WITH UTILIZATION OF VOLUNTARY COUNSELLING AND TESTING SERVICES AMONG BODA BODA OPERATORS IN NDHIWA CONSTITUENCY, HOMA BAY COUNTY, KENYA

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Factors Associated with Utilization of Voluntary Counselling and Testing Services among *Boda Boda* Operators in Ndhiwa Constituency, Homa Bay County, Kenya

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

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DEDICATION

I dedicate this work to my parents: late mother Pamela Achieng and granny Leah Opere, mum Rosemary and dad Evans Kowuor. Pam and Leah thanks for showing me the importance of education early enough in life. Rosemary and Evans, thanks for your sacrifices, prayers and encouragement. May the Almighty God bless you all.

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LIST OF ABBREVIATIONS AND ACRONYMS

AHF	Africa Health Foundation
AIDS	Acquired Immunodeficiency Syndrome
DHMT	District Health Management Team
ERC	Ethical Review Committee
HIV	Human Immunodeficiency Virus
KEMRI	Kenya Medical Research Institute
LVCT	Liverpool Voluntary Counselling and Testing Centre
NASCOP	National AIDS and STD Control Programme -Kenya
NCAPD	National Coordinating Agency for Population and Development
NIAID	Unites States-National Institute of Allergy and Infectious Diseases
PEPFAR	United States President's Emergency Plan for AIDS Relief
PI	Principal Investigator
PLWHA	People Living with HIV and AIDS
STD/Is	Sexually Transmitted Diseases/Infections
UNAIDS	Joint United Nations Programme on HIV and AIDS
UNFPA	United Nations Population Fund
WHO	World Health Organization
VCT	Voluntary Counselling and Testing

ABSTRACT

Voluntary Counselling and Testing (VCT) is one of the initiatives used to deliver HIV/AIDS preventive information. It enhances access to antiretrovirals (ARVs), HIV patient care and support as well as behaviour change. In spite of these benefits, its utilization is still low in Kenya's most rural areas like Ndhiwa constituency which has high HIV prevalence. This low VCT utilization exposes the public, including *Boda Boda* operators to lose on benefits of VCT services. This is likely to put the transport sector in Ndhiwa Constituency, provided mainly by *Boda Boda* business, at risk of low activity owing to dangers of HIV infection. The objective of this study was to determine level of utilization of HIV-VCT services (testing for HIV at VCT centre) and factors associated with VCT utilization among *Boda Boda* operators in Ndhiwa constituency. In this cross-sectional study, pre-tested questionnaires were administered to 231 operators while in-depth interviews were conducted for four selected key informants. Data were entered and analysed in SPSS Version 16.0. Descriptive statistics using frequencies and proportions were used to determine levels of VCT utilization and VCT awareness. Odds ratio at significance level p value <0.05 was determined to establish factors associated with VCT uptake among the operators. Factors that showed association were entered into logistic regression analysis to control for effect of confounding in establishing predictors of VCT utilization. Qualitative data were analyzed through the scrutiny of words or phrases mentioned by the interviewees on thematic areas based on the variables and literature review.

Majority of the operators were males (91.3 %), 52.4% were married while 47.6% were single. The ages of the participants ranged from 15-57 years with the mean of 27.2 years. Most operators were within the age groups of 20-24 and 25-29 years at 31.2 % and 33.8% respectively. With respect to religion, majority were Seventh Day Adventists (37.7%). The participants who attained primary level of education were 48.1% while those with secondary education were 44.2% and only 7% had post secondary education. Majority of the participants came from the terminus of Magina market centre (25.5%). Level of utilization of VCT services among the *Boda Boda* operators was 72.1% while 96% of them were aware of existence of at least one VCT site within the constituency. Key informants also mentioned high VCT utilization and awareness among the participants.

Factors that showed significant association to VCT utilization at both bivariate and multivariate analysis were gender (AOR=4.529, 95% CI: 1.753-11.687), visiting a VCT centre with a partner (AOR=16.39, 95% CI: 3.012-27.986) and assurance of confidentially in HIV test results (AOR =4.79, 95% CI: 2.033-8.907). Going to a VCT centre in which the operator was known (AOR=0.152, 95% CI: 0.034-0.221) and fear of being seen at VCT centre (AOR=0.551, 95% CI: 0.307-0.988) were likely to hold over the operators from HIV testing.

In conclusion there is high level of VCT service utilization and awareness among the *Boda Boda* operators. VCT utilization uptake among the operators is influenced by gender, assurance of confidentiality of the HIV test results, going to a VCT with a partner, fear of being seen at a VCT centre and going to a VCT in which the operator is

known. Interactive programmes between the operators and the immediate society on VCT services that encourage the transfer of the high level HIV/VCT awareness of the operators to the general public should be developed. Couple counselling and testing, provision of specialised training and development of peer educators as well as development of programmes that de-stigmatize HIV/AIDS by the relevant ministries of health together with other development partners in the health sector will increase utilization of VCT services among the operators and the immediate society.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

Acquired Immuno Deficiency Syndrome (AIDS) is a disease of the human immune system caused by the Human Immunodeficiency Virus (HIV) and is one of the world's leading pandemics (WHO, 2010). The pandemic continues to spread globally: a total of 33.3 million people were infected with HIV worldwide in 2009 (UNAIDS, 2010). Sub-Saharan Africa remains the most affected region; 22.5 million people were estimated to be living with HIV and approximately 1.8 million new infections in 2009. The region also accounted for 72% of the world's AIDS-related deaths in 2009 (UNAIDS, 2010). According to Oppong and Kalipeni (2004), HIV/AIDS catastrophe is quickly erasing the hard-earned gains in life expectancy observed in the 20th century in Africa. It is in response to this catastrophe that Voluntary Counselling and Testing (VCT) and other forms of HIV prevention were introduced to curb its spread. Voluntary Counselling and Testing (VCT) is a self-initiated HIV testing and prevention counselling procedure often integrated in health centres, mobile units, and community-based settings and involves extensive pre and post test counselling services (CDC, 2010).

Voluntary Counselling and Testing program has proved effective in the fight against HIV/AIDS and serves as an entry point to HIV with positives – the use of the HIV infected individuals to help stop the spread of the virus (Gage and Ali, 2004). Voluntary Counselling and Testing forms a link to HIV treatment options, care and support as it

allows for adoption of preventive measures (UNAIDS 2010). People are safer when they know their HIV status (Gage and Ali, 2004). By knowing one's status, HIV positive individuals are motivated to adopt healthier lifestyles like eating healthy food and reducing stress thus improving their health and slowing disease progression to symptomatic HIV and full blown AIDS (Bateganya *et al.* 2010). Additionally, repeated testing is needed due to chances of exposure to the virus through unprotected sex or other modes of transmission (WHO, 2010). Moreover, AIDS vaccine remains elusive and as a result, prevention of new infections is the only practical way of reducing HIV prevalence and controlling the scourge (WHO, 2010). Voluntary Counselling and Testing thus forms a major tool in the prevention of HIV/AIDS especially among high risk groups. Taking an early step to visit a VCT centre can lead to prolonging of life when a decision of positive living is adopted on accurate knowledge of one's current HIV status. It is for this purpose that Phillips (1995) pointed out the need for more research that elucidate factors which prevent persons at risk of HIV infection from seeking counselling and testing, and if HIV-positive, from seeking early care**.** Furthermore, policies need to be developed to remove existing barriers in accessing VCT services.

Besides, socio-demographic, behavioural, attitude, awareness and knowledge of VCT have been shown to influence voluntary counselling and testing utilization (Phillips, 1991, Zapka *et al.*, 1991, Phillips, 1993). Worth mentioning is the notion that people with risky behaviours for HIV hardly perceive themselves to be at risk of HIV infection or in need of HIV testing (Phillips, 1991, Miller *et al.*, 1986). According to UNAIDS,

(2010) report, more than 80% of PLWHA in low income countries do not know they are infected including the transport providers like taxi drivers (Kirunga and Ntozi, 1997) and *Boda Boda* operators (Oduor, 2010). Among the transport providers, risk behaviours are fostered by trade for sex, constant cash flow and high sexual activity (Kirunga and Ntozi, 1997, Oduor, 2010). It is for this reason that taxi drivers (Okongo *et al*., 1997, Kirunga and Ntozi, 1997) and other transport operators like *Boda Boda* operators call for more HIV testing and counselling services. Voluntary Counselling and Testing is therefore a useful tool in stemming up HIV/AIDS pandemic that continues to spread globally (WHO, 2010). Despite the aforementioned benefits of VCT, utilization of the service is still very low in most developing countries, Kenya included, and more so in the rural areas.

According to Kenya Aids Indicator Survey (KAIS) report (2007), more than 1.4 million people (7.4%) are estimated to be living with HIV/AIDS in Kenya. This indicates that Kenya's HIV/AIDS prevalence of 7.4 % is almost similar to that of Sub-Saharan African region which stands at 7.5% (UNAIDS, 2010). The country's HIV prevalence may be on the decline in some areas (KDHS, 2008/9), but the epidemic still pose significant challenges to this low-income country (World Bank, 2009).

The Government of Kenya responded to the HIV epidemic by in the 1990s by establishing the National AIDS Control Council (NACC) in 1999 and declaring the disease a national disaster among other statutory bodies when HIV/AIDS became an

epidemic in the country (NACC, 2009). This led to the formation of National Strategic Frameworks for HIV/AIDS of 2000-2005, 2005-2010 and 2009/10-2012/13 to deal with the scourge. Part of these strategies was to increase the number of VCT centres in all corners of the country (NACC, 2009). Since then, Kenya has had an exceptional expansion of VCT sites from only three in the year 2000 to over 900 sites by the end of 2007 (KDHS, 2008/09). Despite the rapid scale up, the use of VCT services remains low, with only 36% of the adult population aged between 19-64 reporting having ever been tested once for HIV, and among the rural population, only 30% have ever tested for HIV (KAIS, 2007). This is way below the government's target of 80% VCT utilization level. This implies that nearly two-thirds of Kenyans are unaware of their HIV status (KDHS, 2008/09). Moreover, most Kenyans reside in rural areas like Ndhiwa constituency and are thus, not likely to access appropriate services for prevention, care, and treatment of HIV, especially with increased access to ARVs for HIV-infected individuals (KDHS, 2008/09).

Boda Boda business in Ndhiwa constituency is one of the income generating activities for the youth and older adults as well. The operators are commonly known as *Boda Boda* (commercial cyclists). However, with high HIV/AIDS prevalence at 29% in this constituency (AHF, 2010), the scourge is affecting a productive segment of this population in the transport sector provided majorly by *Boda Boda* business. These operators are skilled and experienced and there is fear of losing them due to HIV/AIDS related deaths and thus the long term HIV/AIDS illness effects cannot be overlooked. This is supported by Oduor's (2010), assertion that reduction in productivity of these

individuals is increasingly compromising the provision of quality service. The operators sometimes opt out of the business when they are weak as a result of HIV infection since the job is high labour intensive in nature (Odour, 2010).

Increasing VCT utilization among operators and the benefits associated with it can significantly contribute in the management of infected individuals so that the infected operators can still earn their living and also to give advice to their uninfected counterparts to take care of themselves from contracting the virus. The purpose of this study therefore, was to explore aspects that are important and that can be modified to promote utilization of VCT services among the *Boda Boda* operators in this rural setting of Kenya.

1.2 Statement of the Problem

Ndhiwa constituency of Homa Bay county has serious HIV/AIDS epidemic with a prevalence of 29 % (AHF, 2010), almost thrice the national rate of 7.4 % (KAIS, 2007). This puts various populations including the *Boda Boda* operators at high risk of contracting HIV. This might lead to loss of skilled and experienced operators. Although some information on HIV/AIDS and factors affecting utilization of VCT on different target groups are available, there is still scarcity of information on *Boda Boda* operators in this regard. Disparity also exist towards utilization of VCT services between urban and rural areas, with 50% of urban residents reporting having been tested for HIV at

least once in their lifetime, compared to only 30% of their rural counterparts (KAIS, 2007). In response to these drawbacks, this research was done to establish factors associated with utilization of VCT services and among the *Boda Boda* operators of Ndhiwa constituency with a view of suggesting measures for improved uptake.

1.3 Justification of the Study

Voluntary counselling and testing services are some of the basic HIV prevention strategies which have continually become available in Kenya (PEPFAR, 2009). Due to this, finding out factors associated with their utilization will help in formulation of new strategies to improve provision of VCT services in various populations including high risk groups of *Boda Boda* operators (Odour, 2010). *Boda Boda* operators are a highly accessible group in Ndhiwa constituency due to the mobile nature of their business. They also interact with a wide scope of people and so their attitudes towards HIV counselling and testing can impact on many members of the society. Moreover, they transport the sick including HIV/AIDS patients which should activate an interest to give them HIV-VCT information. In Thailand, for example, taxi drivers have been used to deliver HIV messages to their customers (Traitongyoo, 1991).

