

ปัจจัยทางสังคมเศรษฐกิจศาสตร์ที่มีผลต่อความรู้ของประชาชนและอัตราการเข้าพบเพื่อปรึกษาและ  
ทดสอบของการบริการปรึกษาและทดสอบโดยสมัครใจในเมืองการุณาณู ประเทศเนปาล



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**SOCIO –ECONOMIC CHARACTERISTICS AFFECTING PEOPLE’S  
KNOWLEDGE AND UTILIZATION OF HIV/AIDS COUNSELLING-TESTING  
SERVICE IN KATHMANDU DISTRICT, NEPAL**

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Thesis Title                   SOCIO –ECONOMIC CHARACTERISTICS AFFECTING  
PEOPLE’S KNOWLEDGE AND UTILIZATION OF  
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การศึกษาค้นคว้าครั้งนี้เป็นการสำรวจเชิงพรรณนาแบบภาคตัดขวางในเมืองการูมานทุประเทศเนปาล เพื่อที่จะหาความสัมพันธ์ระหว่างอัตราการเข้าพบเพื่อปรึกษาและทดสอบของการบริการปรึกษาและทดสอบโดยสมัครใจและปัจจัยเชิงเศรษฐกิจศาสตร์และสังคมของบุคคลเพื่อที่จะทำการวัดถึงความรู้เกี่ยวกับการติดเชื้อ HIV และโรคเอดส์

การสำรวจมีขอบเขตพื้นที่การศึกษาทั้งในเขตเมืองและเขตชนบทของเมืองการูมานทุโดยตัวอย่างจะทำการเลือกด้วยวิธีการสุ่มอายุตั้งแต่ 15 ปี ถึง 49 ปี จากประชากรโดยทั่วไปและประชากรกลุ่มเป้าหมายเพื่อทำการสัมภาษณ์ ในการศึกษาจะมีการศึกษาโดยการวิเคราะห์เชิงพรรณนา การนำเสนอเชิงแผนภาพ การวิเคราะห์แบบจำลองถดถอยโดยการประมาณแบบวิธีกำลังสองน้อยที่สุด การทดสอบสมมติฐานสำหรับการวิเคราะห์และตีความระดับนัยสำคัญทางสถิติเพื่อที่จะทำการพรรณนาศึกษาตัวแปรที่เกี่ยวข้องตามข้อกำหนดของวัตถุประสงค์การศึกษา

จำนวนผู้ทำการสัมภาษณ์ทั้งสิ้นคิดเป็น 280 ตัวอย่าง มีความแพร่หลายของความรู้เกี่ยวกับเชื้อ HIV และโรคเอดส์ของประชากรร้อยละ 85 จากประชากรทั้งหมด มีความรู้ตั้งแต่ ร้อยละ 47 ถึงร้อยละ 98 เพศ เชื้อชาติ เป็นปัจจัยที่มีอิทธิพลสำหรับระดับความรู้เกี่ยวกับเชื้อ HIV และโรคเอดส์ในเขตเมือง และยังคงมีความแตกต่างระหว่างเพศชายและเพศหญิงในระดับการศึกษา รายได้ และอัตราการเข้าพบเพื่อปรึกษาและทดสอบของการบริการปรึกษาและทดสอบโดยสมัครใจ รายได้มีการกระจายตั้งแต่ 2,000 รูปีเนปาล ถึง 50,000 รูปีเนปาล ด้วยค่าเฉลี่ย 10,385.72 รูปีเนปาล ความรู้เกี่ยวกับเชื้อ HIV และโรคเอดส์เป็นปัจจัยสำคัญเชิงบวกที่มีผลต่ออัตราการเข้าพบเพื่อปรึกษาและทดสอบของการบริการปรึกษาและทดสอบโดยสมัครใจหรืออีกนัยหนึ่งความรู้เกี่ยวกับเชื้อ HIV และโรคเอดส์สามารถเพิ่มอัตราการเข้าพบเพื่อปรึกษาและทดสอบของการบริการปรึกษาและทดสอบโดยสมัครใจ

