DECEMBER 2006

EPIDEMIOLOGY AND BIOSTATISTICS
THE DEGREE OF MASTER OF SCIENCE (MEDICINE) IN
PARTIALFULFILLMENT OF THE REQUIREMENTS FOR
UNIVERSITY OF THE WITSWATERSTEinskAND, JOHANNESBURG,
THE FACULTY OF HEALTH SCIENCES.
A RESEARCH REPORT SUBMITTED TO

STUDENT NUMBER: 06169616X
CHUKWUEMEKA EZEREKE NWACHUKWU

BY

(VC7) AMONG YOUTH IN NIGERIA
VOLUNTARY COUNSELING AND TESTING
REGIONAL PATTERNS AND CORRELATES OF HIV
DECLARATION

I, Chikwemena Ezekpe Nwachukwu, declare that this research report is my own.
of the poor and the helpless all over the world.
And to all those who had suffered and made commitments to alleviate the sufferings
knowledge that all will not perish in illness.
To God, who so loved the world that He made provision for advancement in medical

DEDICATION
have to say I do, again. I will ask you once more. Am I — Your virtues are incredible, not to be compared to mine. If I will ever

AND

My family members — Your love, support, encouragement and understanding knew no bounds within this period. God will make this sacrifice worth the while for us.


My colleagues from across Africa and beyond — Peter (Mital), Ayodeji (Nigeria), Alhaji (Ghana), Eruwa (Nigeria), Onwo (Cameroon), Kenneth Eze, Nnadozie, Olumuyiwa, James, Ajeromi, Ayo (Cameroon), Agbada, Odeh, Okechukwu, Onwe, Onyeoma, Gogbe, Okafor, et al.

My sincere and heartfelt thanks to all.

You, and the dedication in the process of writing up this project.

Your hard work and dedication in the process of writing up this project.

Again, thank you for all the opportunities you gave me.

Prof. M.I. Nwankwo — This thought was conceived under your watchful eyes and

My gratitude to:

The desire for this accomplishment was a process, dedicated to all those who

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2. Critical factors influencing the uptake of voluntary counseling and testing for HIV in Nigeria, controlling for sex. (NDHS 2003)

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Percentage distribution of all respondents aged 15-24 by their sex and

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their perception uptake of VCT.

was also found that the higher the educational level of the respondents, the higher
South East had the highest uptake (4.6%) while North East had the lowest (0.7%). If
residence and other demographic and socio-economic factors, respondents from the
having over volunteered for HIV testing, the rate of VCT uptake varies by region of
The results show a low uptake of VCT in Nigeria with only 2.6% of respondents

the effects of identified predictors of volunteering for HIV testing.

15-24 who had ever tested for HIV, Logistic regression model was used to estimate
study was based on 3573 observations, arrived at by selecting men and women aged
reproductive and child health issues in general from the respondents, analysis of this
11,050. The survey used a structured questionnaire to collect information on
males aged 15-29 and females aged 15-49 and generated a probability sample of
2003 NDHS was a nationally representative cross sectional survey conducted among
2003 among young people aged 15 to 24 in Nigeria. The
consequences and testing in HIV among young people aged 15 to 24. In Nigeria, the
study examines the regional prevalence, pattern and correlates of voluntary
using the 2003 National Demographic and Health Survey (NDHS) of Nigeria. This
effort to improve this seem slow despite good knowledge of HIV among the people.
consenting and testing (VCT) for HIV among young people in Nigeria is low and
strategies and an equity point to HIV control programs. Prevalence of voluntary
Voluntary counseling and testing (VCT) for HIV has been recognized as an effective

ABSTRACT
The findings of this study have implications for HIV prevention policies and programs.}

males while region, education, wealth index and risk perception are predictors among southern regions and among the sexes. Age, region and occupation are predictors for perception for HIV. These predictors, however, differ within the northern and southern regions. Seven critical predictors of voluntary testing for HIV were identified: residence (3.72%), those who did not use condom (1.57%), using depressive logis-

sexual intercourse before the survey were more likely to have volunteered for HIV uptake of 7.52% and 7.15% respectively. The youths who used condom in their last 7.52% or uptake of VCT while those with no partners and 3 or more partners reported 7.52% of uptake of VCT while sexual partners in the year preceding the survey reported
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CHUKWUEMEKA EZELIKE NWACHUKWU

BY

VCT AMONG YOUTHS IN NIGERIA
VOLUNTARY COUNSELING AND TESTING
REGIONAL PATTERNS AND CORRELATES OF HIV
By the best of my knowledge, it has not been submitted before in part or in full for either of the programmes of the University of the Witswatersrand, Johannesburg, in partial fulfilment of the degree of Master of Science (Medicine) in 2007.

Cynthia Enoshe Nwachukwu, declare that this research report is my own work.
DEDICTION

of the poor and the helpless all over the world.
And to all those who had suffered and made commitments, to alleviate their sufferings.

knowledge that all will not perish in this.
To God, who so loved the world that He made provision for advancement in medical
have to say, I do again. I will ask you once more.

And your losses are unforgivable, not to be compared to riches. If I will ever

My family members – your love, support, encouragement and understanding knew

My friends – Ezech, Robert, Kibinda, Why can I do without your

your love and accomplish your heart desires.

Ben and Lizette, you made the world in Johannesburg. May God enrich your

My colleagues from across Africa and beyond – Peter (Malawi), Rugoba (Tanzania),

Mary, Kiphiri, Eunice, Ethan, Tim, Robert, Lindy, Lawrence,

All sacrifices and efforts at the School of Public Health, Wiis University – Ronald,

Your hard work and dedication in the process of writing up this project

Prof. CO Ohimegnow – I could not have had a better supervisor. I was humbled by

Thank you for all the opportunities you gave me.

Prof. NN Mwakinyo – This thought was conceived under your watchful eyes and

My gratitude to:

The desire for this accomplishment was a process dedicated to all those who

ACKNOWLEDGMENT
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<td>NACA</td>
<td>National AIDS Coordinating Assembly</td>
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<td>NPc</td>
<td>National Population Commission</td>
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<tr>
<td>VCT</td>
<td>Voluntary Counseling and Testing</td>
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<tr>
<td>SPSS</td>
<td>Statistical Package for Social Sciences</td>
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<td>PSU</td>
<td>Primary Sampling Unit</td>
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<td>PHC</td>
<td>Primary Health Care</td>
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<td>OR</td>
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their percentage uptake of VCT. It was also found that the higher the educational level of the respondents, the higher South East had the highest uptake (4.6%) while North East had the lowest (0.7%). In residence and other demographic and socio-economic factors, respondents from the having ever volunteered for HIV testing. The rate of VCT uptake varies by region of the results show a low uptake of VCT in Nigeria with only 2.6% of respondents.

The effects of identified predictors of volunteering for HIV testing. 1.5-4.7% had ever tested for HIV. Logistic regression model was used to estimate 1. The survey used a structured questionnaire to collect information on males aged 15-59 and females aged 15-49. 2. The 2003 NDHS was a nationally representative cross-sectional survey conducted among young and married people aged 15-24 in Nigeria. The study examines the regional prevalence, pattern and correlates of voluntary counseling and testing (VCT) for HIV among young people in Nigeria. This study aims to improve the current dearth of data on the uptake of VCT services and is only a point in HIV control programs. Prevalence of voluntary counseling and testing (VCT) for HIV has been recognized as an effective

ABSTRACT
The findings of this study have implications for HIV prevention policies and programs.

The females' scores were higher across all domains. In particular, the feminine, educational, wealth index, and risk perception and risk perception were predictors among the Southern females and among the sexes. Age, educational, wealth index, and occupation as predictors for perception of HIV. These predictors, however, differ within the domains and between the sexes. Age, educational, occupation, wealth index, and risk perception were identified as critical predictors of voluntary testing for HIV. The regression models identified those who were more likely to have volunteered for HIV testing: 9.72% vs. 2.51% and 1.75% for those who have tested for HIV and those who have not tested, respectively. The females who used condoms in their last sexual intercourse before the survey were more likely to have volunteered for HIV testing: 7.52% vs. 0.4% of uptake of VCT while those who had no partners and 3 or more partners reported.