Furthermore, the likely loss of skilled and experienced operators due to HIV/AIDS also called for more revelations into the use of VCT service among the operators. Therefore, there was a pressing need to establish *Boda Boda* operators' awareness and factors associated with utilization level of the VCT services. By establishing these factors, it

was also important to find out if the operators can be educated and empowered to act as agents in communicating HIV/VCT information to the locals and also manage themselves in regard to HIV/AIDS. Lastly, findings of the study can be used as important tools in designing of intervention measures aimed at increasing VCT awareness and utilization of HIV/VCT services by *Boda Boda* operators and the populations of this rural area by the Kenyan ministries of health and partners.

1.4 Research Questions

1. What are the socio demographic characteristics of *Boda Boda* operators in Ndhiwa constituency?
2. What is the level of utilization and awareness of VCT services among *Boda Boda* operators in Ndhiwa constituency?
3. What factors are associated with utilization of VCT services among *Boda Boda* operators in Ndhiwa Constituency?

1.5 Objectives

1.5.1 General Objective

To determine level of utilization of VCT services and its associated factors among *Boda Boda* operators in Ndhiwa Constituency.

1.5.2 Specific Objectives

1. To determine socio demographic characteristics of *Boda Boda* operators in Ndhiwa constituency in 2011.
2. To determine the level of utilization and awareness of VCT services among *Boda Boda* operators in Ndhiwa constituency in 2011.
3. To determine factors associated with utilization of VCT services among *Boda Boda* operators in Ndhiwa constituency in 2011.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Overview of HIV and AIDS Pandemic

HIV/AIDS is a disease of the human immune system caused by the Human Immunodeficiency Virus (HIV) and is one of the world's leading pandemics (WHO, 2010). A total of 33.3 million people were living with HIV worldwide in 2009 (UNAIDS, 2010). Sub-Saharan Africa remains the most affected region; 22.5 million people were estimated to be living with HIV in 2009 (UNAIDS, 2010), there were an estimated 2.6 million people who became newly infected with HIV and approximately 1.8 of them are Sub-Saharan African (UNAIDS, 2010).

Kenya has more than one million people estimated to be living with HIV/AIDS (KAIS, 2007). Though, recent data point towards a decline in the HIV /AIDS prevalence in some areas of the country (KDHS, 2008/09), the disease still poses significant challenges to the nation (World Bank, 2009). The Government of Kenya first established a National AIDS Control Council (NACC) in 1999 to form strategies to curb the epidemic (NACC, 2010).

2.2 HIV/AIDS Prevention Strategies

Effective strategies for preventing HIV transmission have been identified over the past three decades. However, fewer than one in five people at high risk of HIV currently have access to effective prevention globally (WHO, 2010). According to UNAIDS (2010) and WHO (2010) reports, expanded access to proven prevention strategies could avert half of the 62 million new HIV infections projected to occur between 2005 and 2015 world over (Stover, 2006). In Sub-Saharan Africa alone, expanded prevention could avert 55% of the 53 million new infections projected to occur in the region between 2003 and 2020 (Salomon, 2005). However, there is no single solution - "magic bullet" - to prevention of HIV. The most effective prevention programs are a combination of strategies to achieve maximum impact. Adoption of these strategies could achieve these reductions even in a shorter period than expected (Auerbach and Coates, 2000).

2. 3 Role of VCT in the Management of HIV AIDS

Voluntary counselling and testing plays a critical role in HIV prevention as it promotes early diagnosis of HIV infection as well as timely therapeutic or prophylactic interventions (Gage and Ali, 2004). HIV testing and counselling also promotes risk reduction in various populations, leading to behaviour change and reduced transmission (Peltzer *et al.,* 2004)**.** Moreover, VCT has been found to be the most important approach towards control of HIV/AIDS as it is the entry point to the management and prevention of HIV and AIDS-related diseases (Omary, 2009). HIV counselling and testing have

greater impact on risk behaviour. Studies have shown increased rates of condom usage following counselling (Kamenga *et al.*, 1991, Allen *et al.*, 1993).

2. 4 Factors associated with utilization of VCT services

Socio demographic, behavioural, attitude and knowledge characteristics have been associated with VCT utilization (Phillips, 1991, Zapka *et al.*, 1991).

2.4.1 Gender

Females have been found to have higher odds of seeking VCT services than men (Omer and Haider, 2009). Omer and Haider,(2009) reported that high VCT utilization was due to the fact that women in reproductive age are offered VCT services while they visit health facilities especially during their antenatal check-ups, a view also supported by Wondwoson, (2007). Secondly, the fear of testing positive among sexually more adventurous males could discourage male participation (Lliyasu *et al.*, 2006). This was corroborated by The Kenya AIDS Indicator Survey report (2007) that also reported more women (40.7%) having ever been tested for HIV compared to men (24.9%).

2.4.2 Number and Location of VCT centres

Number of VCT centres in a particular area influences use of VCT services (Omary, 2009). A study in Tanzania reported that the access to VCT services was influenced by number of VCT service centres (Omary, 2009). In addition to that, it was established

that the location of VCT services from their residence caused low turnout among youth and other members of the society towards accessing the VCT services. Other factors were hours of operation of these VCT centres and distance of their locations to the road.

2.4.3 Religion

Religion has a great influence on utilization of VCT services (Mgosha *et al*. 2009). In this study, it was found that even though Catholics were attending VCT centres, they (Catholics) showed the least proportion of attendees to voluntary counselling and testing services as compared to other denominations. This could have resulted from their negative attitudes towards condom use and other contraceptive methods usually offered during VCT services which are in conflict with their religious doctrines (Mgosha *et al*. (2009).

2.4.4 Other factors

Another factor associated with utilization of VCT services is age (Omary, 2009). In his study among university students in Tanzania, Omary (2009), found out that younger students were more willing to use VCT services than older students. Other reasons for VCT utilization include number of sexual partners, marital status, education level, having children, having a sick spouse or relative who is infected with HIV, and being sick of other conditions (Gage and Ali, 2004**,** Lliyasu *et al.*, 2006).

2.5 Challenges to VCT utilization

Potential barriers to counselling and testing that have been mentioned include social stigma and fear of discrimination (Phillips *et al.*, 1995). Potential for adverse consequences in social relationships, concerns about coping with test results (Zapka *et al.*, 1991), and perceived lack of risk or need for testing adds to the list (Bauman and Siegel, 1987, Perry *et al.*, 1990, Phillips, 1991). Moreover, privacy concerns beyond the issue of name reporting also appears to be a barrier; for example, it has been found that 50% of untested persons with risk factors living in high AIDS prevalence cities reported that they would get tested if no one would find out their results (Phillips *et al.*, 1995). However, with the advent of treatments for early HIV disease, counselling and testing has assumed a greater role as the first step in obtaining early care (WHO, 2010). Nevertheless, many HIV-infected persons delay being tested and seeking care (Stein *et al.*, 1991, Moore *et al.*, 1992, Perry *et al.*, 1992, Siegel *et al.*, 1992, Solomon *et al.*, 1991, and Silvestre *et al.*, 1993). Hence, future research is needed to analyse the linkages between counselling and testing and access to care, and also to examine the full range of barriers to obtaining early care.

2. 6 Other HIV Prevention Strategies that can be promoted using VCT Services

2.6.1. Behaviour Change Programs

These programs encourage people to adopt safer sexual behaviours thus reducing the risk of acquiring and transmitting HIV (Valdiserri, 1989). They include: sexual abstinence or delaying initiation of sexual activity, decreasing number of sexual partners, using condoms consistently and correctly if sexually active. The programs are effective among a broad range of populations at risk of HIV infection, like commercial sex workers (UNAIDS, 2004), men who have sex with men, (Valdiserri, 1989), and school-age youth (Jemmott, 1992).

Most effective behaviour change programs are tailored to the needs and values of the groups they are designed to reach. For example, Thailand reduced new HIV infections from 143,000 in 1991 to 19,000 in 2003 through behaviour change programs targeted at high-risk groups, including widespread condom distribution to commercial sex workers and their clients at the country's brothels (UNDP, 2004). Encouraging abstinence has an important place in HIV prevention, especially among young people. Though abstinence only programs don't work, providing people with comprehensive information on reducing HIV risk - including abstinence, partner reduction, and correct condom use - is most effective at preventing new infections (Jemmott, 1998).

2.6.2 HIV Testing, Prompt Diagnosis and Treatment of Other STDS

Encouraging HIV testing is critical for prevention HIV as well as identification of STDS which increases risk of HIV acquisition. However, less than 10% of the population in developing countries access HIV testing services (Bateganya *et al.,* 2010). Studies have shown that people who know their HIV status are more likely to protect themselves and others from infection. For example, a multi-centred study in Kenya, Tanzania, and Trinidad found that when people learned that they or their partner was HIV-infected, they were significantly more likely to practice safer sex (Varghese *et al*., 2000).

Infection by other sexually transmitted diseases (STDS) such as gonorrhoea increases risk of HIV acquisition and transmission by at least two to five times (Institute of Medicine of the National Academies, USA, 2005), and prompt detection and treatment of STDS can help reduce HIV risk. For example in Tanzania, it was found that treating STDS reduced the rate of new HIV infections by 38% (Grosskurth, 1995). Grosskurth (1995) also suggested that STD control efforts are most effective at preventing HIV when initiated as early as possible in the course of a country's epidemic and are targeted toward people at highest risk.

2.6.3 Male Circumcision and Condom Use

Counselling promotes male circumcision especially in population that does not practice it. This is because male circumcision provides a degree of protection against acquiring HIV infection, equivalent to what a high efficacy vaccine might achieve (Auvert *et al.*, 2005). Bailey *et al.*, (2007) found out that male circumcision was 53% protective against HIV transmission among men in Kisumu, Kenya. In Kenya, it is now part of prevention strategies being enforced by Ministry of Public Health and Sanitation (Nelson and Quinn, 2009).

Condoms are highly effective in preventing sexual transmission of HIV and other STIs. United States National Institute of Health 2001 report analysed several studies on condom effectiveness, and concluded that consistent use of condoms can reduce an individual's risk of HIV transmission by 85% (Institute of Medicine, 2005). This can be promoted especially by visiting VCT (Jemmott, 1998).

2.6.4 Harm Reduction Programs and Blood Safety Supply

Harm reduction programs like provision of clean needles and syringes with proper counselling have been shown to be effective in reducing the risk of HIV acquisition and transmission (Hurley, 2006). Needle and syringe programs also connect drug users to other health programs. A 2002 report by the U.S. National Institute on Drug Abuse concluded that these programs serve as a bridge by offering opportunities for HIV testing, and by providing referrals for drug abuse treatment, (Institute of Medicine,

2005).VCT services can be offered together during blood donation to ensure routine screening of the blood to eliminate the risk of HIV transmission through blood transfusion (Sloand, 1997).

2.6.5 Preventing Mother-To-Child Transmission

VCT services offered in anti natal clinics are part of prevention of mother-to-child transmission (PMCT). PMCT services are coupled with counselling services in which mothers are advised to use antiretroviral drugs (ARVs) such as Nevirapine. Use of ARVs can reduce mother to child transmission by nearly 50% (Guay, 1999). When mothers visit anti natal clinics, they are counselled on the importance of breastfeeding and breast feeding alternatives including importance of safe delivery methods. Ideally, HIV-infected mothers should have access to breastfeeding alternatives, such as infant formula (Coutsoudis, 1999). Currently, WHO (2010) recommends exclusive breastfeeding for six months coupled with provision of ARVs and counselling to minimize chances of HIV transmission from infected mothers to their children. This is because breast milk contains antibodies that provide protection for infants against other infections.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study Design

This was a cross-sectional study in which data was collected through quantitative and qualitative Methods.

3. 2 Study Area

The study was conducted in Ndhiwa constituency in Homa County which is part of the former Nyanza Province. Ndhiwa is a rural constituency as classified by the Kenyan government (NCAPD, 2005) and it has a high HIV/AIDS prevalence of 29% (AHF, 2010). The major economic activity here is subsistence agriculture. Another economic activity that sprung up in the late 1990s is the *Boda Boda* (commercial cyclist) business. The activity started with the use of bicycles before the current motor cycles and the business is popular mostly among the youths (NCAPD, 2005).

In Ndhiwa constituency, the operators work from specific termini where which they pick and drop their customers. These termini acted as the sampling units. The major *Boda Boda* operators' termini in this constituency are Ndhiwa market, Mirogi, Aora Chuodho, Magina, Opapo and Pala trading centres. By December 2010 a pilot study done found out that the termini had the following number of operators who were

registered by their association: - Ndhiwa market - 156, Mirogi - 94, Aora Chuodho - 45, Magina - 138, Opapo - 112, and Pala - 63. Hence, there were about 600 operators within the constituency although this may be dynamic.