ระดับการศึกษาเป็นปัจจัยสำคัญอย่างมากในการกำหนดความรู้เกี่ยวกับเชื้อ HIV และโรคเอดส์ และเมื่อเปรียบเทียบความรู้เกี่ยวกับเชื้อ HIV และโรคเอดส์ และอัตราการเข้าพบเพื่อปรึกษาและทดสอบของการบริการปรึกษาและทดสอบโดยสมัครใจในเขตเมืองและเขตชนบทพบว่ายังคงมีความแตกต่าง รายได้ของแต่ละบุคคลเป็นปัจจัยที่มีอิทธิพลในการกำหนดการพัฒนาความรู้เกี่ยวกับเชื้อ HIV และโรคเอดส์

อัตราการเข้าพบเพื่อปรึกษาและทดสอบของการบริการปรึกษาและทดสอบโดยสมัครใจเป็นปัจจัยพื้นฐานในการขยายการบริการปรึกษาและทดสอบโดยสมัครใจในเมืองการูมานทุ เช่นเดียวกับปัจจัยทางเศรษฐกิจศาสตร์และสังคมและความรู้เกี่ยวกับเชื้อ HIV และโรคเอดส์เป็นปัจจัยพื้นฐานสำหรับการนำไปใช้อย่างมีประสิทธิภาพของแต่ละโปรแกรมตามแต่ละปัจจัยของปัจเจกบุคคล

สาขาวิชา.....เศรษฐศาสตร์สาธารณสุข.....ลายมือชื่อนิสิต.....  
 ปีการศึกษา.....2550.....ลายมือชื่ออาจารย์ที่ปรึกษาหลัก.....

##508 56148 29:MAJOR HEALTH ECONOMICS

KEYWORD:SOCIOECONOMIC/CHARACTERISTICS/KNOWLEDGE/UTILIZATION OF HIV/AIDS COUNSELLING-TESTING SERVICE/KATHMANDU DISTRICT, NEPAL.

GUNJA BAHADUR G.C.: SOCIO –ECONOMIC CHARACTERISTICS AFFECTING PEOPLE’S KNOWLEDGE AND UTILIZATION OF HIV/AIDS COUNSELLING-TESTING SERVICE IN KATHMANDU DISTRICT, NEPAL. THESIS PRINCIPAL ADVISOR: ASSOCIATE PROFESSOR PONGSA PORNCHAIWISSESKUL, Ph.D.,146 PP

A cross-sectional descriptive survey was conducted in Kathmandu district, Nepal, to find out the relationship between utilization of counseling-testing visit for voluntary counseling and testing service and socioeconomic characteristics of people, and to measure their knowledge about HIV infection and AIDS.

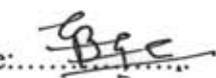
The survey was conducted in both of urban and rural area of Kathmandu district, participants aged 15-49 years were randomly selected from the general as well as target population to be interviewed. Descriptive analysis, graphical presentation and three regression model analysis and estimated from OLS method, Hypothesis testing for statistical significance as of result interpretation were used to describe the association between selected variables as requirement of research objectives.

A total of two hundred eighty people were interviewed. The prevalence of knowledge about HIV/AIDS of people was 85% ranging from 47% to 98%. People with gender, ethnicity in urban area had higher knowledge about HIV/AIDS, There were differences between male and female in terms of educational level, income and utilization of counseling –testing visit for VCT service. Income ranged from Rs 2000.00 to Rs 50,000.00 with the mean was Rs 10,385.72. Knowledge about HIV/AIDS was important factor affecting utilization of counseling-testing visit for VCT service with positive impact or in other word knowledge about HIV/AIDS could increase utilization of counseling-testing service for VCT.

Educational level was the most important characteristics of individual affecting to knowledge about HIV/AIDS with high sensitivity. There was a disparity between urban and rural area in term of knowledge about HIV/AIDS and utilization of counseling-testing service for VCT. Individual income also had very important role for improvement the knowledge about HIV/AIDS of people.

Utilization of counseling-testing service for VCT is an important basis to expand VCT service in Kathmandu district. Association between individual socioeconomic characteristics and knowledge about HIV/AIDS may be a basis for implementing intervention programs efficiently according to characteristic of individual.

Field of Study: Health Economics

Student’s Signature:.....

Academic Year: 2007

Principal Advisor’s Signature: .....