In conclusion, the uptake of VCT in Nigeria is recommended.

Research in this area, especially preventive studies to explore all the factors that influence the uptake of VCT in Nigeria is recommended.
A higher number of people living with HIV/AIDS in 2005. This has potential implications despite its low adult prevalence of 4.4%. It ranked the third county in the world with the Financial year is the most populous block nation with an estimated population of 140 million

affordable.

know their HIV status and in some cases such services may not even be available and/or importantly engage risky sexual practices. Inability to access health services to师范大学 mandate preventive and sex work (UNAIDS, 2006). People therefore services, harmful marriage practices and sex work (UNAIDS, 2006). People therefore information and education on sexual health, hygiene and discrimination. Poor healthcare factors identified to have contributed to the spread of HIV in Nigeria are: low access to counseling, early treatment, care and support. Knowledge of an individual's HIV status can potentially change sexual behavior through condom and voluntary counseling and testing (VCT) (Boswel and Bangladesh, 2002).

Young people have been portrayed as those include campaigns on safe sex, regular use of especially in developing counties. Various strategies to combat HIV, especially among is therefore important to target this group of people in HIV prevention and care services. Among youths aged 15-24 and who are also vulnerable to unsafe sex and sexual abuse. It

Saharan Africa (UNAIDS, 2004). Incidence of HIV in the sub-Saharan Africa is highest (25 million) of the infected people and 75% of the burden of death globally is in the sub-

HIV is a global pandemic, reported in almost all the countries of the world. Nearly 55%

Chapter 1
Implementing of health programs and research in the country: assessing disease prevalence, risks, patterns and correlates to benefit policy, planning.

Assessing disease prevalence, risks, patterns and correlates to benefit policy, planning.

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Assessing disease prevalence, risks, patterns and correlates to benefit policy, planning.
The country has a tropical climate with dry season characterized by cold, dry and dusty conditions in the rural areas. The majority of the population is concentrated in the rural areas, resulting in unique and homogeneous populations. On the average, two-thirds of the population is engaged in agriculture and different forms of petty trading, farming, and fishing, and educational attainment is low. The country is divided into six (6) geopolitical zones (North East, South East, South South, South West, North Central, and North West). These regions are characterized by diverse cultures, traditions, and languages. The government is headed by a president and vice president, with the House of Representatives and Senators being the legislative branches. The president is elected by the people and serves a term of four years. The country has a federal system of government with a presidential system. The nation came into existence at the amalgamation of its northern and southern regions.

1.2 BACKGROUND INFORMATION ON STUDY POPULATION

Cameroon borders the south of the country.
Christian Universal Basic Education (CUBE) education is presently free up to junior
It is a policy of the government to provide education for all children. As a result of the
families have different educational needs and aspirations in diverse areas. A result of the
by the National Literacy Program for Adults and Nonformal Education for the benefit of
primary education formulated in 1976 (NPCE, 2007). This has been aggressively followed
child was given the right to a free and compulsory primary education by the Universal
build a sustainable manpower and human resources for its developing economy. Every
Educational system and literacy levels in Nigeria have evolved over time in an effort to

control plans to the Presidential Council on AIDS (PCA) for policy purposes.
implementation of the strategic national plan for the control of HIV/AIDS and present
Nigeria (NACA, 2000). The aims are, among others, to coordinate, monitor and evaluate
(NACA) was established in February, 2000 to coordinate all HIV/AIDS activities in
Service providers, with respect to HIV/AIDS, the National Action Committee on AIDS
delivery across the regions due to differential availability of resources and distribution of
can be achieved through collaboration. There are, however, widespread differences in health
to been integrated established in various parts of the country, predominantly in the rural areas
HIV/AIDS and provision of essential drugs. Comprehensive health care facilities have
reproductive health, immunization, control of diseases including prevention of
services include health education, provision of portable water and food sanitation.
the priority on which efforts to improve health care delivery will be channelled. The PHC
The country's health care system is structured to recognize primary health care (PHC) as
concealed, which is now the mainstay of the economy.
the country were a major source of foreign exchange earnings before the discovery of
In other African countries such as Kenya and Uganda, VCT uptake among youths is high
upake in the county and provide a poor indicator of how youths are using VCT services.
Oyo state (South-West region). These studies may not reflect the true measure of VCT
women (Adewole et al, 2004) and underprivileged (Adewole and Lawson, 2004) both in
largely on a higher selective group of people and within locations such as in Ferguson.
Studies on voluntarily counseling and testing (VCT) for HIV in Nigeria have reported

1.4 JUSTIFICATION FOR THE STUDY:

Informed individuals...

Informed individuals, which will minimize the spread of HIV and sustain good quality of life for
and increase VCT uptake. For example, effective counseling and education, effective counseling and testing
Regional patterns and differences in voluntary counseling and testing is important for
Nigeria, but this does not provide information on regional variations. Understanding
2004). The NIDHS (2003) reported that only about 10% of Nigerian youth had ever been
knowledge of HIV, VCT uptake is low (Adewole and Lawson, 2004). Adenuga et al,
uptake of HIV testing in Nigeria. However, some scholars have shown that despite high
and Musa-Gelery, 2004). There are limited studies assessing the regional variation in the
test of HIV especially among young people (Bosom and Bagdady, 2002). Moreover,
HIV voluntary counselling and testing is an effective strategy in reducing the transmission

1.3 STATEMENT OF THE PROBLEM:

Environments and the decreasing quality of education in Nigeria
distributed across the regions in the county (PFN, 2005), which also reflects in
secondary school education. Facilities and teachers are, however, not equally

1.5.2 SPECIFIC OBJECTIVES:

2003

To identify the critical factors influencing the uptake of voluntary counseling and testing for HIV among youth aged 15-24 in Nigeria.

1. To determine regional variations in the utilization of voluntary counseling and testing among youth who are aged 15 to 24 in Nigeria in

This study aims to examine the regional differences in prevalence patterns and correlates of HIV voluntary counseling and testing among youth people aged 15 to 24 in Nigeria.

1.5.1 GENERAL OBJECTIVE:

1.5.2 STUDY OBJECTIVES

This study will provide valuable information to strengthen existing national HIV/AIDS policies and programs in Nigeria. The study will examine the patterns and correlates of VCT use in Nigeria, with a focus on young people. This is therefore the need to promote access and use of VCT services by young people. Given Nigeria's diverse ethnicities and cultural complexities, understanding the regional variations in VCT service utilization will help to design more specific programs in

(MacQuarrie and McCallaey, 2001).
There are few epidemiological studies assessing the uptake and regional prevalence of HCV VCT in Nigeria. Literature search conducted in Medline through PubMed and AFRICON's Ovid databases did not yield any studies on VCT in Nigeria. These are localized studies and do not reflect the national experiences. Various formal papers in the health sciences library of the University of Wisconsin and the Nigerian literature search conducted in Medline through PubMed and AFRICON's Ovid databases did not yield any studies on VCT in Nigeria. Literature search conducted in Medline through PubMed and AFRICON's Ovid databases did not yield any studies on VCT in Nigeria.

In all the countries surveyed (Measures DHS, 2006), the uptake for HCV VCT was higher in males than in females, and this result was consistent across all the countries surveyed. In Nigeria, 80% of young people (aged 15-24) had heard sex in the past 12 months had received four and seven times higher for HCV than in Brazil, which reported that only 40% received counseling and testing. Research suggests that men are more likely to conclude, and women less likely to conclude, that their partners to assess the spread and prevalence of HCV voluntarily counseling and testing will help in assessing the spread and prevalence of HCV.