The constituency had seven NASCOP licensed VCTs sites: - Magina Health centre VCT, Good Shepherd Ang'iya VCT Centre, Maram community Health centre VCT, Pala Health centre VCT and Ratang'a VCT and care centre, level 4 Ndhiwa sub district Hospital VCT and Got Kojowi Health centre VCT by December 2010. The constituency provides an example of rural settings in Kenya which experiences low VCT utilization (KDHS, 2009). The constituency is also part of the former Nyanza province where HIV prevalence is highest (14.7%) in Kenya (KAIS, 2007).

3.3 Study Population

The study population consisted of *Boda Boda* operators within Ndhiwa Constituency only. These are men and women who earn their living by transporting passengers and/or goods either by bicycle or motorcycles in exchange for money. *Boda Boda* business is the major means of transport in this area due to lack of vehicles resulting from poor road network. Moreover, *Boda Boda* operators in this region are a population that is at risk of HIV infection due to high HIV/AIDS prevalence of 29% in the constituency (AHF, 2010) and 15.4% in the now defunct Nyanza province respectively (KAIS, 2007). Other risky practices among the operators include activities such as engaging in transactional

sex (Oduor, 2010). The important aspect about the operators is that; it is a group of people that if targeted by the right HIV information and empowered, can possibly be useful in spreading HIV/AIDS preventive strategy of VCT to their community members.

3.3.1 Inclusion Criteria

The following criteria were used to recruit participants to the study.

a) Must have been practicing as a *Boda Boda* operator within Ndhiwa Constituency for at least 3 months.

b) Those who consented to participate in the study

3.3.2 Exclusion Criteria

Refusal to consent for participation in the study

3.4 Study Sample

The formula below was used in sample size calculation (Daniel, 1999)

$$n = \frac{=Z^2 P(1-P)}{d^2}$$

Where

n = sample size,

Z = Z statistic for a level of confidence, standard normal value corresponding to 95% confidence interval (1.96)

P= is the expected proportion of the rural population who take up VCT services i.e. 30% according to KAIS, 2007. (In proportion of one which is 30%, P = 0.3), this was applied to the operators and d = precision, (In proportion of one; 5%, d = 0.05). Therefore: n= $(1.96)^2$ x 0.3 x 0.7/0. 05x0.05 = 322.16

n= is approximated at least 323 operators.

Using finite sample size correction formula on the 323 operators among the total number of 609 cyclists operating in the area as per August, 2010.The sample size was calculated as follows

$$n_1 = \frac{n_0}{1 + (n_0 - 1)/N}$$

n_1= 323/ (1+ (323-1)/609) = is at least 211 samples/ participants.

A 10% of the 211 participants were included to cater for non-response.

= 10%*211= 21 participants.

Total number of participants who were to be recruited was 211+21= 232 participants.

3.5 Sampling Method

A systematic random sampling technique was employed in selection of research participants. In this case, the calculated sample size of 232 was proportionately distributed to each of the six termini depending on the population of operators in each terminus as shown in the table below. A sample frame consisting of the names of operators was made for each of the terminus from the operators' daily registers. These

sample frames are the ones from which the operators were selected. A sampling interval was designed in each of the sample frames by dividing the total number of operators in that terminus by the sample size of each terminus. After which a random starting point in the sample frame was determined. Study participants (operators) were then selected with the predetermined sampling interval as they came to the parking bay daily. This was done until the required sample size was reached. This was replicated throughout all the parking bays in all the respective centres. The total number of participants included in the study was sum of all sampled participants from all the termini.

Table 3.1: Number of study participants per terminus

Terminus	***Boda Boda* population**	**Formula**	**Sample**
Ndhiwa	140	140/609*232	53
Aora chuodho	45	45/609*232	17
Opapo	112	112/609*232	43
Magina	155	154/609*232	59
Pala	63	63/609*232	24
Mirogi	94	94/609*232	36
Total	609		232

3.6 Variables

3.6.1 Dependent Variable

The dependent variable was VCT utilization level amongst *Boda Boda* operators i.e. having been tested for HIV at a VCT centre or not.

3.6.2 Independent/Explanatory variables

The independent variables were age, gender, education, marital status, religion, number of children, monthly income, and distance of VCT locations from residential areas or area of operation, visiting a VCT centre with a partner and awareness of availability of VCT services.

3.7 Data Collection Methods

Data quantitative and qualitative collection was done between July and August 2011.

3.7.1 Quantitative Data

Pre-tested interviewer administered questionnaires in English or *Dholuo* were used for data collection among the 232 sampled participants. In order to prevent any interviewer variability that could result due to language used for each participant, the questionnaires were translated to *Dholuo* and back translated to English and then to Dholuo. Pre-testing of the questionnaires was done on 10 operators in a neighbouring constituency prior to data collection to ascertain homogeneity and clarity of the questions. Questionnaires

were given after adequate explanation about the objectives of the study. Data was recorded in the questionnaires as they were being administered to the participants. The responses were verified by checking one questionnaire for every five filled. If they were not well responded to, the questionnaires were re-administered.

3.7.2 Qualitative Data

Face to face in-depth interviews were conducted for selected four key informants to get more information on VCT utilization among the operators. A voice recorder was used to record the interviews. Key informants included the chairman of the operators' association, two community health workers and the constituency's NACC coordinator. The chairman of the association was selected to give an overall view point on how the operators perceive the VCT and how they relate to this service. A community health worker was included since they are involved in routine public health sensitisation issues to the locals including HIV/AIDs prevention mechanisms like VCT. The coordinator was interviewed due to his administrative and oversight role in the constituency's HIV based programs.

3.8 Data Management and Storage

The data collected from questionnaires were entered into an SPSS version 16.0 data base. Some responses were dichotomized for binary analysis while others were stratified into categories for stratified analysis. Data from the key informant interviews, summary

quotations were made according to thematic areas addressed. Data was kept in the PI's personal computer protected with the aid of a password. Backs ups were made by keeping the information on CDs and flash disks.

3.9 Data Analysis

Data from the questionnaire was analysed using version 16.0 of SPSS. Descriptive analysis involved statistics such as frequencies and proportions for both numerical and categorical variables. Level of significance was fixed at 0.05 ($p<0.05$) with a 95% confidence interval. Tests of association on VCT utilization and the independent categorical variables were done through bivariate and stratified analysis for categorical variables with more than two categories using odds ratio. Stratification was done to remove confounding and chances of effect modification. Binary variables that showed significant association were entered into a logistic regression model to control for confounding effect of other variables. Quantitative analysis was restricted to non missing data.

Qualitative data were analysed through the scrutiny of words or phrases mentioned by the interviewees as per the thematic areas based on the observed responses and literature review. Results of the quantitative data were presented in tables, pie charts and bar graphs.

3.10 Ethical Considerations

3.10.1 Ethical Clearance

Scientific and ethical approvals were obtained from KEMRI's Scientific Steering Committee (SSC) (Appendix VII) and KEMRI National Ethics Review Committee (Appendix VIII). Permission was also requested from the District Officer's office to carry out research in the area. Other relevant stake holders like the District Health Management Team (DHMT) were informed about the study. The questionnaires were translated in *Dholuo* for those who were not be able to answer in English, point translation i.e. one to one translation was done during questionnaire administration.

3.10.2 Consent and Confidentiality

Informed consent was obtained from the participants before administration of the questionnaires. Participants were given an informed consent form (appendix II) to read and a detailed explanation given to them. Fortunately most of the operators knew how to read and write. The explanation involved informing them the purpose of the study and contents of the questionnaire. This was done by both the Principal Investigator (PI) and the research assistants. This was done to make the participants familiarize themselves with the study before responding to the questionnaire (appendix III). For operators who were less than 18 years old, consent was sought from their guardians and questionnaires given to them after assenting for participation. Voluntary participation in the study and right of withdrawal at any point without any negative consequences was clearly outlined.

This also applied to the key informants.The interviews were conducted in scheduled places near the *Boda Boda* parking bays at each of the terminus. Interviews were one-to-one interaction and no information was given to any other unauthorized person. No names were recorded; only serial numbers were entered into the questionnaire. Filled questionnaires were kept under lock and key.

CHAPTER FOUR

4.0 RESULTS

4.1 Socio demographic characteristics and distribution of *Boda Boda* operators per terminus in Ndhiwa constituency.

A total of 231 *Boda Boda* operators were interviewed. The mean age of the operators was 27.2 years and range 15-57 years. In terms of distribution of the operators per terminus, majority were from Magina market centre 59 (25.5%), Opapo 51 (22.1 %), Ndhiwa 44 (19%), Mirogi 35 (15.2 %), Aora chuodho 23 (10%) and 19 (10 %) from Pala market centres respectively. In terms of gender, 91.3% (211) were males while 8.7% (20) were females while 52.4% were single and 47.6% were married Majority (33.8%) of the operators were within the age groups of 25-29 years old and most of them were primary 103 (44.16%) and secondary 111 (48.05%) school leavers with few of them having tertiary education, 17 (7) % (Table 4.1).

Table 4.1 Summary of Socio demographic characteristics of *Boda Boda* operators in Ndhiwa Constituency

Variable		n=231	Percent (%)	95% CI Lower	95% CI Upper
Gender					
	Male	211	91.3	87.7	94.9
	Female	20	8.7	5.1	12.3
Marital status	Single	121	52.4	46.0	58.8
	Married	110	47.6	41.6	54.04
Age	15-19	19	8.2	4.7	11.7
	20-24	72	31.2	25.2	37.2
	25-29	78	33.8	27.1	39.9
	30-34	30	13	8.7	17.3
	35-39	15	6.5	3.3	9.7
	40 and above	17	7.3	4.0	10.8
Religion	Muslims	8	3.5	1.1	5.9
	Catholics	62	26.8	21.1	32.5
	Anglicans	19	8.2	4.7	11.7
	SDA	87	37.7	31.5	44.0
	Pentecostals	40	17.3	12.4	22.2
	Others	15	6.5	3.3	9.7
Education	Primary	102	44.16	37.8	50.6
	Secondary	111	48.05	41.6	54.5
	Tertiary	16	7	3.7	10.3
	Missing	2			

4.2 Utilization of VCT services among the *Boda Boda* operators in Ndhiwa constituency.

In this survey, 165 (72.1%) of the participants indicated that they had been tested at least once in their lifetime for HIV at a VCT centre compared to 64 (27.9%) who had never been tested for HIV. Two participants did not indicate whether they have been tested or not. This statistics was supported by the key informants' sentiments, especially the head of the operators association and the community health workers. According to the latter, *Boda Boda* operators in the recent past have been sensitized on the importance of knowing their HIV status by local NGOs and other humanitarian organisations in the area. Another reason given by the head of NACC in the Constituency was that, the operators consider VCTs as places for provision of ARVs hence visiting VCT allows them to freely access available either for themselves or their loved ones. A sentiment supported by another community health worker who said, "Some of them think those drugs cure all disease".

A summary of VCT utilization across different demographic characteristics is shown in Table 4.2. More male operators (75.1%) had gone for test compared to their female counterparts (40%). In terms of marital status, 75.4% had utilized VCT among the married operators as compared 68.3% among the singles. Utilization of VCT services across different educational levels was as follows, amongst those with primary education, 73 % of them had gone to VCT for HIV-test compared to 71.2% among those with secondary level of education and lastly 68.8 % among those who had

secondary education. According to different age groups, there were generally a high number of operators who had accepted to go for test (Table 4.2)

There was high VCT utilization across different religious groups. Among the Muslims 75%, Catholics (73.3%), Anglican (52.6%), SDA (65.5%), Pentecostals (90%) and the rest of the religious affiliations like traditionalists, independent African churches and non believers (76.9%). This high level of VCT utilization is supported by a key informant who said.

> "The people of this region have realised the importance of knowing their status and are much aware that HIV/AIDS is not just a cultural curse as previously perceived but is a disease that can be prevented. The cultural belief that HIV was *chira* (cultural curse) has been removed from their minds and now they are much aware of HIV issues and they take drugs with ease".

Table 4.2 gives a summary of VCT utilization among the operators in relation to socio demographic characteristics. The **"Yes''** column shows the proportion of the operators who have been tested for HIV at VCT centre while the **"No"** column indicates proportion of the operators who had not been tested for HIV at VCT centres.

Table 4.2: Frequency of VCT utilization in relation to socio demographic characteristics of *Boda Boda* operators in Ndhiwa constituency.