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## CONTENTS

	Page
ABSTRACT (THAI).....	IV
ABSTRACT (ENGLISH).....	V
ACKNOWLEDGEMENTS.....	VI
CONTENTS.....	VII
LIST OF TABLES.....	XI
LIST OF DIAGRAMS.....	XIII
LIST OF ABBREVIATIONS.....	XIV
CHAPTER I INTRODUCTION.....	1
1.1 Introduction.....	1
1.2 Demographic Consequences.....	4
1.3 Economic Effect.....	4
1.4 The Effect on Development.....	4
1.5 World Scenario.....	5
1.6 Developing Country Overview- Asia.....	6
1.7 Country developments.....	6
1.8 Global Situation of HIV /AIDS.....	9
1.9 Socio-Economic Situation of Nepal.....	10
1.10 HIV/AIDS Situation of Nepal.....	13
1.10.1 National Response.....	15
1.10.2 Epidemic Analysis.....	16
1.10.3 Other factors that shape the dynamics of the epidemic include.....	17
1.10.4 Challenges.....	26
1.10.5 Significance.....	27
1.10.6 Scopes.....	28
1.10.7 Research Questions.....	29
1.10.8 Major Achievements .....	29
1.10.9 Prevention.....	30
1.10.10 Treatment care and support.....	31
1.10.11 Advocacy, policy and legal reform.....	31
1.10.12 Leadership and management .....	32
1.10.13 Strategic information .....	32

1.10.14 Finance and resource mobilization .....	32
1.10.15 Control of National Action Plan (2006-2008).....	33
1.10.16 Commitments .....	33
1.10.17 Resources.....	34
1.10.18 Antiretroviral therapy treatment activities.....	35
1.10.19 Percentage of infants born to HIV infected mothers who are infected.....	36
1.10.20 Achievements against the targets.....	37
1.10.21 Objectives.....	39
1.10.22 Specific objectives.....	39
1.10.23 Usefulness of the study.....	39
 CHAPTER II LITERATURE REVIEW. ....	40
2.1 Concept of Knowledge ,Transfer and use.....	40
2.2 Spreading Knowledge.....	41
2.3 Knowledge of HIV/AIDS and attitude towards voluntary counseling and testing among adults.....	42
2.4 Youth Have Startling Little Knowledge about HIV/AIDS Knowledge and attitude towards voluntary.....	43
2.5 counseling and testing for HIV: a community based study in northwest Ethiopia.....	46
2.6 Acceptability of HIV counseling and testing among tuberculosis patients in south Ethiopia.....	47
2.6.1 Patient characteristics.....	47
2.6.2 Previous HIV diagnosis and treatment.....	48
2.6.3 Perceived HIV risk and awareness.....	48
2.6.4 Willingness and acceptability of HIV testing.....	48
2.7 Effect of an HIV counseling and testing program on AIDS-related knowledge and practices in tuberculosis clinics in Abidjan, Côte d'Ivoire.....	49
2.8 Evaluation of 2 techniques of HIV pre-test counseling for pregnant women in West Africa .....	50
2.9 Women’s Knowledge About Treatment to Prevent Mother-to-Child Human Immunodeficiency Virus Transmission.....	51

2.10	HIV testing and counseling.....	52
2.11	Sexual Risk Behaviors for HIV/AIDS in Chuuk State, Micronesia: The Case for HIV Prevention in Vulnerable Remote Populations Survey of knowledge, attitudes, and Behaviors.....	52
2.12	HIV counseling and rapid testing.....	54
2.13	Counseling and Testing for HIV.....	54
2.14	CT services serve two principal purposes.....	55
2.15	Previous study in Thaibinh city of Vietnam.....	57
2.16	Determinants of individual.....	59
	2.16.1 Age.....	59
	2.16.2 Gender.....	59
	2.16.3 Place of living .....	60
	2.16.4 Educational level.....	60
	2.16.5 Income.....	60
CHAPTER III RESEARCH METHODOLOGY.....		61
3.1	Study design.....	61
3.2	Methodology.....	61
3.3	Study area: Kathmandu district.....	61
3.4	The Map of Kathmandu.....	62
3.5	Conceptual Framework.....	63
3.6	Operational Definition.....	63
	3.6.1 dependent variable.....	63
	3.6.2 Independent variables .....	64
3.7	Sample size Estimation.....	65
3.8	Sampling Procedure .....	65
3.9	Data collection.....	66
3.10	Total Population of Kathmandu District.....	67
3.11	Inclusion and Exclusion Criteria .....	68
3.12	Data Analysis.....	68
	3.12.1 Descriptive Analysis.....	68
	3.12.2 Define knowledge.....	68
	3.12.3 Regression Analysis.....	69