(Bowser and Barfie, 2002)
Following up on a previously neglected risk in the development of suspicious symptoms, having a HIV-positive partner and reported possible reasons for seeking VCT in developing countries include encouragement and isolation and fear of marital sanctions. On the other hand, Solomon et al. (2006) reported the reasons for avoiding VCT in Nigeria include fear of stigmatization (88.3%). A study conducted in patients (lezione and Ormari, 2004) in Kenya and in a study in Northern Nigeria among patients aged between 24 and 45 showed a high uptake among men (had ever been tested and received the results of their HIV test) at hospital-based NCDHs. The focus of the survey, however, was not on VCT. The report (NPC, 2003) showed that 15% of young people aged 15 to 24 (69% of women and 44% of men) had ever been tested and received the results of their HIV test. The only national study which provided a national rate for VCT uptake is the 2003

Although laws regarding VCT were largely influenced by stigma and fear of discrimination, another study among undergraduates who had completed secondary education (p<0.02), another study among undergraduates for HIV (p=0.006) and parents of the higher socio-economic classes (p<0.05) and numbers and teachers in the higher socio-economic classes (p<0.05) and numbers in the higher socio-economic classes (p<0.05). Among male undergraduates, there were no differences in knowledge scores and experiences with VCT. Similarly, among male undergraduates, those who volunteered for VCT had higher HIV knowledge scores than those who did not respondents who did not volunteer credit the fear of social volunteering for VCT and more education (p=0.05) and higher HIV knowledge score those who volunteered for VCT and more education (p=0.05) and higher HIV knowledge score those who volunteered for VCT and more education (p=0.05). Those who volunteered for VCT and more education (p=0.05) and higher HIV knowledge score those who volunteered for VCT and more education (p=0.05). Those who volunteered for VCT and more education (p=0.05) and higher HIV knowledge score those who volunteered for VCT and more education (p=0.05). Those who volunteered for VCT and more education (p=0.05).
Half of the population in Sub-Saharan Africa, who are at risk of acquiring HIV, do not have access to or do not use testing services. The barriers to testing include lack of awareness of the availability of testing services, lack of information on testing, and the perception that testing is stigmatizing. Additionally, the cost of testing is often prohibitive, and the results may not be readily available.

Studies in other countries show low VCT uptake in Malawi, Uganda, and Tanzania. In Malawi, the uptake of VCT is lower than in other African countries. In Uganda, the uptake of VCT is also lower than in other African countries. In Tanzania, the uptake of VCT is even lower than in Malawi and Uganda.

The reasons for low uptake of VCT include lack of awareness, lack of access to testing services, and the perception that testing is stigmatizing. The cost of testing is often prohibitive, and the results may not be readily available.

In order to improve the uptake of VCT, there is a need for targeted interventions that address the barriers to testing. These interventions should focus on increasing awareness of the availability of testing services, reducing the cost of testing, and addressing the stigma associated with testing. Additionally, the results of testing should be made available in a timely manner.

In conclusion, the uptake of VCT in Sub-Saharan Africa is low, and there is a need for targeted interventions to improve the uptake of VCT. These interventions should focus on increasing awareness, reducing the cost of testing, and addressing the stigma associated with testing.

References:

el large. The survey used a structured, multi-stage sampling method with the list of
indicators with urban and rural differentials for the six geopolitical zones and the country.
The 2003 NDHS was sampled to provide estimates of population and various health

2.12 Sample Design of the NDHS

used in the survey, which is summarized below.

in Nigeria. The full report of the 2003 NDHS contains the details of the methodology,
monitoring and evaluation of population and health programs to improve health services
makers, health program managers and researchers in planning, implementation,
monitoring, family planning, maternal and child health, HIV/AIDS. This is to guide policy
issues such as the 1999 NDHS. The

2.11 About the 2003 NDHS

Demographic and Health Survey (NDHS) of 2003.

This study is a secondary data analysis using dataset from the Nigeria National

2.1 Study Design:

plan for dissemination of results.

procedure and methods of analysis, the scope and limitations of the study and
interests and the study hypotheses are also stated. Also included are data management
size and study population. The source of data, definitions of keywords and variables of
The chapter discusses the methodology of the study including the study design, sample

Methodology
2.1.2 Data Collection Tool

The eligible men and women questionnaires were translated into the three major languages.

The National Population Commission and the National Bureau of Statistics, a joint team of government and non-governmental organizations and international donors, developed the DHS+ program during a technical workshop organized by MEASURE DHS+ program during a technical workshop organized by

2% for the 2003 DHS was collected with questionnaires adapted from the model

eligible men

(400) response rate was 99% of households. 95% of eligible women and 94% of eligible men aged 15 to 59 in every third household were interviewed.

The 1999 DHS randomly selected with estimates based on the response rate of 1999 households was proportionately selected with probability proportional to the population in the survey. A nationally representative probability sample of 7,864 households in urban and 200 in rural areas. Then households were systematically selected for

In the sampling frame, the hundred and sixty five (65) clusters were first randomly selected.

each cluster contained a minimum of fifty (50) households.

Sampling units (PSU) were clusters defined as consisting of one or more EAs such that

with localities less than 2,000 in population comprising a rural area. The primary

site and localities within LGA. The EAs were first selected by region and rural areas

within a sample frame. The EAs are grouped by states, local government areas (LGAs) within a enumeration areas (EA), developed for the 1991 national population census in Nigeria as
2.4 QUALITY CONTROL

Because quality control personnel and field coordinators had participated in a series of special training courses, the interviews were conducted in small groups for three (3) days, conducted in English and the interviewer's language. The interviews were conducted by outside experts, with the guidance of the field coordinators and supervisors.

The interviews were conducted from February 17 to March 8, 2003. For all interviews that were conducted, the field coordinators and supervisors participated in a series of special training courses.

2.3 FIELD WORK

In order to ensure the quality and cultural diversity in the interviews, and in keeping with the language and cultural diversity in the population, the interviews were conducted in the three (3) languages that were spoken by the target population. The interviews were conducted by the field coordinators and supervisors, one (1) female interviewer, one (1) field editor, and in English.

Twelve (12) interview teams collected data from March 10 to August 20. Each team consisted of one (1) supervisor, one (1) female interviewer, one (1) field editor, and in English.

2.1.3 FIELD WORK

15 to 49 in every household, respectively.

Information from eligible men aged 15 to 49 in every third household and women aged individual interviews. The men and women who were interviewed were then used to collect demographic information. The household questionnaires contained information on household livelihoods, and...
15 to 49 from the Nigerian census of 1991 (NPC, 2006). Therefore the effective sample size was 9,922.

The 2003 NDHS sampled 7,386 households for interview, about 11,050 people.

2.3 SAMPLE SIZE:

NDHS

aged 15-49 in 2003, spread across the regions and who were interviewed in the 2003
Nigeria. This study involved analysis of data from both male and female participants.

The 2003 NDHS interviewed eligible men aged 15 to 59 and women aged 15 to 49 in

2.2 STUDY POPULATION:

for errors. Data entry and coding were completed by September 2002.