Variable		HIV test status of the operator at a VCT centre							
		Yes		95% CI		No		95% CI	
		n	%	Lower limit	Upper limit	n	%	Lower limit	Upper limit
Gender	Male	157	75.1	69.5	80.7	52	24.9	19.3	30.5
	Female	8	40	33.8	46.4	12	60	53.68	66.3
Marital	Single	82	68.3	62.3	74.3	38	31.7	25.7	37.7
	Married	83	75.4	69.9	81.05	26	23.6	18.1	29.1
Age group	15-19	12	63.2	57.08	69.4	7	36.8	30.6	43.0
	20-24	49	70.0	64.1	75.9	21	30.0	24.1	35.9
	25-29	54	69.2	63.35	75.2	24	30.8	24.9	368
	30-34	23	76. 7	71.3	82.2	7	23.3	17.9	28.8
	35-39	14	93.3	90.1	96.5	1	6.7	3.5	9.9
	40 and above	12	92.3	88.9	95.7	4	7.7	4.3	11.1
Education	Primary	75	73.5	67.8	79.2	27	26.5	20.8	32.2
	Secondary	79	71.2	65.4	77.0	32	28.8	23.0	34.6
	Tertiary	11	68.8	62.8	74.8	5	31.2	25.2	37.2
Religion	Muslims	6	75	69.4	80.6	2	25	19.4	30.6
	Catholic	44	73.3	67.6	79.0	16	26.7	21.0	32.4
	Anglican	10	52.6	46.2	59.0	9	47.4	41.0	53.8
	SDA	57	65.5	59.4	71.6	30	34.5	28.4	40.6
	Pentecostals	36	90	86.1	93.9	4	10	6.1	13.9
	Others	10	76.9	71.5	82.3	3	23.1	17.7	28.5

4.2.1 Utilization of VCT services in relation to Terminus of Operation

Mirogi had the highest level of VCT utilization at 91.4%. Utilization of VCT services in other termini are shown in Figure 4.1 below.

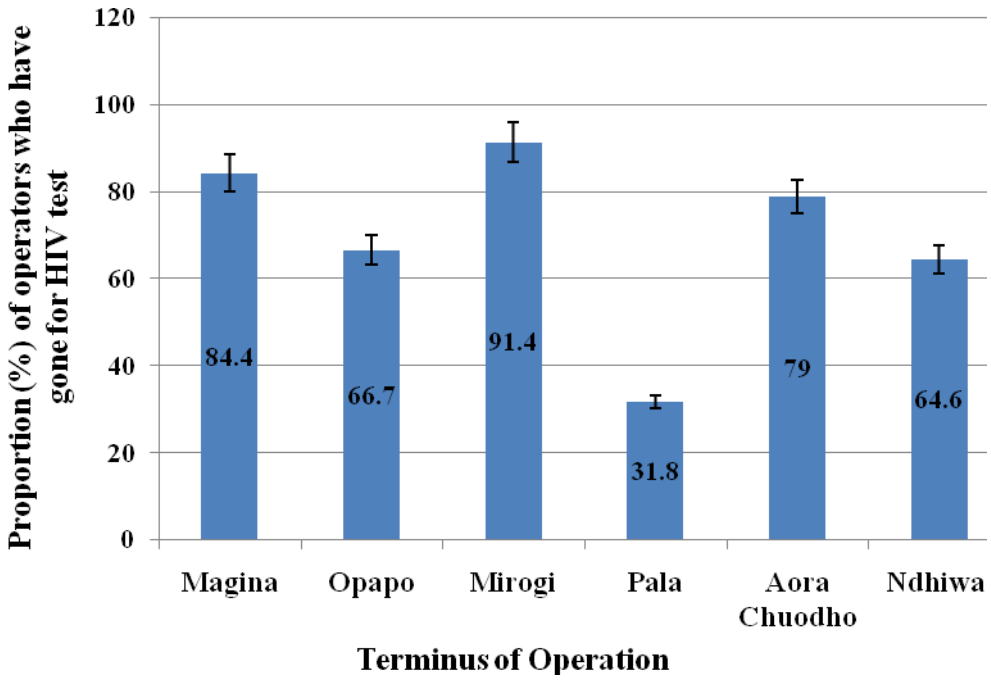

Figure 4.1: VCT utilization among *Boda Boda* operators in Ndhiwa constituency in each terminus of operation.

4.2.2 Rate of VCT utilization among the operators

Among the operators who had gone for HIV test at a VCT, 16.8 % had been tested once, 41.0% twice, 23.6% thrice while 18.6 % had gone for HIV test more than three times as shown in Figure 4.2.

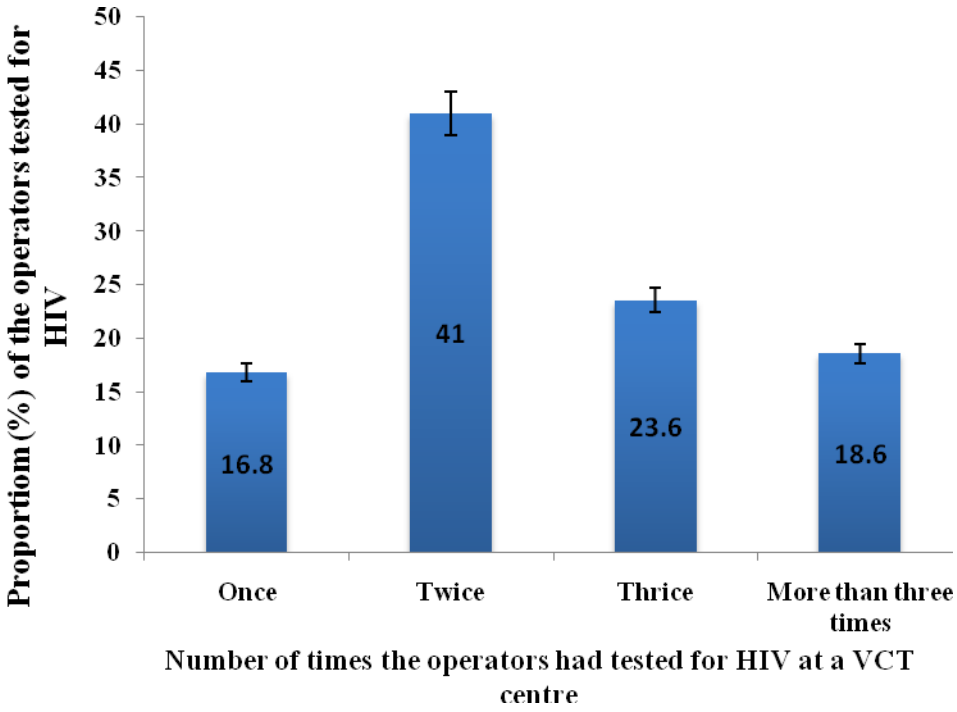

Figure 4.2: Frequency of VCT utilization among the study participants.

It shows the number of times the operators who have gone test have gone for HIV test.

4.3 Awareness of Availability of VCT Services within Ndhiwa Constituency among the Operators

In terms of awareness, 96% of those interviewed were aware of the existence of at least one VCT centre within the constituency. Among the male operators, 96.2% of them were aware of VCT services compared to 89.5 % among the female operators.

One of the key informants said that every operator is aware of the existence of HIV/VCT service.

"Every operator here is aware of the existence of a VCT, those who have not gone have not just gone for test but they don't have any excuse.''

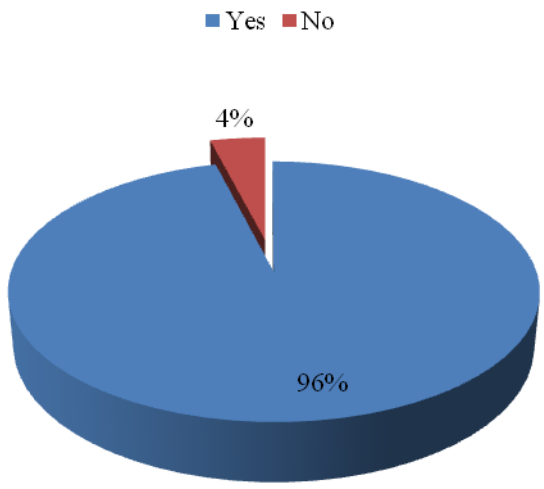

Figure 4.3: Proportion of operators aware of VCT sites within Ndhiwa constituency

4.3.1 Awareness of Availability of VCT by Education Level

Among those aware of the presence of VCT service/centre within the constituency, 45.7% of them had primary level of education while 47% had secondary education and 7.3% had tertiary level of education.

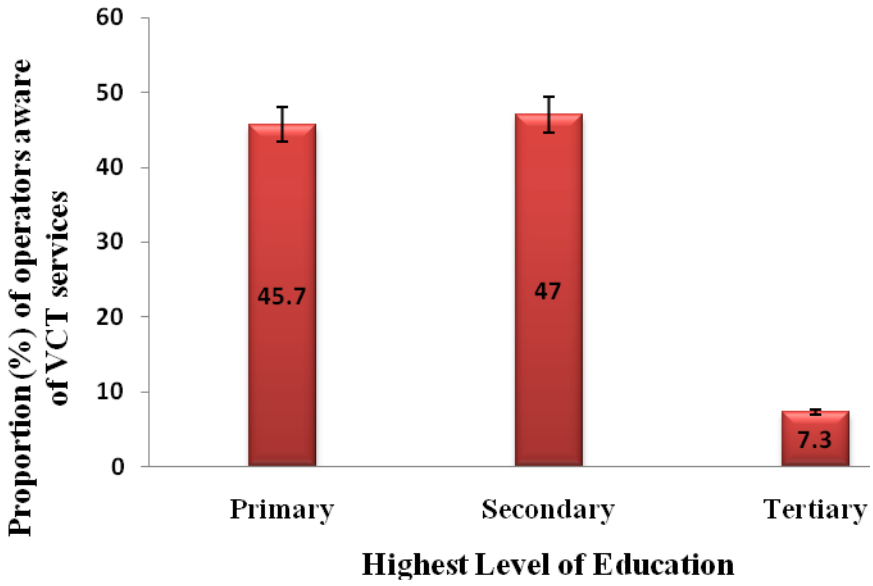

Figure 4.4: Proportion of operators aware of VCT services within Ndhiwa constituency by highest level of education

4.3.2 Awareness of Availability of VCT by Religious Affliation

Figure 4.5 below shows awareness of existence of VCT services as distributed by religious affiliations of the operators. Most operators (37.2%) who were aware of the availability of VCT services were operators affiliated to the Seventh Day Adventist.

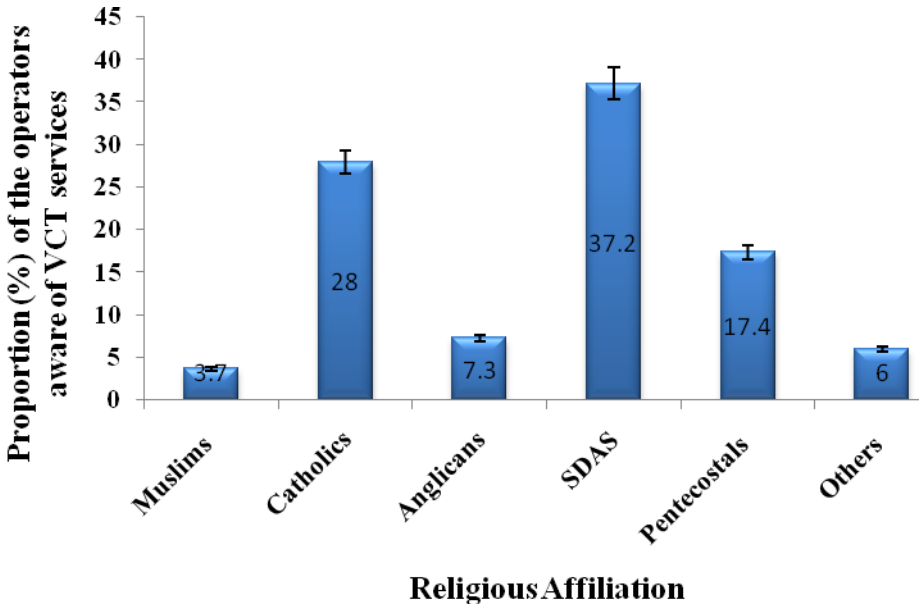

Figure 4.5: Proportion of *Boda Boda* operators aware of VCT services within Ndhiwa constituency by Religious Affiliation

4.3.3 Awareness on Services taking place at VCT Centres among the operators who have tested for HIV at VCT centre.

The results in Table 4.3 indicate that all *Boda Boda* operators who had been tested for HIV were aware of HIV blood test as a service taking place at a VCT centre, 98.4% of them mentioned counselling as a service taking place at a VCT centre. Circumcision was mentioned by 52.2% of those tested while 95.1% of them mentioned condom distribution as one of the services that given at a VCT centre.

Table 4.3: Awareness of *Boda Boda* Operators on Services Taking Place a VCT Centre among both who have been tested for HIV at VCT centre.

Service Offered at VCT Centre	Response	n=165	%
Blood test	Yes	165	100
	No	0	0.0
Counselling	Yes	160	97
	No	5	3
Circumcision	Yes	84	52.2
	No	77	47.8
	Missing (4)		
Condom distribution	Yes	156	95.1
	No	8	4.9
	Missing (1)		

4.3.4 Awareness on Services taking place at VCT Centres among the operators who have not tested for HIV at VCT centre.

Awareness on services offered at VCT centres among those had not been tested for HIV at VCT centres. Among them, 98.4 % of them were aware of blood test as a service in the VCT centre. The rest of the services are as shown in Table 4.4.

Table 4.4: Awareness of *Boda Boda* Operators on Services Taking Place a VCT Centre among participants who have not been tested for HIV at VCT centre.

Service Offered at VCT Centre		n=66	%
Blood test	Yes	64	98.4
	No	1	
	Missing (1)		
Counselling	Yes	63	100
	No	0	0
	Missing (3)		
Circumcision	Yes	26	41.3
	No	37	58.4
	Missing (3)		
Condom distribution	Yes	58	92.1
	No	5	7.9
	Missing (3)		

4.3.5 Awareness of *Boda Boda* operators on importance of testing at VCT

The operators were asked the importance of going to a VCT centre and knowing their status. Almost all the operators (99.6%) mentioned that visiting a testing at a VCT centre would help one plan for the future (Figure 4.6).

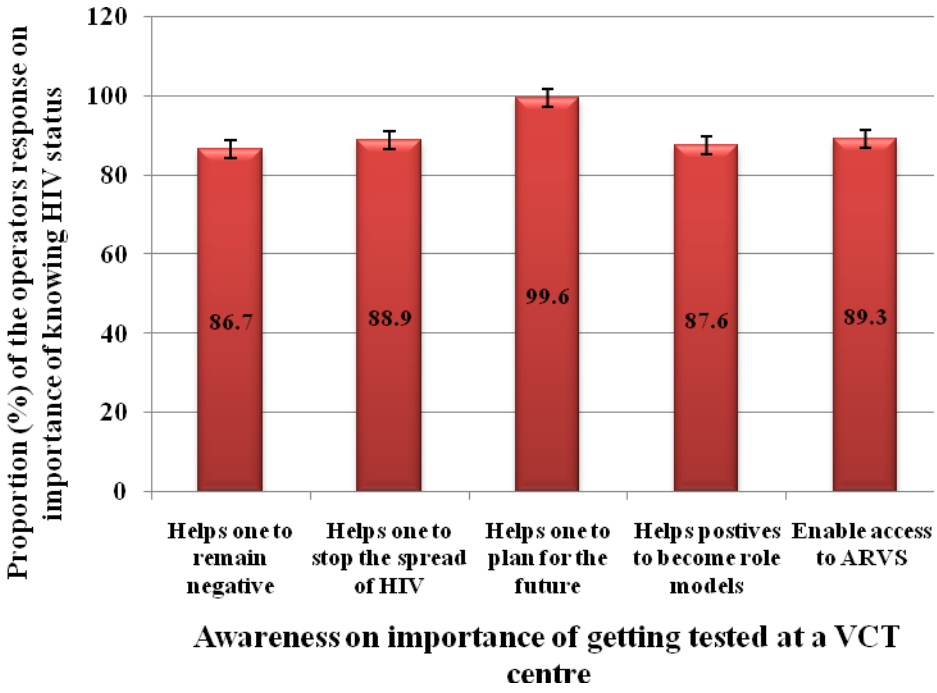

Figure 4.6: Awareness of *Boda Boda* operators on importance of testing at a VCT centre

4.3.6 Awareness on the best place to offer VCT services

The operators were asked where they consider the best place to offer VCT services. Table 4.5 below give their responses. Majority of them (58.1%) mentioned church as the best place to offer VCT services . This was followed by 16.6% who preffered homes. They said that those in charge of providing VCT services should go door to door encouraging people to go for test.

Table 4.5: Opinion of *Boda Boda* operators on best place to offer VCT services

	Best place to offer VCT services among the operators	
	n	%
Home	38	16.6
Hospitals Clinic	13	5.7
Church	133	58.1
NGO	14	6.1
Schools	16	7.0
Mobile	15	6.6

* Multiple responses allowed

4.3.7 Awareness of *Boda Boda* operators on when HIV test should be taken

After asking the operators the appropriate time after which someone should to go for an HIV test (Figure 4.7), 12.7% agreed that HIV test should be done after every sexual intercourse, 13.5% said every year, 24.1 % said that every time you feel unwell while 13.9 % said HIV test should be taken as many times as possible. The rest, 35.9% said HIV test should be taken after every three months.

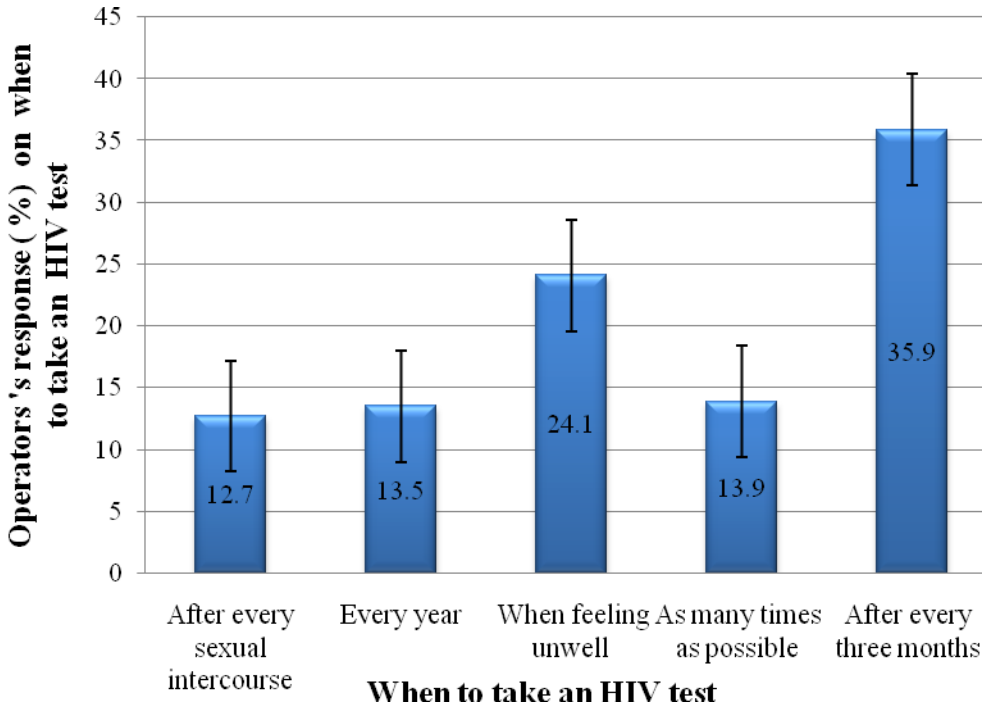

Figure 4.7: Awareness of *Boda Boda* operators on when to take an HIV test.

4.3.8 Suitability of using operators as agents of VCT

The *Boda Boda* operators were asked whether they can be used as means of transmitting HIV information to other members of the community. Majority (72.9%) of the operators agreed that they can be used as source of information of HIV and VCT to their colleagues as well as the immediate community. The rest, 27.1% said it was not possible for them to be used. Among those who agreed that the operators can be used to spread HIV information, 71.3% of them had been tested for HIV while 28.7% had not been tested for HIV. All key informant interviews suggested that if the operators could be

educated, they could be used as agents of voluntary counselling testing and as potential educators on HIV issues within the constituency.

4.3.9 Awareness of *Boda Boda* operators on ways of curbing HIV pandemic

The operators were asked to give their best idea on what they consider could lead to reduction of HIV scourge in Kenya. The results are shown Table 4.6. Majority of the operators (29.7%) stated increase in number of VCT sites as the major way of realising reduction of HIV in this country, 21.9% said abstinence and 24.7 % said being faithful to a partner. Abstinence and faithfulness are part of the ABC methods of HIV control. Five (2.3%) of the operators suggested that if a vaccine could be developed; HIV could be a thing of the past. The ABC methods were highly supported during the key informant interviews. Another suggestion by a key informant was that, it is necessary for every person to know the HIV status of the individual they want to have any sexual relationship with.

> "I recommend that every person including the *Boda Boda* operator should know the HIV status of their sexual partner and after knowing they should be faithful and use protection" suggested one of the community health workers.

Table 4.6: Awareness on ways of curbing HIV pandemic by the *Boda Boda* operators

Suggestion on How to curb HIV in Kenya	n	%
HIV/AIDS education and awareness	41	18.7
Use Condom	48	21.9
Increase of VCT centres and people encouraged to go for Testing	65	29.7
Abstinence and faithfulness	54	24.7
Not possible to reduce HIV	1	0.5
Circumcision	4	1.8
Getting saved	1	0.5
Through research on a vaccine	5	2.3

4.3.10 Awareness of *Boda Boda* operators on HIV as a community health problem

Despite high VCT utilization among the operators, HIV was still considered a community threat and78.9% of the operators said HIV/AIDS is still a problem within the society. This view was corroborated in most key informant interviews.

> "HIV/AIDs is the greatest killer of our people here, many children have been left orphans, we have widows and in fact almost all homesteads within this area has someone who is HIV positive", said one of the community health workers.

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4.3.11 Awareness of *Boda Boda* operators on challenges facing VCT utilization in Ndhiwa constituency.

Factors that were considered to affect VCT utilization included fear to be seen at a VCT site (28.8 %), fear of getting positive results (36.0%) and lack of proper information on VCT services (35.2%).

4.4 Sources of VCT information among the operators

The major sources of VCT information among these operators were radio (95.2%), other forms of media 92.2%, family members 89.1%, and friends 88.7% and during marriage counselling 38.4%. Other sources of HIV and VCT information were funerals and *chief Barazas* (local meetings held by the administrative chief). Both tested and untested operators have heard of HIV voluntary counselling and testing. On VCT information, 99.6% of the operators interviewed said they had heard of VCT services.

4.5 Bivariate analysis on factors associated with utilization of VCT services

Table 4.6 summarises results of Bivariate analysis using Odds Ratio at significance level of p-value <0.05. Five factors were significantly associated with utilization of VCT among *Boda Boda* operators. Male operators were more likely to go for HIV-VCT test compared to females (OR=4.529, 95% CI: 1.753-11.687; *p*-value: 0.001). Operators going to a VCT centre with their sexual partners were also more likely to be tested for HIV as compared to those who went alone (OR=7.286, 95% CI: 3.012-17.624; *p*-value =

0.001). Operators who were certain that their test results will be kept confidential were also more likely to go for HIV-VCT test as opposed to those unsure that their test results will be kept confidential (OR=4.79, 95% CI: 2.033-8.907; *p*-value = 0.044). Operators who were aware of presence of VCT services within the constituency were more likely to go for HIV at VCT compared to those who did not (OR =4.237, 95% CI: 1.154-15.56; p value 0.019). Apparently fear of being seen at a VCT site (OR=0.551, 95% CI: 0.307-0.988; *p*-value 0.031) and having visited a VCT centre in which the operator is known (OR=0.152, 95% CI: 0.034-0.221; *p*-value <0.001) was not associated with testing at a VCT centre.

Table 4.7: Summary of Bivariate analysis of factors associated with VCT utilization among the Study participants.

Variable		Test for HIV at VCT					
		Yes	**No**	**Crude OR**	**95% CI**		***p*-value**
Gender	Male	157	52	4.529	1.755	11.687	**0.001**
	Female	8	12				
Income	< 3000	84	34	0.786	0.418	1.479	0.455
	≥3000	66	21				
Marital status	Single	82	38	0.676	0.377	1.213	0.185
	Married	83	26				
Have children	Yes	83	26	1.414	0.768	2.603	0.265
	No	70	31				
Living with spouse	Yes	78	26	0.500	0.057	4.341	0.522
	No	6	1				
Heard of VCT	Yes	159	60	1.767	0.482	6.479	0.385
	No	6	4				
Distance from VCT	<4Km	130	52	0.625	0.257	1.520	0.297
	≥4km	28	7				
Sexual partners	One	105	29	1.655	0.805	3.402	0.168
	>1	35	16				
Have visited a VCT centre with partner	Yes	81	7	16.39	3.012	17.624	**0.001**
	No	24	34				
Fear of being seen at VCT	Yes	71	37	0.551	0.307	0.988	**0.031**
	NO	94	27				
Fear of testing positive	Yes	94	41	0.743	0.409	1.348	0.204
	NO	71	23				
Confidentiality of test results	Yes	131	29	4.79	2.033	8.907	**0.044**
	NO	33	35				
Is HIV problem in society	Yes	154	55	2.520	0.973	6.527	0.051
	No	10	9				
Visiting a VCT in which the operator is known.	Yes	23	33	0.152	0.034	0.221	**<0.001**
	No	142	31				
Aware of VCT within Ndhiwa	Yes	161	57	4.237	1.154	15.56	0.019
	No	4	6				

4.5.1 Stratified analysis of categorical variables

Stratified analysis was done for categorical variables with more than two categories. The results are given in Table 4.8 below. The results show that VCT utilization was significantly associated with being in each of the terminus of operation in relation to the Pala trading centre which was used as the reference category, Magina $p<0.01$, Opapo $p=0.010$, Mirogi $p<0.001$, Aora Chuodho $p=0.004$ and finally Ndhiwa $p=0.019$. Being in a particular age group, belonging to a particular religious group and having a particular level of education did not show significant association with VCT utilization in relation to the reference categories.

Table 4.8: Stratified analysis of terminus, religions and age and education level.