Also, at each interview, they were then entered into the computer and checked by
periodically reviewed in the office where trained data processing personnel checked them
the National Population Commission (NPC) in Abuja. Completed questionnaires were

Data processing began soon after the completion of fieldwork at the head office of

2.1.5 DATA PROCESSING:

Since data were entered concurrently with the fieldwork, interviews selected households while data management staff sent feedback to field staff
work and regularly monitored the work. Quality control personnel also independently re-
YOUTH - Defined by the United Nations as persons between the ages of 15 and 24.

provided in the dataset.

of their own since information on pre and post test counseling were not

the study will regard VCT as those who requested for HIV testing

individual, and be of the sex may be assessed through the process will be confidential.

about being tested for HIV. This decision must be entirely the choice of the

Voluntary Counseling and Testing (VCT) - The process of providing

2.4 KEY WORDS

2.4 KEYWORDS AND VARIABLES OF INTEREST

NHS. This corresponds with the sample of N.107 found in the dataset.

size for this study will be approximately 4,000 calculated from the total sample in the
<table>
<thead>
<tr>
<th>Knowledge of HIV/AIDS was assessed by the respondents</th>
<th>Positive response to all of these four questions used in the survey:</th>
</tr>
</thead>
<tbody>
<tr>
<td>No (q), Yes (r), Unknown (s)</td>
<td>HIV/AIDS knowledge (t)</td>
</tr>
<tr>
<td>Perception of risk for HIV (u), Lower (v), Middle (w), Upper (x)</td>
<td></td>
</tr>
<tr>
<td>Region (y), (z), Other (A)</td>
<td>Education status (B)</td>
</tr>
<tr>
<td>No education or Primary (C), Secondary (D), Higher (E)</td>
<td>Residency (F), Urban (G), Rural (H)</td>
</tr>
<tr>
<td>Married status (I), Ever Married (J), Never Married (K), Living together (L), Single (M)</td>
<td>Number of different persons the respondent had sexual intercourse with in the past 12 months, Ever-copulated (O)</td>
</tr>
<tr>
<td>Number of sex partners (P), Age the first time the respondent had sexual intercourse (Q), Male (R), Female (S)</td>
<td>Age (T)</td>
</tr>
<tr>
<td>Age group (U), 15-19 (V), 20-24 (W), 25-34 (X)</td>
<td>Current age of respondent (Y), Region (Z)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DEFINITIONS</th>
<th>VARIABLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.4.2 Exploratory variables</td>
<td></td>
</tr>
</tbody>
</table>
women:

- Men are more likely to volunteer for HIV counselling and testing in Nigeria than
  women.
- Respondents with multiple sexual partners are more likely to volunteer for HIV
  testing than those with single or no partners.
- HIV in Nigeria.
- Religious inclinations affect the uptake of voluntary counselling and testing for
  HIV.
- Socio-economic status affects voluntary HIV testing in Nigeria.
- Voluntary HIV testing in Nigeria is associated with region of residence.

The hypotheses to be tested are:

2.5 HYPOTHESES

15-24 and used in the analyses.
asked to all men and women aged 15-49 in the survey. Data was extracted for those aged
asked for the lead in the second question and no, otherwise. The questions were
variable categorized as yes, if the respondent answered yes to the first question and
asked to all men aged 15 to 49 and women aged 15-49 in the survey. If a majority
asked for the lead in the second question of was it required? (NPC, 2003). The first option in the second question
accepted, or was it required? (NPC, 2003). The first option in the second question
when you had the test, did you yourself ask for the test, was it offered to you and you
resil, but have you ever been tested to see if you have the AIDS virus? and "The last
respondents' response to the following two (2) questions, "I don't want to know the
measure of uptake of voluntary counselling and testing for HIV delivered by means of
The outcome variable is voluntary counselling and testing (VCT). This is a responsive
2.4.3 OUTCOME VARIABLE
explore and described for in analyses.

Statistical differences in prevalence of HIV VCT and so were

Prevalence of residence and self perception of risk for HIV were found to be

This huge difference in sample size,

differences in the sex categories may not represent the true situation because of
countries, which were part of the main activities of the NDHS. Observed
from the women on reproductive and fertility issues as well as data on their
their own. This was a deliberate attempt to assess enough information

The number of women included in the survey was about three (3) times more than

Factors/variables are defined in table 2.1.

Attitude of healthcare/VCT providers, etc will not be assessed. Available

designed VCT centers, closest of the centers, cost of HIV testing, stigma,

(VCT) for HIV and which are not available in the dataset e.g. availability of

Other factors that may influence the uptake of voluntary counseling and testing

Results from this study may exaggerate the prevalence of HIV VCT in Nigeria.

Information on pre and post test counseling was not provided in the dataset.

Further probe to disclose their names and the stigma associated with it

Since those who tested positive may deny having ever been tested for fear of

to have ever volunteered for counseling and testing. If it is prone to bias

The outcome variable is a retrospective measure of the respondents' willingness

to verify the outcome variable.

Specifically assessing the accuracy of the information on the variables used to

The survey was not conceived with this research in mind and so it is difficult to

2.6 SCOPE AND LIMITATIONS:
package for Social Science (SPSS) version 10, which was the original software store.

measures during the in the regular mail and opened with the satisfaction
Nigeria demographic and health surveys. Data was then downloaded from the
the survey), through the MEASURED DHS + project to use the data from the 2003
Written permission was obtained from ORC Macro (who provided technical support to

2.9 DATA SOURCE AND PROCESSING

2.9 DATA MANAGEMENT

The study (Protocol Number: M060917)

University of the Wisconsin and ethical committees, which gave unconditional approval for
disclosure and other ethical considerations. The protocol was also presented to the
in the public domain with no link to individuals. If therefor has no risk ofunique
The study analyzed secondary data whose report is already published and data available

2.8 ETHICAL CONSIDERATION

study so as to advise relevant community agencies.

Macao, while approving data downloads per-conditional that it will receive copies of the
presented in seminars and conferences focused on HIV prevention and prevention. ORC

There is also plan to publish the result in a peer-reviewed international journal and

also be advised on the findings of this study:

other non-governmental organizations working towards prevention of HIV in Nigeria will
of Nigeria through the National Action Committee on AIDS (NACA) institutions and

The result of this study will be made available to the Federal Ministry of Health (FMoH)

2.7 PLANS FOR UTILIZATION AND DISSEMINATION OF RESULTS
not living together. Weckel index was constructed from information on surveyed
income union (and not living together) composite windowed, divorced and
responded to never married, living together (confining on married and living together
reflected from their original categories in the dataset: Some of those are marital status
To make analysis and interpretation simpler and more meaningful, some variables were
common software.
researcher is more familiar with it and finds that it is easier to manipulate than other
The data was analyzed using STATA 9. This software was preferred because it

2.9.2 DATA ANALYSIS

difference and other variables with incomplete responses
observations from the explanatory variables were deleted excluded to account for this
the question if they have ever been tested for HIV. Five hundred and thirty-four
continued only 3273 observations. This is the number of respondents who responded to
However, the derived outcome variable, voluntary counseling and testing (VCT)
transferred from excel to Stat software Release 10 (Stata Corporation, 2005) for analysis.
study resulting in four thousand one hundred and seven (4177) observations. It was then
as selection of a subset of respondents aged 15 to 24 according to the objectives of this
The variables were measured, the variables renamed and sex variable added in excel as well.
variables deleted in sections 2.5.2 and 2.5.3 and other variables used to derive them.
and woman data and saved in Microsoft excel from Microsoft office 2000. These are
A set of twenty six (26) identical variables was selected from the files containing the men
account for possible inter-cluster differences due to the sampling method used in the study. For the group of VCT, the data was first set to be a survey data in StATA to enable multiple regression analyses were done by analytical stepwise selection of the variables associated with uptake of VCT. The data used cross-sectional variables were done by analytical stepwise selection of the variables and predictors to examine all the explanatory variables for significant association with uptake of VCT. HIY was used cross-sectional and univariate logistic regression. Finally, variables were presented as means and standard deviation. There was then a multivariate logistic regression model built in proportions to show national figures and regional differences. Continuous and prevalence rates of HIY VCT according to their region of residence. These were analyzed and prevalence rates of HIY VCT according to their region of residence. These were analyzed in the sample size between males and females. The first was the univariate analysis of the baseline demographic and socio-economic characteristics of participants to discern if there were any differences in the sample size between males and females. The first was the univariate analysis, including stratification by sex to explore the effect of help received in these levels, including stratification by sex. To explore the effect of help received in these levels, including stratification by sex. To explore the effect of help received in these levels, including stratification by sex. To explore the effect of help received in these levels, including stratification by sex. To explore the effect of help received in these levels, including stratification by sex. To explore the effect of help received in these levels, including stratification by sex. To explore the effect of help received in these levels, including stratification by sex. To explore the effect of help received in these levels, including stratification by sex.
... where $\logit(p) = \log \left( \frac{p}{1-p} \right)$ is the log of the odds (or logit) of the dependent variable $I$, $c$ is intercept and

$$\logit(p) = c + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_k x_k$$

For the independent variables is thus

exp (exponential) function of the independent variables. The basic logistic regression equation is

A logistic regression model gives the probability that the outcome occurs as an

between the outcome variable and the explanatory variables.

all covariates at the same time, giving the magnitude and direction of association

or not). If also allows for withdrawing all identified variables into the model as to control for

Logistic regression model was chosen because the outcome variable is binary (YCT - yes

95% confidence intervals.

covariates and presented as adjusted odds ratios with corresponding $p$-values and 95%
with Christianity dominating the South, a large percentage of the respondents are members of religious organizations. This is, however, a higher percentage of Muslims in the Northern regions. While 43% of those who are Christians, 4% are Muslims and 1% belong to other religions. There is an average of 26% of males, 34% of urban dwellers and 44% of rural dwellers among the respondents.