Variable		Test for HIV at VCT					
		Yes	No	OR	95% CI		*p* -value
Terminus	Magina	49	9	11.67	3.714	36.6	<0.001
	Opapo	34	17	4.29	1.47	12.5	0.010
	Mirogi	32	3	22.86	5.18	101.5	<0.001
	Aora Chuodho	15	4	8.036	1.94	33.25	0.004
	Ndhiwa	28	16	3.75	1.264	11.13	0.019
	Pala	7	15	Reference			
Age group	15-19	12	7	0.5714	0.0972	3.040	0.493
	20-24	49	21	0.7800	0.164	2.978	0.770
	25-29	54	24	0.752	0.160	2.82	0.770
	30-34	23	7	1.09	0.194	5.40	1
	35-39	14	1	4.677	0.3727	245.53	0.3326
	Above 40	12	4	Reference			
Religion	Muslims	6	2	0.900	0.077	13.82	1
	Catholic	44	16	0.825	0.130	3.79	1
	Anglicans	10	9	0.333	0.0461	1.957	0.2675
	SDA	57	30	0.573	0.0942	0.536	2.496
	Pentecostals	36	4	2.70	0.332	8.641	0.343
	Others	10	3	Reference			
Education	Primary	75	27	1.262	0.314	4.394	0.736
	Secondary	79	32	1.122	0.282	3.854	1
	Tertiary	11	5	Reference			

4.5.2 Logistic Regression of Significant Variables in Bivariate Analysis

Factors significantly associated with VCT utilisation at bivariate analysis *p* value <0.05 were entered into a logistic regression analysis using *backward conditional* regression model to assess individual factor effect on VCT utilization. All the factors remained significantly associated with HIV-VCT utilisation. Gender (AOR =4.500, 95% CI: 1.418-15.910: *p*-value=0.012), going to a VCT centre with a sexual partner (AOR=16.39, 95% CI: 3.365-27.986: *p-value* <0.001) and having confidence that your test results are safe (OR=4.79, 95% CI: 2.033-8.907; *p*-value = 0.044) were more likely associated with VCT utilization among the operators in Ndhiwa constituency. Awareness of VCT services within the Constituency was not a likely predictor to VCT utilization in a logistic regression (AOR =2.097, 95% CI: 0.34-9.31; *p*-value <0.266). Having visited a VCT in which the operator is known (AOR =0.152, 95% CI: 0.034-0.221; *p*-value <0.001) and fear of being seen at a VCT site were not associated with testing at a VCT centre (AOR =0.551, 95% CI: 0.307-0.988; *p*-value <0.001).

Table 4.9: Summary results of multivariate analysis of factors associated with VCT utilization

		Tested for HIV at VCT					
Variable		**Yes**	**No**	A**OR**	**95% CI**		***p*-value**
Gender	Male	157	52	4.52	1.42	15.91	**0.012**
	Female	8	12				
Visiting a VCT with partner	Yes	81	7	16.39	3.37	27.99	**<0.001**
	No	24	34				
Confidentiality of test results	Yes	131	29	4.79	2.033	8.907	**0.044**
	NO	33	35				
Fear of being seen at VCT	Yes	71	37	0.551	0.307	0.988	**0.031**
	NO	94	27				
Visiting a VCT centre in which the operator is known	Yes	23	33	0.152	0.034	0.221	**0.003**
	No	142	31				

CHAPTER FIVE

5.0 DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Discussion

5.1.1 Socio Demographic Characteristics of the *Boda Boda* Operators

From the survey, 91.3% of the operators were males, 52.4 % of them were single while 47.6% were married. These findings are corroborated by both Kirunga and Ntozi (1997) and Okongo *et al.,* (1997) who reported that majority of transport providers were males and mostly single. This was more likely because *Boda Boda* business like other energy demanding occupation is dominated by men, more so the youth Oduor (2010). It was also observed that most of the operators were young adults within the age brackets of 20-24 and 25-29 years. This result is supported by Oduor (2010) who reported that majority of *Boda Boda* operators in Busia, Kenya were young adults within the age brackets of 20-30 years. In terms of religion, majority of the *Boda Boda* operators were affiliated to the Seventh Day Adventist church (SDA) and the Catholic Church (37.7%). This was most likely because the dominant churches within Ndhiwa constituency are Seventh Day Adventist churches followed by the Catholics church (AHF, 2010).

In terms of level of education, most operators had secondary (48.05%) and primary (44.16%) levels of education with only few of them (7%) having tertiary education. The results corroborate other studies that have found majority of transport providers to be a

less educated population with only a few of them having tertiary education (Oduor, 2010, Kirunga and Ntozi, 1997, Okongo *et al.*, 1997). In most cases, people do informal jobs such as *Boda Boda* business as result of their inability to acquire formal jobs which are a preserve to those with higher levels of education (NCAPD, 2005).

5.1.2 Utilization and Awareness of VCT Services among the *Boda Boda* operators

Utilization of VCT services among *Boda Boda* operators in Ndhiwa constituency was relatively high at 92.1 % compared to the Kenya Demographic Health Survey which reported a very low VCT utilization of 30% among the rural population and 36% among adults aged 19-49 years (KDHS, 2008/9). This high level of VCT utilization is also contrary to other findings (Marita, 2009). Marita found low VCT service utilization of 30.5% among secondary school teachers which is below the utilization level among these *Boda Boda* operators. This high VCT utilization among the operators could be attributed to the many VCT centres in Ndhiwa constituency (AHF, 2010). Great attention has also been given to this area on HIV related issues due to high HIV prevalence (AHF, 2010). This could explain the high level of awareness of VCT services among the operators at 96.4%.

Besides, high VCT utilization among the operators could have resulted from the fact that most operators like other transport providers are considered to be a population at higher risk of HIV infection (Odour, 2010, Okongo *et al.*, 1997). As a result of this, there has

been a need to make VCT more accessible and acceptable to them as said by the community health workers. Some NGOs like International Medical Corps (IMC), Family AIDS Community Education Services (FACES) and Africa Health Foundation have also been targeting the youth including the operators with HIV information (AHF, 2010).

5.1. 2.1 Religious Affliation and Utilization of VCT Services among the *Boda Boda* operators

There was high VCT utilization among the operators across the different religious affiliations, among the Muslims 75 %, Catholics, 73.3%, Anglicans 52.6%, SDA 65.5% and 90% among Pentecostals respectively. This could have been as a result of the education that is offered on importance of HIV testing and counselling among varied religious groups in this constituency (AHF, 2010). A study on VCT utilization among medical students in a Tanzanian university found out that even though Catholics were knowledgeable on VCT, they formed the least proportion of those who had visited VCT sites for HIV test (Mgosha, *et al*., 2009). According to Mgosha *et al*., (2009) Catholics at that time were more rigid to condom use as contraceptives. They therefore considered VCTs as places where condoms are distributed and thus did not want to be associated with them. Religion influences health care services, not only in HIV/AIDS management but other disease programs as well (Zapka *et al.*, 1991, Basu, 2011). Miller and Thorensen (2003), assert that religion has become a prominent component of health research. From time to time, some religions do not allow certain conventional health

practices among their followers as they believe divine intervention is enough to help them recover (Basu, 2011).

5. 1.2 .2 Marital Status and Utilization of VCT Services among the *Boda Boda* operators

In this survey 75.4% of the married operators had gone for HIV/VCT test as compared to 68.3% of the single operators. Though some studies have linked marital status to VCT utilization (Karau et al., 2010), in this study there was no significance difference in VCT utilization between single and married operators. These findings therefore corroborate a research on VCT done among teachers in Ethiopia that found no significant difference of VCT utilization between single and unmarried teachers (Omer and Haider, 2009).

5.1.2.3 Gender and Utilization of VCT Services among the *Boda Boda* operators

It was found that 75.1 % of males had been tested for HIV as opposed to 40% of the female operators. When those who had been tested were combined, 95.2% of them were males while 4.8 % were females. The findings are supported by a study done in China that found higher utilization of VCT services among males than females (Rou *et al.,* 2009). Otwombe *et al.,* (2007) using VCT statistics in understanding association between gender and HIV in Kenya found out that majority of those who are visiting VCT sites were males as opposed to females**.** Even though the findings are corroborated by these studies, other studies have found that females are more likely to go for HIV test than males (Karau *et al*., 2010, Omer and Haider, 2009). This is because adult females

are likely to get tested for HIV while attending ante natal clinics in which VCT is part and parcel of (Karau *et al.,* 2010, Omer and Haider, 2009). Though males have been reported to be less likely to go for HIV test than females, they are more sexually adventurers and this could lead them to be more suspicious making them visit VCT centres (Karau *et al*, 2009). Sex is also a great influence to the uptake of varied health programs (Muela *et al*., 2009).

5.2.2.4 Education level and Utilization of VCT Services among the *Boda Boda* operators.

Voluntary counselling and testing utilization of was almost similar across all the education levels. In this study, 73.5% and 71.2% of those with primary and secondary levels of education had been tested for HIV respectively. Among those with tertiary levels of education, 68.5% had been tested for HIV. This is contrary to Muela *et al*., (2009) who reported that in line of HIV, people with higher education are more likely to accept changes in HIV management as opposed to their uneducated counterparts. This is also contrary to Bwambale *et al.*, 2008, who demonstrated that those with higher education were more likely to go for HIV test and accept ARVs than their lower level educated counterparts. Even if these findings are opposing earlier findings, education is an essential part of the society including health care. In this regard it has been shown that there are behavioural differences between those having formal education and those without (KDHS, 2008/9). It is without doubt that education influences health based behaviours of most people. This is because those with higher levels of education have

known the importance of better lifestyle resulting from behaviour change like good nutrition, use of preventative measures like condom more than those with lower levels of education (Karau *et al.,* 2010, Muela *et al.,* 2009).

Some of the above stated findings have been contradicted in a number of studies. Karau *et al.,* (2010), examining responsiveness to VCT utilization among women attending various ante natal clinics in Kenya, established that women with higher level of education were more sceptical of going for HIV test than their lower educated counterparts. The authors argued that educated women were more knowledgeable of the psychological risks of testing positive for HIV, hence their fear for HIV test. The high HIV prevalence in Ndhiwa constituency coupled with a lot of HIV preventative information that has been going on targeting high risk groups adds to explain the reason for higher VCT utilization among the operators in this region (AHF, 2010). People have therefore adopted self education toward HIV including knowledge on voluntary and counselling services.

5.1.2.5 Awareness of the VCT Services among the *Boda Boda* operators

In terms of awareness, 96% of the operators were aware of the presence of at least one VCT site within Ndhiwa constituency. As per the activities taking place at a VCT**,** 100% of those who had been tested knew that HIV blood test takes place at VCT while 98.2% of them were aware of counselling as one of the activities taking place at VCT centre. Finally 52.2% mentioned circumcision as one of the activities taking place at a VCT

site. This high level of awareness is contrary to Kenya demographic health survey (KDHS, 2008/9) which reported a lower awareness of 65% percent of Kenyans towards availability of VCT services. This high level of VCT awareness in Ndhiwa could have resulted from the fact that there have been a lot of campaigns on utilization of VCT services within the constituency (AHF, 2010). Ensor and Cooper (2004) explain that awareness on availability and the presence of health care services can enhance health care delivery. This could be one of the reasons that have facilitated access to VCT services among the operators evidenced by majority of them who have gone for HIV-VCT test. In addition, Muela *et al.,* (2009), reported that awareness of health care services entails behaviour change which is this case is going for test at VCT centres. Awareness of people on health maters including familiarity with the location of existing health facilities to the users is one of the key factors for success in health behaviour change (Muela *et al.,* 2009).

There was also much awareness on importance of knowing their status especially by getting tested at the VCT centre. Majority (58.1%) the operators suggested that VCT services could be best offered in churches. This can be explained with the fact that the church or faith based organisations have been perceived to be places of finding solace in cases of trouble including having HIV/AIDS (AHF, 2010).This explains why the operators mentioned the church as the best place for offering VCT services. People may get sympathy if they turn positive in the church. It was also evident that the operators had knowledge on when one should seek HIV test. This can be attributed to the

aggressive campaigns that have been in this constituency stressing on HIV testing (AHF, 2010).

Majority of the operators (72.9 %) agreed that they can serve as agents of HIV/VCT information to the general public including fellow operators. This finding supports a study that was done in Thailand where taxi drivers were educated and were later used to deliver HIV /AIDS related information to their customers (Traitongyoo, 1991). This affirms that educating and empowering the *Boda Boda* operators can make them carryout VCT and HIV outreach services to other members of the society.

Despite the high VCT utilization of VCT services among the *Boda Boda* operators within Ndhiwa constituency, various reasons that were mentioned as challenges to VCT utilisation such fear of getting positive results (36.0%), fear to be seen at a VCT site (28.8 %), and lack of proper information on VCT services (35.2%). These findings concur with Phillips *et al.,* (1995) and Zapka *et al.,* (1991) reports. These factors are stigma related implying that there is still stigma associated with HIV despite the great efforts that have been done to demystify HIV/AIDS as a disease of death (WHO, 2010).