4.1 Univariate Analyses

CHAPTER 3

RESULTS
Nigeria: 

(6.73%) (Figure 3.2). There is more uptake of VCT in the South than in the North. 

when South West (3.02%), North Central (2.97%), North East (1.74%), and North West 

VCT for HIV was highest in the South East (4.64%), followed by South South (3.35%). 

acceptable and those who for one reason or the other rejected HIV testing. The uptake of 

insensitive to those who refused voluntarily. Those to whom testing was offered and they 

NDHS reported a prevalence of HIV infection of 10% among Nigerian youths. This is 

97.4% (had never volunteered for HIV counseling and testing) (Figure 3.1). The 2003 

Nigerian three (2.6%) and ever volunteered for HIV counseling and testing while 3.480 

wealthy index class (4.96%) with 30% in the low class and 21% in the middle class. 

education than those in the North. A good fraction of the respondents occupy the high 

those in the Southern region having higher percentage of secondary and higher 

education or primary education, while 6% have higher education, again, this varies with 

An average of 54% of respondents have secondary education, 40% have either no 

married and for living together in the Northern region than in the South. 

married or living with a partner. There is a higher percentage of those who are 

working. More than half of the respondents (66%) are not married while 22% are either 

as professionals or in the technical/management positions (77%). While above 1% are not
The outcome varied across the regions and between males and females. Whether they are at risk or not, 18% had a low self-perception of risk, and only 2% had high risk. 61% of the respondents perceived themselves to be at risk of HIV. 19% do not know themselves, HIV knowledge is consistently above 90% in all the regions and sexes. About 40% of the youths studied had good knowledge of HIV of 97% in males and 96% in females.

unmarried youth. Percentage of those not using condom may, however, have been influenced by their use of contraception. The result varied across the regions and within the sexes. The higher reported use of condom in their last sexual intercourse before the survey while 44% reported not using condom in their last sexual intercourse before the survey while 44% of the respondents were more promiscuous more so in the southern regions. An average of 64% of the respondents in the northern regions. An average of 64% of the respondents reported having had 3 or more partners within the same period across the regions. Seventy percent of the respondents have not had any sexual partners in the last 12 months preceding the survey. While 25% had not had any sexual partners in the last 12 months preceding the survey.

The mean age of sexual debut is 16.48 years (SD=2.78) for males and females respectively. The mean age of sexual debut is 15.97 years (SD=2.78) for males and females respectively. The mean age of sexual debut is 16.48 years (SD=2.78) for males and females respectively. The mean age of sexual debut is 15.97 years (SD=2.78) for males and females respectively.

We explored the effect of the difference in sample size between the two sexes. The

Table 3.7 and Appendix 1 show regional pattern and distribution of the survey. Table 3.7 and Appendix 1 show regional pattern and distribution of the survey. The survey. Table 3.7 and Appendix 1 show regional pattern and distribution of the survey. Table 3.7 and Appendix 1 show regional pattern and distribution of the survey. Table 3.7 and Appendix 1 show regional pattern and distribution of the survey. The survey. Table 3.7 and Appendix 1 show regional pattern and distribution of the survey.
| South East | North East | North West | Total | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female |
|-----------|-----------|-----------|-------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|
| 100       | 100       | 100       | 100   | 50   | 50     | 50   | 50     | 50   | 50     | 50   | 50     | 50   | 50     | 50   | 50     | 50   | 50     | 50   | 50     | 50   | 50     | 50   | 50     | 50   | 50     | 50   | 50     | 50   | 50     | 50   | 50     |
|           |           |           |       |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |
|           |           |           |       |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |

**NOTE:** Table 3.2 Percentage distributions of respondents by their sexual behaviour, contraception for sex and region of residence (NHHS 2003).
cope so. Lipids in the area of residence is also higher in males than females.

of urban residents and took up VCT while only 1.6% of their rural counterparts had

females (2%) had benefited from VCT, which is consistent in all the regions. About 3.8%

West (0.7%), North East (1.7%), and North Central (1.97%). More males than

by South South (0.25%) and South West (0.37%). The lowest percentages were from North

Within the region, the highest uptake of VCT was in the South East (4.6%), followed

volunteered. This result is consistent in all the regions surveyed

vaccines) had ever volunteered for HIV testing while only 1% of those aged 15-19 had

(\(x^2=30.0, p\text{-value}=0.000\)), about 4% of young people aged 20-24 (\(x^2=2.9, p\text{-value}=0.09\)), and 2% of

age groups and VCT uptake showed significant association between the two variables

and the chi-squared (\(x^2\)) statistics with the corresponding p-value of the cross tabulations of

The chi-squared (\(x^2\)) statistics with the corresponding p-value of the cross tabulations of

association and difference between the different categories of the variable.

and those not associated with uptake of VCT. P-value<0.05 signifies significant

corresponding p-value was used to differentiate the variables into those associated

with the uptake of VCT in the National data. The chi-squared (\(x^2\)) test and its

scores. These means and HIV knowledge were found not to be significantly associated

VCT among Nigerian youths. This, however, varied across the regions and within both

use, risk perception and age, sexual debut are significantly associated with uptake of

educational status, occupation, wealth index, religion, number of sex partners, condom

showed that these groups, sex, region of residence, place of residence (urban/rural),

confounding and testing for HIV among the Nigerian youths, Tabels 3-4, and appendix

The second objective was to identify critical factors influencing the uptake of voluntarily

3.2 BI-VARIATE ANALYSIS
Respondents were more likely to volunteer for HIV testing (OR = 1.2; p-value = 0.18) (Appendix 2).

Respondents were more likely to volunteer for HIV testing, the higher the age and sexual desire, the less likely the

Masters) in the religious groups, seen in all the regions.

Christians and Muslims accepted HIV VCT than females (2.3% Christians and 0.7% Muslims) respectively had volunteered for HIV counselling and testing. More males (5.8% religious groups), 3.6% and 1.3% of respondents who are Christians and Muslims were those in the lower class had more uptake than the middle class. Among the

in the regions and within both sexes except among males in the South West and South followed by the middle class (1.58%) and the lower class (1.1%). This is consistent with

Respondents in the higher wealth index class had the highest uptake of VCT (3.98%).

had higher percentages of uptake of VCT compared to other occupational groups.

the regions. Males in unskilled labor in the North East (1.67%) and South West (3.3%).

HIV testing (2.7%) than those in other occupations. These were, however, no some of

within the sexes, respondents who are professionals were more likely to volunteer for

The least uptake was among the professionals (2.1%) and agricultural workers (3.6%).

unskilled workers (5.1%), followed by skilled workers (4.2%) and those not working.

education. In the categories of occupation, most uptake of VCT was found among

with primary or no education had higher uptake of VCT than those with secondary

except for males in the South East and both sexes in the South West were respondents

compared to females in all the education categories. This pattern is seen in the regions no education respectively. There is higher percentage of uptake of VCT among males

A higher percentage of those who had higher education (11%) had volunteered for HIV
accessed VCT while none of those with poor knowledge had, consistent in all the regions.

association with VCT uptake, about 3% of those with good knowledge of HIV had
females in the South East and South West. Knowledge of HIV also led no significant
increase in the uptake in VCT among respondents who were not married (2.3%), married and living together (2%), and those not living together.

There was no significant difference in the uptake of VCT among those who were

VCT. This result varied across the regions and within the sex groups.

(2.9%), only 0.3% of respondents who do not know their risk perception/same across
followed by those with no risk perception (2.3%). This is consistent in all the regions except in the North West (17%) and
South South (males) where those who did not use condom had higher uptake. About 4%
13.9% to 2.9%. This is consistent in all the regions except in the North West (17%) and
living in the South East. The finding that females were more likely to have volunteered for HIV
in all the southern regions. Respondents who used condom in their last sexual
This result is only consistent among females in the North Central and North East and
who had no partners and those who had 1 or more partners respectively had been less
prevalence of the survey and volunteered for HIV testing while 2.5% and 2.1% of those
7.5% of respondents who had had 1 or 2 sexual partners within the last 12 months
0.31) to 10 for VCT at an increasing age of sexual debut, through varied across the regions.
Males (OR=0.14; CI=0.04-0.43) were more less likely then females (OR=0.18; CI=0.06-0.6).

The uptake of VCT was not significantly different between those with good knowledge of HIV and those who did not know their risk perception.
<table>
<thead>
<tr>
<th>Region of Residence</th>
<th>% of Girls of VCT</th>
<th>% of Boys of VCT</th>
<th>% of Girls of VCT</th>
<th>% of Boys of VCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>North-East</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North-Central</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 3.3:** Exploratory variables associated with uptake of VCT in Nigeria by Region of Residence, controlling for sex (NIDS 2002) - Northern Nigeria
<table>
<thead>
<tr>
<th>Risk perception</th>
<th>Positive</th>
<th>Default</th>
<th>Total</th>
<th>X^2</th>
<th>P-value</th>
<th>Good knowledge</th>
<th>Condom use</th>
<th>Total</th>
<th>X^2</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>0.69 (159)</td>
<td>0.957</td>
<td>1.657 (6)</td>
<td>0.04</td>
<td>0.837</td>
<td>0.34</td>
<td>0.395</td>
<td>1.73</td>
<td>0.19</td>
<td>0.695</td>
</tr>
<tr>
<td>No</td>
<td>0.696 (159)</td>
<td>0.957</td>
<td>1.657 (6)</td>
<td>0.04</td>
<td>0.837</td>
<td>0.34</td>
<td>0.395</td>
<td>1.73</td>
<td>0.19</td>
<td>0.695</td>
</tr>
<tr>
<td>Total</td>
<td>1.392 (318)</td>
<td>1.912</td>
<td>3.304 (12)</td>
<td>0.08</td>
<td>0.777</td>
<td>0.34</td>
<td>0.395</td>
<td>1.73</td>
<td>0.19</td>
<td>0.695</td>
</tr>
<tr>
<td>Observations</td>
<td>188</td>
<td>188</td>
<td>188</td>
<td>188</td>
<td>188</td>
<td>188</td>
<td>188</td>
<td>188</td>
<td>188</td>
<td>188</td>
</tr>
<tr>
<td>OR</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
</tr>
<tr>
<td>95% CI</td>
<td>0.77 - 1.36</td>
<td>0.76 - 1.36</td>
<td>0.76 - 1.36</td>
<td>0.76 - 1.36</td>
<td>0.76 - 1.36</td>
<td>0.76 - 1.36</td>
<td>0.76 - 1.36</td>
<td>0.76 - 1.36</td>
<td>0.76 - 1.36</td>
<td>0.76 - 1.36</td>
</tr>
<tr>
<td>Age at sexual debut</td>
<td>1.07</td>
<td>1.08</td>
<td>1.08</td>
<td>1.08</td>
<td>1.08</td>
<td>1.08</td>
<td>1.08</td>
<td>1.08</td>
<td>1.08</td>
<td>1.08</td>
</tr>
<tr>
<td>95% CI</td>
<td>0.85 - 1.36</td>
<td>0.85 - 1.36</td>
<td>0.85 - 1.36</td>
<td>0.85 - 1.36</td>
<td>0.85 - 1.36</td>
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<td>0.85 - 1.36</td>
<td>0.85 - 1.36</td>
<td>0.85 - 1.36</td>
<td>0.85 - 1.36</td>
</tr>
<tr>
<td>Year of entry</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
</tr>
<tr>
<td>95% CI</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
</tr>
<tr>
<td>Time known</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
</tr>
<tr>
<td>95% CI</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
</tr>
<tr>
<td>Time known Low</td>
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<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
</tr>
<tr>
<td>95% CI</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
</tr>
<tr>
<td>Time known High</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
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<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
</tr>
<tr>
<td>95% CI</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
</tr>
<tr>
<td>Time known No</td>
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<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
</tr>
<tr>
<td>95% CI</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
<td>0.77 - 1.36</td>
</tr>
<tr>
<td>Total positive</td>
<td>0.68 (156)</td>
<td>0.957</td>
<td>1.657 (6)</td>
<td>0.04</td>
<td>0.837</td>
<td>0.34</td>
<td>0.395</td>
<td>1.73</td>
<td>0.19</td>
<td>0.695</td>
</tr>
<tr>
<td>Total default</td>
<td>0.696 (159)</td>
<td>0.957</td>
<td>1.657 (6)</td>
<td>0.04</td>
<td>0.837</td>
<td>0.34</td>
<td>0.395</td>
<td>1.73</td>
<td>0.19</td>
<td>0.695</td>
</tr>
<tr>
<td>Total total</td>
<td>1.382 (318)</td>
<td>1.912</td>
<td>3.304 (12)</td>
<td>0.08</td>
<td>0.777</td>
<td>0.34</td>
<td>0.395</td>
<td>1.73</td>
<td>0.19</td>
<td>0.695</td>
</tr>
<tr>
<td>Race Group</td>
<td>% of Total Volunteers</td>
<td>% of Volunteers in South South</td>
<td>% of Volunteers in South East</td>
<td>% of Volunteers in North Central</td>
<td>% of Volunteers in North East</td>
<td>% of Volunteers in South West</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>----------------------</td>
<td>--------------------------------</td>
<td>------------------------------</td>
<td>-------------------------------</td>
<td>-------------------------------</td>
<td>-----------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>2.0%</td>
<td>3.0%</td>
<td>4.3%</td>
<td>0.1%</td>
<td>0.2%</td>
<td>2.6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>1.2%</td>
<td>1.7%</td>
<td>2.3%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>1.5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.8%</td>
<td>1.1%</td>
<td>1.5%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>0.4%</td>
<td>0.6%</td>
<td>0.8%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.4%</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Table A4: Explanatory variables associated with uptake of VCT in Nigeria by region of residence, controlling for sex (NCHS 2009) - Southern Nigeria.
<table>
<thead>
<tr>
<th>Sex partners</th>
<th>Cond. use</th>
<th>Good knowledge</th>
<th>Risk perception</th>
<th>Age at sexual debut</th>
<th>OR</th>
<th>95% CI</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 or more</td>
<td>Yes</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.90</td>
<td>0.38</td>
<td>0.15</td>
<td>0.17</td>
<td>1.38</td>
<td>0.66</td>
<td>82</td>
</tr>
<tr>
<td>3 or more</td>
<td>Total</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.00</td>
<td>0.19</td>
<td>0.18</td>
<td>0.18</td>
<td>0.86</td>
<td>0.49</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>70</td>
</tr>
</tbody>
</table>

Note: The table contains statistical data with various categories and values.
Influence of VCT.

Using multiple regression analysis, factors other than region were selected to predict the uptake of VCT. This was done by education, wealth index and risk perception. The factors were selected by forward selection of variables. Table 3.5 shows the unadjusted and adjusted odds ratio, 95% confidence intervals between the variables and uptake of VCT for HIV.