5.1.3 Factors Associated with Utilization of VCT Services among the *Boda Boda* operators

Various factors were found to be significantly associated with utilization of VCT among the *Boda Boda* operators within Ndhiwa Constituency. For example male operators were

more likely to be tested for HIV compared to their female counterparts (AOR=4.529, 95% CI: 1.753-11.687; *p*- value=0.012). This is contrary to studies done in Ethiopia which found females with higher odds of going for HIV test than their male counter parts (Wondwoson, 2007, Omer and Haider, 2009). However findings in this study were supported by a study done in China by Rou *et al.,* (2009) that found higher VCT utilization to be associated with males. Males in general are more likely to go for test because they are more sexually adventurers in nature and sometimes feel unsafe for HIV hence they constantly need to know their status (Karau *et al.,* 2010).

Another factor that showed significant association with being tested at a VCT was going to a VCT centre with a partner (AOR: 16.39, 95% CI: 3.365-27.986: *p*-value=0.001). Thus, accompaniment with a partner while visiting a VCT centre increased chances of the *Boda Boda* operators being tested for HIV. Rou *et al*., (2009) reported that those living with their partners had increased chances of going for HIV-VCT test as opposed to those without. This may result from the psychological support someone expects or gets from their partner hence giving courage to be tested for HIV. People usually feel safe when they know someone is standing by their side. This might have been the reason why those who had visited VCT centres with their partners were more likely to be tested for HIV than those who visited VCT centres alone.

Boda Boda operators who had confidence that their HIV-test results would be kept confidential were more likely to be tested for HIV at VCT centres as compared to those

who thought their test results would be revealed to other sources (AOR 4.79, 95% CI : 2.033-8.907; *p*-value=0.044). Conversely, this finding is contradicted by Bwambale *et al.* (2009), who found that assurance of confidentiality of HIV test results had no influence in going for HIV test. Even though lack of confidentiality did not influence on VCT uptake (Bwambale *et al.,* 2009), VCT results are supposed to be confidential (WHO, 2010). This could explain why *Boda Boda* operators who were confident that their test results would be kept secret were more likely to be tested for HIV at VCT than those who thought otherwise.

On the other hand, visiting a VCT centre in which the operator is known was likely to discourage HIV testing among the operators (AOR=0.307, 95% CI: 0.034-0.221; *p* value =0.003). Fear of being seen at a VCT centre was also likely to reduce chances of the operators going for test (AOR =0.551, 95% CI: 0.307 -0.988: *p*-value =0.031). These findings are supported by Bwambale *et al.,* (2009) and Omer and Haider, (2009). They reported that males, Bwambale *et al.,* (2009) and teachers, Omer and Haider, (2009) who feared being seen at the VCT were less likely to be tested for HIV than those who did not fear being seen at a VCT centre. This may be due to stigma that is still associated with being HIV positive (WHO, 2010). So people shy from going to the VCT as those who visit any such centres are considered to be suspicious of themselves of having contacted HIV hence the need for them to be tested and this may have adverse consequences in their communal relationship (Zapka *et al*., 1991, Phillips, 1993).

The data generated in this study has provided information that if used for implementation, will improve utilization of VCT services and develop strategies and policies for HIV/AIDS management in the rural setups and among the *Boda Boda* operators, other transport providers and the surrounding community. Findings are of benefit to NASCOP and NACC and other organizations in charge of HIV/AIDS care and management in the country. The study has also given insight into the possibility of using *Boda Boda* operator*s* as agents of VCT service information in rural settings where they operate.

The study was limited by focussing only on assessing the utilisation, awareness of availability and factors associated with VCT services among *Boda Boda* operators in Ndhiwa constituency. Also, the results of the study might only be applicable to the rural informal work force in the region the study was carried out and other neighbouring constituencies with similar settings.

5.2 Conclusions

- *Boda Boda* business in Ndhiwa constituency is a male dominated field, with majority of them being single and having primary and secondary education.
- There is high voluntary counselling and testing service utilization (72.1%) among the *Boda Boda* operators of Ndhiwa constituency. Though this is still below the government target of 80%.

- There is high level of awareness (96%) among the *Boda Boda* operators of Ndhiwa constituency on the presence of VCTs in the area as well as the services that are offered at VCT centres.
- Male operators were more likely to be tested for HIV at VCT site than their female counterparts.
- Going to a VCT centre accompanied by a partner and assuring operators that their test results would be kept confidential, increased chances of the operators to be tested for HIV at VCT centres.
- Fear of being seen at a VCT centre is likely to reduce chances of going to HIV test among the operators.
- *Boda Boda* operators were less likely to be tested in VCT centres where are known.

5.3 Recommendations

- Despite the high level of VCT service utilization among the operators, there is need for a scale up on VCT utilization to reach the government's target of 80%.
- Due to high level of awareness on VCT services among the operators in Ndhiwa constituency, they can be used as mentors to spread VCT information to other members of the society. This can be done by providing specialized training to selected operators on HIV-VCT services.

- Couple counselling and testing should be encouraged among the operators and the community at large since going to a VCT centre with partner increased the odds of the operators testing for HIV at a VCT site.
- There is need for programmes that de-stigmatize HIV/AIDS and that will motivate operators from the fear of going to VCT where they were and also that of being seen at VCT centres.
- Female operators need to be encouraged to visit VCT centres for HIV test as male operators were more likely to be tested compared to the females.
- Further research on the sexual relationships among the operators should be done to explain more on the trends of HIV acquisition and unveil more opportunities for HIV prevention.
- Comparative studies among other risk groups such as truck drivers, fish mongers and among operators from low HIV prevalence areas should be done.
- These recommendations can be adopted by NASCOP, NACC and other development partners in the health sector.

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APPENDICES

Appendix 1: Role of investigators.

Felix Blair Odhiambo is a Master of Science (Epidemiology) student at JKUAT/KEMRI here in referred to as the Principal Investigator for this work. He led in the conduct of this research based on the procedures in this protocol as part of his Degree requirement.

Dr. Jared Omolo is an Epidemiologist and co-ordinator of Kenya Field Epidemiology and Laboratory Training Program (FELTP)-Ministry of Public and Sanitation and a co-investigator in this project. He gave technical advice to the PI.

Dr. Kikuvi is a Lecturer at the Institute of Tropical Medicine and infectious Diseases (JKUAT) and a co-investigator. He provided the research team with a key link between JKUAT and KEMRI administration. He also provided technical assistance and advice.

Dr. Peter Wanzala is a research scientist (Epidemiologist) at Kenya Medical Research Institute and a co-investigator in this project. He too provided the research team with a key link between JKUAT and KEMRI administration as well as technical assistance and advice.

Appendix II: Informed consent for the participants (their guardians- for operators under 18 years old) and Key informants.

Title of Research: Factors associated with utilization of VCT services among *Boda Boda* operators in Ndhiwa constituency, Homa Bay County.

Researcher: Felix Odhiambo, Masters Candidate, Jomo Kenyatta University of Agriculture and Technology/Kenya Medical Research Institute.

Purpose of the Study

You (your child- for parents of operators below 18 years old) are being asked to participate in this research entitled above. For you to be able to decide whether you (he/she) want to participate in this project, you should understand what the project is about, as well as the possible risks and benefits in order to make an informed decision. This process is known as informed consent. This describes the purpose, procedures, possible benefits, and risks. It also explains how your (child's) personal information will be used and protected. Once you have read this form and your questions about the study are answered, you will be asked to sign it. This will allow your (child's) participation in this study. You should file a copy of this document to keep a record.

Explanation of the study

Attempts have been made to scale up VCT services utilization in Kenyan populations. This has been made by setting up over 900 operational VCT sites in the country as at December 2008. This was to improve access to HIV testing and counselling services which has been linked to increased levels of behaviour change and access to various

treatment options. However, the utilization still remains very low in the country with the rural populations having worse utilization levels. Research findings have indeed established that VCT services have effect on sexual behaviour change and can reduce HIV prevalence. What is not clear are the factors leading to low VCT utilization among rural areas of Kenya. Accordingly, this study proposed to highlight VCT utilization among the rural *Boda Boda* operators in this region with the aim of establishing factors influencing this utilization and using them as heralds of VCT strategy.

Procedure

Either my research assistant or I will identify himself to you (and your child) after which you (he/she) will be required to fill a detailed questionnaire through an interview. This is supposed to be a private and confidential exercise done in an enclosed area. You are supposed to fill the questionnaire only after you have accepted and signed a consent form. For a key informant after you are identified, I will come to you with an interview guide. You will then be asked questions or given statement which you are expected to respond to afterwards. The questions will probe you on issues relating to utilization of VCT services among the *Boda Boda* operators within Ndhiwa Constituency.

Risks/Discomforts

There are no physical risks associated with participation in this study except one may get thirsty during the interview. A bottle of water will be given to you to quench your thirst during the interview.

Alternative to Participation

If you feel like you cannot carry on with the study you are free to stop your participation. You have a choice to do so and we will still appreciate your willingness to participate in the study. You are also free to avoid any question you are uncomfortable with**.**

Confidentiality

The information we get from you is purposely for research and will not be relayed to anybody. We will keep the confidentiality of every participant by use of serial numbers on the questionnaire. Names will not be used at any point and is of no purpose for this study

Contact Information

If you have any questions regarding this study, please contact Felix Odhiambo, on phone number 0723 914 385 or the Secretary KEMRI/National Ethics Committee, P.O BOX 54840-00200, Nairobi; Telephone number : 020-272 2541; 0722 205901, 0733 400003

Declaration

Having read and understood the purpose of the study, I willingly accept to take part in it (for operators under 18 years old, they will sign together with their guardians).

Signature …….. Date ……

Note: By putting your signature, you are agreeing that: You have read this consent form and have been given the opportunity to ask questions

- You have known the risks and they have been explained to your satisfaction
- You understand Jomo Kenyatta University and KEMRI has no policy or plan to pay for any injuries you might receive as a result of participating in this research protocol

Your participation in this research is given voluntarily

Appendix III: Consent form in local language (dholuo)

Gir Yie

To Nango , Nyinga en Felix Odhiambo a somo e mbalariany mar Jomo Kenyatta University of Agriculture and Technology to atimo nonro marat Kenya Medical Research Institute (KEMRI) kaluwore gi chik mondo omiya tiekgruok mar Masters Degree e kos miluongo ni Epidemiology (ma en kos mar kwano ngima ji).

Wach maduong e somoni

Ngiyo gigo ma otenore kod tiyogi gi kuonde pimo chal mar ji kaluwore gi tuo maduong' mar Ayaki e onganda jo ngware e NdhiwaConstituency, Homa Bay County

Nang'o itime?

Nonroni itimo mondo ong'e ni to gigo mage ma mono kata jiwo ngeyo chal mar ng'ato kaluwore gi tuo mar Ayaki , to kod lony mar jo ngware kuom limo kuonde pim mar Ayaki e Ndhiwa Constituency.

Chienro

Wanayangrenu bang'e nochiwni oboke moting'o penjo. Bange ne kwayi mondo iduok penjogo. Ma notim kamopondo manyisore ni sama ipenji pengo to umanyo kama opandore. Ma bende notim mana ka iseketo seyi mari.

Rach kata Ber

Ok bi iny dendi ka ichiwore ne duoko penyo gi mak mana samoro riyo nyalo ingi to wabiro miyi pi mar chupa mondo ineg riyo.

Yiero

Ma en gima in kendi ema iyiero onge ngato ma biro chuni ni mondo i idonj e nonro. Ka iloko pachi to onge rach moro amora. **Inyalo weyo penjo marachni duoko**

Pando wach Wach te ma wabiro yudo kuomi en mana mar nonro kendo onge ngatno mabiro yude . gikmoko te ma iwacho wabiro pando nikech nyingi ok ibi keto e otas mar penjo go. Onge kanyo ma nyigi ibiro wuokye mana kweno kende.

Tudruok

Ka in kod penjo mora amora inyalo yua to a namba mar Felix Odhiambo, 0723 914 385 kata ne Jagoro mar kar chik mag nonro (KEMRI/National Ethics Committee) P.O BOX 54840-00200, Nairobi; Numba mar simu: 020-272 2541; 0722 205901, 0733 400003

Ayie Asesomo wach mani ka kendo awinje maler. Koro ayie mondo abend achiel ei nonro.

Alama ……. Tarik ……..

Appendix IV: Questionnaire

Questionnaire for the Study on utilisation of VCT services and I associated factors amongst *Boda Boda* operators in Ndhiwa Constituency, Homa Bay County

Participant Study Number: ……..

Tick all answers of respondent (let her/him to respond to the question).

Socio-Demographic information:

1. Date of Birth: (dd/mm/yyyy) ☐☐☐☐☐☐☐☐

2. Sex: Male ☐ Female ☐

3. Religion: Muslim ☐ Catholic ☐ Anglican ☐
SDA ☐ Others *(specify*) ☐

4. Level of Education: Non formal ☐ Primary ☐ Secondary ☐
Tertiary ☐

(*Specify level, if Tertiary*)……..