Table 3.5 shows the unadjusted and adjusted odds ratio, 95% confidence intervals between the variables and uptake of VCT for HIV.

In the multivariate logistic regression to predict and determine the strength of association in the multiple logistic regression to predict and determine the strength of association between the variables and uptake of VCT, wealth index, education, and risk perception were selected as predictors of VCT uptake. In models with age, gender, and education (Table 3.6) age, education, religion, occupation, and self-perception of risk for HIV were predictors of VCT uptake.
For VCT when those with perception of no risk for HIV
are more likely to go
2.98 (and high (AOR = 2.43, CI = 1.44 - 4.67) perception of risk are more likely to go.
For the respondents, self perception of HIV risk, those with low (AOR = 2.0, CI = 0.65 - 6.0) 4.95 (or wealth index were more likely to access VCT, relative to those in the lower class.
The middle (AOR = 1.92, CI = 0.95 - 2.98) and upper class (AOR = 2.43, CI = 1.69 - 3.85) compare to those with no education.

education were much more likely to access VCT (AOR = 4.2, CI = 0.69 - 6.15) 6.15 - 6.50)
level of education, the more likely the people of VCT, respondents with higher
skilled labour (AOR = 1.00, CI = 0.99-2.57) and those non working. The higher the
when those are not working. There is no difference in uptake of VCT between those in the
sector (AOR = 3.12, CI = 1.01-9.90) are more likely to go for voluntary testing for HIV
unskilled workers (AOR = 1.87, CI = 0.48-7.24) and those working in the agricultural
respondents in the professional category of occupation (AOR = 4.28, CI = 1.15-15.94).

significant for South East
South West (0.02; 0.002 - 0.22) which are not significant for North East and海岸
(0.09; 0.03 - 0.31), South East (0.26; 0.08 - 0.92), South South (0.08; 0.01 - 0.48), North West
and confidence interval for the regions are: North East (0.58; 0.23 - 1.44), North West
is less likely in all the regions compared to the North Central Region. Adjusted odds ratios
0.15, CI = 0.04 - 0.51 (relate to their male counterparts. In the regions, uptake of VCT
= 2.9, CI = 1.73 - 4.8) and females in the study were less likely to go for VCT (AOR =
From the tables, as age increases, respondents are more likely to access VCT (AOR =
### Table 3.5 Critical Factors Influencing the Uptake of Voluntary Contraception and Testing for HIV Among Youths in Nigeria (NDHS 2003)

The table presents the odds ratios (OR) and 95% confidence intervals (CI) for various factors associated with the uptake of contraceptive and testing for HIV among youths in Nigeria. The factors include age, wealth index, education, occupation, religion, and HIV status. The table also includes the percentage of respondents who reported using any contraceptive method and the percentage of youths who tested for HIV.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Odds Ratio (OR)</th>
<th>95% CI</th>
<th>p-Value</th>
<th>% of Respondents Using Any Contraceptive Method</th>
<th>% of Youths Testing for HIV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14-17</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-20</td>
<td></td>
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<td>21-25</td>
<td></td>
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<td></td>
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<td>26-34</td>
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<td>35-44</td>
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<tr>
<td>45+</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Wealth Index</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower</td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>Middle</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Higher</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
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</tr>
<tr>
<td>No formal education</td>
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<td></td>
</tr>
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<td>Primary</td>
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<tr>
<td>Secondary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
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<tr>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recruit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional/Managerial</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religious</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christian</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Muslim</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traditional</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** The table includes a summary of significant factors (p-value < 0.05) that influence the uptake of contraceptive and testing for HIV among youths in Nigeria.
<table>
<thead>
<tr>
<th>Variable</th>
<th>South</th>
<th>North</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odds Ratio (95% CI)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odds Ratio (95% CI)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample Size</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3.6: Summary of critical predictors of uptake of VCT in the Northern and South regions of Nigeria, NDHS 2003.
For HIV counseling and testing in Nigeria compared to females. This may be explained (perhaps of all, 2004). This suggests the hypothesis that males are more likely to volunteer HIV counseling and testing unlike the South African survey that reported the reverse. In this study, more males (4.6%) than females (2.9%) youths in Nigeria had volunteered for HIV counseling and testing unlike the Nigerian population (females being more likely to be tested than males (27.6% versus 18.9% resp ectively, p<0.01) 2004). However, the 2009 survey of young people aged 15-24 years reported that about 10% (14% of males and 6% of females) of youths aged 15-24 in Nigeria had ever been tested for HIV. The figure differs from the result of the 2003 NDHS which reported that about 10% of young people aged 15-24 years had ever been tested for HIV.

Previous studies in Nigeria have shown that did not yield any results on these variables. Therefore, the basis for comparing this and VCT for HIV or HTLV-1 infection in Nigeria and existing literature in the databases searched have been useful. The 2003 NDHS did not report regional variations in the uptake of VCT services and perceived VCT services in the country. Low awareness of VCT services and perceived VCT for HIV in the sub-population used in the analysis. This is probably due to lack of spread of low national and regional prevalence of uptake of voluntary counseling and testing (VCT) among young people in Nigeria. The results show a

**DISCUSSION**

**CHAPTER 4**
that most ARV centers and by implication, VCT centers in Nigeria are in the urban areas. Prevalence in rural areas, also the National Action Committee on AIDS (NACA) reports education campaigns on HIV occur in urban areas, and myths about HIV/AIDS are in villages than their rural counterparts. It is known that more information and voluntary testers for HIV (p-value<0.001). This is similar to data reported from a Ugandan study (Karimani et al., 2006) where urban dwellers were 2.7 times more likely to test for HIV. In this study, urban dwellers (3.8%) than rural dwellers (1.1%) had voluntarily peers and in schools rather than from family members.

issues than older youths in traditional African societies, sex is often learned from
that younger youths have less a shorter sexual experience and are less informed on sexual
respectively volunteered for HIV testing. This age disparity may be due to theHelpmadosh and Pelletier et al. (2004) showed 12% and 29% of those aged 15-19 and 20-24
(2004) reported that males of higher age groups responded more to voluntary HIV testing
from studies in Nigeria and other sub-Saharan African countries. For instance, Adepole
the higher age group are more likely to go for VCT. This is similar to reported results
seeks and in the six regions. The Logistic Regression results further confirm that those in
those aged 15-19 (4.11%) versus 1.19% p-value=0.001). This result is consistent in both
Respondents aged 20-24 were more likely to volunteer for HIV testing compared with

sick, discrimination, and marriage insecurity
and spouses. Women may also decline information on their health status for fear of
anybody to decline on testing while women will often need the consent of their partners
men being more open about their sexual behavior and do not need permission from
also reported in NIDHS (2003) where respondents in the highest wealth quintile (26.3%) of the population were less likely to have volunteered for HIV testing than those in the middle (15.8%) and lower (7.8%) wealth quintiles. These differences could result from differences in the population surveyed, where respondents in the upper wealth class have more years of education and more health knowledge. The results suggest that more educated and better health conscious respondents are more likely to be involved in volunteer activities for HIV testing.

Prevention strategies should be directed at rural and less educated populations. These results suggest that more HIV testing among pregnant women also showed that those with post secondary education were more likely to be tested for HIV. These results also confirm that rural residents have better sexual knowledge. The findings of this study show that those with primary school or no education are more aware of HIV and the risks involved, have better sexual knowledge and could be more health conscious. This could be because those with higher education are more aware of HIV and the risks involved. This study also confirmed that those with higher education at the age of 14 are more likely to volunteer for HIV testing. The study also showed that those with higher education and who had secondary and primary or no education were more likely to volunteer for HIV testing compared to 3% and 1% of those who had secondary and primary or no education. This study also showed increasing likelihood to volunteer for HIV testing with increasing education.
This tendency can be

Without participating themselves to be at risk of HIV infection. Compared to women, men tend to be predisposed to having multiple sexual partners by sex revealed that this occurred among males and is the reverse in the females more likely to have accessed VCT than those with 3 or more partners though slightly no partners. It is surprising that those with no sexual partners were found to be slightly females (6.00% vs 0.00%) and 0.00% (p=0.00) while was not significantly among males 4.84% and 0.00% (p=0.00) which is not substantially significant sexual partners (2.10%) within the same period. This trend is not substantially significant for HIV compared to those with no sexual partners (2.10%) and those with 3 or more months preceding the survey (7.52%) were more likely to have gone for voluntary testing. It was also found that women who had changed a sexual partner once within the 12

company (FGN, 2005).