5. Marital Status: Single ☐ Married ☐

If married, are you living with your spouse? Yes ☐ No. ☐

If single, then state which category Widowed ☐ Divorced ☐
Separated ☐ Never married ☐

6. **A).** If married: Number of spouses/partners ☐

7. A) If not married are you in a regular sexual relationship (if not married)?

Yes ☐ No ☐

B). If yes to question **7A**, with how many partners ☐

8). Do you have children? Yes ☐ No ☐ ☐

9). What is your approximate monthly income? ☐

10). Do you think HIV/AIDS is a health problem in this community?

Yes ☐ No ☐

11). Have you heard about Voluntary Testing and Counselling (VCT)?

Yes ☐ 2. No ☐

12). If yes, how did you come to know about it? Ask for response and tick where appropriate

Response	**Yes**	**No**
1. From a friend		
2. From a relative/family member		
3. During marriage counselling		
4. Radio		
5. Television		
6. Newspaper		
7. In Church		
8. Other (Specify)		

13). Do you know places where VCT services are offered in this constituency?

1. Yes ☐ No. ☐

14). How much do people pay for VCT in Ndhiwa? 1. Amount ☐ 2.None ☐

15). How far is the nearest place you have mentioned to you? State approximate distance in Kms ☐

16). A) Have you ever been tested for HIV at a VCT centre?

Yes ☐ No ☐

If yes how many times 1.Once ☐ 2.Twice ☐ 3. Thrice ☐

4. > More than 3times ☐ 4. I can't remember ☐

B). When was the last time you were tested?

1) The past three months ☐

2) The past one year ☐

3) More than two years ago ☐

4) Specify ☐

C). Have you gone to a VCT centre for HIV test with your partner?

Yes ☐ No ☐

D) In your own opinion what can make you get tested?

		Yes	No
1.	Want to know your status		
2.	Spouse died of HIV		
3.	When having prolonged		
4.	Convinced by a friend		
5.	For fun		
6.	Other ……		

E) State whether each of these can make someone not to go for an HIV/Test test?

		Yes	No
1.	Fear to be seen at the VCT site		
2.	Fear of a positive outcome		
3.	Lack of information on VCT		
4.	Other ……..		

17. What activities do you know of takes place at the VCT? Tick all that applies

1. Testing of the blood for the HIV ☐ 2. Counselling ☐

3. Male circumcision ☐ 4. Condom distribution ☐

18. Can you take an HIV a test at a VCT place where you are known?

1. Yes ☐ 2. No ☐

19. According to you where would be the best place to offer HIV-VCT services?

1. Home ☐ 2. Hospital /clinic (government) ☐ 3. Church ☐

4. Private clinics ☐ 5. Non-government organizations ☐ 6 Schools ☐

20. How often should HIV test be taken?

		Yes	No
1.	After every sexual intercourse		
2.	Every year		
3.	Whenever you feel unwell		
4.	As many times as possible		
5.	After every three months		

21. In your opinion, state whether VCT?

Responses		**Yes**	**No**
1)	Helps one if negative to remain negative		
1)	If positive not to spread it to others		
2)	Helps one if negative to remain negative		
3)	To plan for the future (children etc)		
4)	Helps those who are HIV positive to be role models		
5)	Increase chances for suicidal tendencies among the		
6)	Can make mental illness increase		
7)	Can increase break-up of marriages and families		
8)	Can lead to discrimination, stigmatization and		
9)	I don't know		

22. What suggestion (s) can you make to stem the spread the spread of HIV/AIDS in Kenya?

.....……**...**……

23. **A)** Do you think *Boda Boda* operators in this region can be used to spread HIV/VCT information to the immediate community?

Yes ☐ No ☐

B). How is this possible? ……**.....**……**..**……

Thank you for your participation.

NOTE: This questionnaire will be administered in either English or local language, Dholuo depending on the participant language preference

Appendix V: Questionnaire in Dholuo

PENJO MAG NONRO MA THOUN WACH E KAKA

Ngiyo gigo ma otenore kod tiyogi gi kuonde pimo chal mar ji kaluwore gi tuo maduong' mar Ayaki e onganda jo ngware e NdhiwaConstituency, Homa Bay County

Kwan ……

Penjo Mar chal mari

1). Iga mar nyuolni ☐☐☐☐☐

2). Inyako koso Wuoyi ☐

3). Din mari. 1. SDA ☐ 2.Katholic ☐ 3.Anglikan ☐

4. Islam ☐ Machielo (wachna) ☐

4). Klasi mar somo romo nade?

1.Primar ☐ 2.Secondar ☐ 3.tiegruok (mane) ☐

4.Ok Itemo ☐

5). Isekendo Eh ☐ Ooyoo ☐

Ka ise kendo to bende idak kod jaodi? Eh ☐ Ooyo ☐

Ka idak kendi to ler ane ka idonjo e lo moket ka gi . Pok inyombo ☐ Jaodi Otho ☐ joadi onge ☐ nuweru kod jaodi ☐

6). Kise kendo to in kod ji adi?

Eh ☐ Ooyo ☐

7). **A)**. To kapok ikendo to bende in kod jahearini moro maitimo godo terruok?

Eh ☐ Ooyo ☐

B). Ka yie gi penjo ma7**A,** ise kod gi adi? ☐

8). **A).** Bende in kod nyithindo Eh ☐ Ooyo ☐ ☐

9). Yuto ni e dwe rom nade? ☐

10) Bende iparo ni ayaki en tuo malit a piny mar Ndhiwa ka?

Eh ☐ Ooyo ☐

11). Bende isewinjo kama ilungo ni VCT kata kuonde ma itime pim ?

Ehh ☐ Ooyo ☐

12) Ere kaka ng'ato mosewinjo, ne iwinje kanye

	Yes.	**No.**
1. Kuom osiepni		
2. Kuom Watni		
3. Ka udhie keny		
4. Nyakalondo		
5. Rangi (TV)		
6. Oboke (Gaset)		
7. Kanisa		
8. Ka machielo		

13). To bende ingeyo kuonde ma itimo a pim Ndhiwa ka?

Ehh ☐ Ooyo ☐

14). To bende ji chulo pim kar kuonde pimo mag VCT.

Ehh ☐ Ooyo ☐

15). A) Kama ma iwacho gi bor kodi maro nade? Nyisa bor e kilomitas……

16). A) Bende isedhiye pim mar ayaki?

Ehh ☐ Ooyo ☐

Ka isepimori to nyadidi? 1. Dichel ☐ 2.Diriyo ☐ 3 Didek

4. Moloyo Didek ☐ 5.Ok anyal paro ☐

B). Nidhiye pim mogik Kara ango

1. Dweche adek mokalo ☐
2. Higa achiel mokalo ☐
3. Moloyoignni ariyo ☐
4. Wachne mopogore gimagi ☐

C) Bende isedhi e pim mar e VCT ka un kod jaodi? .....

D) E pachi ango manyalo miyo ngato dhi e pim?

	Ehe	Ooyo
Dwaro ngeyo ngeyo chalni		
Ka jaodi ne otho gi ayaki		
Ka ituo e hospital		
Ka osiepni olombi		
Mar mor		
Gima chielo……		

E) Ango manyalo mono ngato dhi e pim?

	Eh	Oyo
Ka ok obadhi		
Iparo ni ayaki bor kodi		
Luoro ni ok bi neni e VCT VCT		
Luoro dwoko		
Kia mar VCT		
Machielo ……..		

17). Ango mitimo kar pim ming'eyo

A) 1. Pimo remo ne ayaki ☐ 2. Lalruok ☐ 3.Giduto ☐ 4.Ok ☐ ang'eyo

18. Bende inyalo yie opimi kama ongeyie

1. Ehh ☐ 2. Ooyo ☐ 3.Ok angeyo ☐

19). Ipare nade ni to Kuonde pim mar Ayaki onigo bed ni iketo kanye?

1. Pacho ☐ 2. Karthieth karlemo ☐ 3. Kar thieth makende ☐

4. Kuonde NGO ☐ 5. Skunde ☐

20). Iparo ng'ato onego pim bang' Ndalo adi?

	Ehh	**Ooyo**
Seche te bang terruok kod condom		
Higa ka Higa		
Kar ok iwinj maber		
Mang'eny kaka nyalore		
Bang dweche adek		
Paro machielo		

21 . Kar pachi owuon iparo ni VCT ?

Ngat maonge ayaki mondo osik kode	**Ehh**	**Ooyo**
Ngat mantei kod ayaki mondo olandi		
Miyo itimi chenro mambele		
Miyo joma ni bedo ranyisi maber		
Ngato nyalo dere		
Nyalo kelo wich marach		
Ok ange'yo		
Nyalo ketho kend		
Ji nyalo ringi ka kwedi		
Machelo …….		

22). Ango miparo ni inyalo tim mondo wa geng landruok mar ayaki e piny Kenya Ka?

……

23). A**)** Bende jo Ngware nyalo lando wach mar pim?

1. Ehhh ☐ 2. Ooyo ☐

B) Ere kaka inyalo tim ma

Appendix VI –Interview guide for Key informants on utilization of VCT service among the *Boda Boda* operators in Ndhiwa constituency

1 How can you describe HIV as a problem in this constituency and among the *Boda Boda* operators in particular?

2 Do you think the numbers of VCT centres are adequate enough to cater for whole constituency including the *Boda Boda* operators?

3 Do you think *Boda Boda* operators visit these centres?

4 What challenges are faced by *Boda Boda* operators in accessing VCT services in this region and what are the best ways of handling them?

5 Has there been any campaign to encourage usage of VCT among *Boda Boda* operators in Ndhiwa constituency and what else should be done?

6 What do you think should be done to scale up VCT utilization among *Boda Boda* operators in this constituency?

7 Can *Boda Boda* operators be used as a way of relaying VCT information to the community including their passengers? If so, how?

8 In your opinion, how can you rate of VCTs service utilization among the operators in this constituency?

Appendix VI –KEMRI scientific steering committee approval letter

KENYA MEDICAL RESEARCH INSTITUTE

P.O. Box 54840 - 00200 NAIROBI, Kenya
Tel: (254) (020) 2722541, 2713349, 0722-205901, 0733-400003; Fax: (254) (020) 2720030
E-mail: director@kemri.org info@kemri.org Website:www.kemri.org

ESACIPAC/SSC/9223 **11th April, 2011**

Felix Odhiambo

Thro'
Director, CPHR
NAIROBI

forwarded 12/4/11

REF: SSC No. 1994 (Revised) – Factors associated with uptake of voluntary counseling and testing services among Boda Boda operators in Ndhiwa constituency, Nyanza Province. PI: Felix Odhiambo (CPHR).

Thank you for your letter dated 19th March 2011 responding to the comments raised by the KEMRI SSC.

I am pleased to inform you that your protocol now has formal scientific approval from SSC.

The SSC however, advises that work on the proposed study can only start after ERC approval.

Sammy Njenga, PhD
SECRETARY, SSC

Appendix VII – KEMRI Ethical Review Committee (ERC) Approval Letter

KENYA MEDICAL RESEARCH INSTITUTE

P.O. Box 54840 - 00200 NAIROBI, Kenya
Tel: (254) (020) 2722541, 2713349, 0722-205901, 0733-400003; Fax: (254) (020) 2720030
E-mail: director@kemri.org info@kemri.org Website:www.kemri.org

KEMRI/RES/7/3/1

May 18, 2011

TO: **FELIX BLAIR ODHIAMBO,**
PRINCIPAL INVESTIGATOR

THRO': **DR. YERI KOMBE,**
THE DIRECTOR, CPHR,
NAIROBI

For Wandoo 20/05/2011

RE: **SSC PROTOCOL NO. 1994 (*INITIAL SUBMISSION*): FACTORS ASSOCIATED WITH UPTAKE OF VOLUNTARY COUNSELLING AND TESTING SERVICES AMONG BODA BODA OPERATORS IN NDHIWA CONSTITUENCY, NYANZA PROVINCE.**

This is to inform you that during the 189th meeting of the KEMRI/ERC meeting held on 10th May 2011, the above study was reviewed.

The Committee notes that the above referenced study aims to determine prevalence of utilization and factors associated with uptake of VCT services among *boda boda* operators in Ndhiwa constituency with a view of suggesting measures for increased uptake.

Due consideration has been given to ethical issues and the study is hereby granted approval for implementation effective this **18th day of May 2011,** for a period of twelve (12) months.

Please note that authorization to conduct this study will automatically expire on **17th May 2012.** If you plan to continue with data collection or analysis beyond this date, please submit an application for continuing approval to the ERC Secretariat by **17th February 2012.**

You are required to submit any amendments to this protocol and other information pertinent to human participation in this study to the ERC prior to initiation. You may embark on the study.

Yours sincerely,

R. Kithinji

Caroline Kithinji,
FOR: SECRETARY,
KEMRI/ETHICS REVIEW COMMITTEE