The greater distribution of educational institutions in the Christian dominated parts of the

groups. The most likely explanation is the higher tendency for attending education and prediction of occurrence of prenatal HIV testing in Nigeria compared to other religions 3.13% versus 0.69% (David and Oladejo, 2009) reported Christianity as an independent

Moslems (1.3%) compared to 0.00% (p-value =0.00) in both religions showed more likelihood to volunteer for HIV testing than females (Christians - 5.82% versus 2.96%; Moslems -

A higher percentage of Christians (3.62%) had voluntarily tested for HIV compared to

more exposure to relevant information for decision-making.

to attend in HIV testing centers, unlike private HIV testing centers and have lower quintiles (4.57%). This may result from those in the higher wealth class being able to

were more likely to have been tested for HIV than those in the middle (6.85%) and
significant association with uptake of VCT. This is contrary to the report by Dandu and 
Marais et al. and HIV knowledge score of respondents were found not to be 

ability to be at risk of HIV infection.
are married under in monogamous relationships and so levels to perceive themselves
pregnant women in Nigeria. This is not surprising because majority of pregnant women
reported self-perception of no risk as an independent predictor of VCT uptake among
2.4% in the high and low risk perception groups respectively. Dandu and Oladejo (2006)
surprisingly found in those with no risk perception for HIV (2.5%) against 2.1% and
perception (2.78%) (p-value<0.01). The highest VCT uptake in females; however, was
perception (2.88%) compared to those with no risk perception (2.78%) and those with low risk
VCT (3.39%) (p-value<0.01). Those who perceived themselves at high risk for HIV were more likely to go for 

Respondents who perceived themselves as high risk for HIV were more likely to go for 

To protect themselves and thus seek to know their status from time to time.
female. Using condom may define youths who are more HIV-aware and are determined
most of the regions whereas males who used condom had higher uptake of VCT than
those who did not use condom (1.57%) (p-value<0.01). This trend is consistent across
before the survey were more likely (3.72%) to have gone for voluntary HIV testing than
regarding condom use, young people who used condom in their last sexual activity

Age Group Studies.
partners which will further worsen the HIV prevalence in Nigeria, especially within this
independence is higher risk for HIV and will likely incur extremely higher numbers
multiple relationships better. The concern here is that these young men are exposed
described as fluid or men who handle relationships better than women and so can manage
Programs implemented:

Nigeria in both genders should therefore be carefully interpreted and applied in terms of
in Nigeria is segregated by sex. Comparisons with this study, which assessed VCT in
assessed uptake of voluntary HIV testing in both genders so that existing data about VCT
factors influencing VCT uptake in Nigeria. More of the identified studies
Dhaliwal and Olopade (2006) compared education and risk perception respectively for
occupation and gender of females and logistic regression, wealth status and risk perception.
predicting uptake of VCT in males in the multicultural analysis, age, region and
predictors of VCT uptake in Nigeria. The predictors of VCT uptake in Nigeria (Table 3.5) were
and receive (VCT) among Youths in Nigeria (Table 3.5). These are similar differences in
this study found age, sex, region, education, occupation, wealth, status and self

Volunteer uptake is still low in Nigeria.

Towards people accepting their HIV status and receiving counseling based on their
combined their even with good HIV knowledge, which should have been a driving force
residing with those with poor knowledge and volunteered. This study also
a percentage of respondents with good HIV knowledge (31.9%) had volunteered for HIV
child transmission, and believe that being married confers some level of protection. Only
amongst care and who understand the potential of HIV resistance to reduce mother-to-
least. This report is however based on pregnant women presenting to the clinics for
Olopade (2006) that being married is positively associated with volunteering for HIV
2.7 This study also lacked qualitative data to further probe specific responses of interest. This was identified as one of the limitations of this study in section 1.6. The experience of counseling, influence of partners, fear of discrimination and other variables reported in other variables affecting VCT uptake but which are not discussed because they were not found in the dataset used. Some of these variables are
CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS
number of youth-friendly VCT services to provide privacy, confidentiality, and protection without stigmatizing or offending the youth seeking services. There is also a need to consider establishing and increasing the training of HIV counselors and counselors to provide more privacy and can serve as models for other counselors in VCT prevention for young people. VCT providers should also be trained in counseling and skills in working with youth who may have special needs or disabilities. Most HIV prevention programs fail to reach this population effectively. In order to reduce the incidence of HIV/AIDS it is essential that HIV prevention programs and services be provided in a comprehensive and culturally sensitive manner. This will be achieved by empowering youth and using youth-led programs and services. The counseling and advice provided to young people should be tailored to meet their needs and preferences. This will involve the development of youth-friendly VCT services to provide privacy, confidentiality, and protection without stigmatizing or offending the youth seeking services.
The regional differences in VCT uptake should also be explored. Looking at the various demographic predictors of VCT uptake observed at the national level and in the different sex groups in the southern and northern regions, the study can independently assess whether the increase in VCT uptake observed for VCT. Such study should explore such variables as age, sex, stigma, sex work and polygamy.

Sexual partners were the least likely to be volunteered for VCT. Such study should serve and enlighten especially the social construct varies in the various geopolitical zones. Further research should be carried out to find out why those who had multiple sexual partners were the least likely to be volunteered for VCT.

Will the trends to be voluntarism least for HIV, only 12% had been so. The result of such a study can be used in the planning and implementation of programs to scale up VCT.

Concerned (Kibwana, 2007) showed how even though about 70% of the youth were people are staying away from being voluntarily tested for HIV. The Uganda HIV/AIDS

Guide and qualitative and quantitative study designs to explore reasons and options on why youth explore all possible avenues for young males and females. This should combine both representativity primary study to determine regional correlates of VCT uptake in Nigeria, consistent in all the regions of the federation. There is need for a nationally

Nigeria, showed a very low uptake of VCT (2.6%). Among young people in VCT in Nigeria, it showed a very low uptake of VCT.

In terms of research, this study revealed an important gap in research regarding uptake of

Importance of knowing ones HIV Status:

Education and communication (IEC) on risk behaviors, safe sex practices and the importance of knowing ones HIV Status should be carried out routinely as a way of expanding programs on information.

Awareness in school curriculum, outreach activities to schools and youth organizations young people seeking VCT is still a stigma and discrimination. Apart from including VCT
individuals in Africa.

effectively prevent the spread of HIV and improve access to treatment for infected
This will help in formulating policies and programs for effective HIV treatment to
accompanied by post- and pre-test counseling and the quality of the counseling given.
Research will also be perceived into the numbers of lesion services for HIV and were

the people

and religious leaders that could influence VCT uptake and their impact on the lives of

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February 22 (Ahead of Print)

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### Appendix 2

Continued from Sex (NIDHS 2003).

Explanatory variables associated with uptake of VCT among youths in Nigeria.
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Legend:
- BMI: Body Mass Index
- HIV: Human Immunodeficiency Virus
- CD4: CD4+ T lymphocyte count
- WHO: World Health Organization
- Sex: Gender
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**Variables**

- Male
- Female

**Variables**

- Age
- Ethnic
- Education
- Occupation
- Religion
- Health behaviors
- Mother's education

**Factors influencing the uptake of voluntary counseling and testing for HIV among youths in Nigeria, considering for sex. (NDHS 2003)**

APPENDIX 3
Map of Nigeria showing the six (6) regions and neighboring West African countries.