CHAPTER IV RESULTS AND DISCUSSIONS .....	73
4.1 Data Description.....	73
4.2 Regression (First Model).....	94
4.2.1 OLS estimated for knowledge about HIV/AIDS.....	95
4.2.2 Setting Hypothesis.....	95
4.2.3 Factors affecting knowledge about HIV/AIDS of people in Kathmandu District.....	95
4.3 Regression (Second Model).....	100
4.3.1 OLS estimated for Utilization of Counseling about HIV/AIDS.....	100
4.3.2 Setting Hypothesis.....	102
4.3.3 Factors affecting Utilization of Counseling about HIV/AIDS of people in Kathmandu District.....	102
4.4 Regression (Third Model).....	110
4.4.1 OLS estimated for Utilization of Counseling and testing visit about HIV/AIDS .....	111
4.4.2 Setting Hypothesis.....	112
4.4.3 Factors affecting Utilization for HIV/AIDS counseling and testing service in Kathmandu district .....	113
4.5 Discussion.....	127
CHAPTER V CONCLUSION AND RECOMMENDATION.....	130
5.1 Conclusion.....	130
5.2 Recommendation.....	133
5.3 Limitation of the study.....	135
References .....	137
Appendices.....	141
Questionnaire.....	141
Biography.....	146

## LIST OF TABLES

	Page
Table 1.10.1 Estimation of HIV infections (2007) .....	15
Table 1.10.2 Most at risk populations who are HIV infected.....	17
Table 1.10.3 Year Wise detection of HIV/AIDS in Nepal 1988-2007.....	18
Table 1.10.4 Key Achivement of VCT Service 2007 of Nepal.....	20
Table 1.10.5 Cumulative HIV and AIDS Situation of Nepal As of 12 Feb 2008.....	21
Table 1.10.6 Cumulative HIV infection by sub-group and sex.....	23
Table 1.10.7 Cumulative HIV and AIDS Situation of Nepal As of 12 Feb 2008.....	25
Table 1.10.8 Most at risk populations who are HIV infected.....	29
Table 1.10.9 ART Centres in Nepal (till 30 June 2007).....	35
Table 1.10.10 PMTCT Centres in Nepal (till 30 June 2007).....	36
Table 1.10.11 TARGET vs. Achievement FY 2063/64 (2006/2007) (Government)....	37
Table 1.10.12 GFATM Activities for FY 2063/64.....	38
Table 4.1.1 Distribution of respondents according with gender.....	73
Table 4.1.2 Distribution of respondents according with Ethnicity .....	74
Table 4.1.3 Pretest counseling(q1), HIV test(q2), HIV+(q3), Post test Counseling(q4) VS * ethnicity Crosstabulation .....	75
Table 4.1.4 Distribution of People's Knowledge VS Gender about HIV/AIDS.....	77
Table 4 .1.5 Distribution of People's Knowledge VS Place of living about HIV/AIDS.....	78
Table 4 .1.6 Distribution of correlation of respondents between age vs knowledge.....	81
Table 4 .1.7 Distribution of frequency mean, Standard Deviation, Range, Minimum and Maximum of Knowledge and socio-economic factors of respondents.....	84
Table 4 .1.8 Distribution of frequency mean, Standard Deviation, Minimum and Maximum of Utilization of counseling and testing about HIV/AIDS.....	85
Table 4 .1.9 Distribution of frequency, Percent of Schooling of the respondents....	86
Table 4 .1.10 Distribution of frequency, Percent of Dependency of family size of the respondents.....	89
Table 4 .1.11 Distribution of frequency, Percent of Average household income of the respondents.....	91

Table 4 .1.12	Distribution of frequency, Percent of Source of income of the Respondents.....	93
Table 4.2.1	OLS estimated for knowledge about HIV/AIDS.....	94
Table 4.3.1	OLS estimated for Utilization of Counseling about HIV/AIDS.....	100
Table 4.4.1	OLS estimated for Utilization of Counseling and testing visit about HIV/AIDS.....	111
Table 4.5	summary of three model of regression coefficient .....	124
Table 4.6	Compare Significant and Sign of Coefficient of the Variable between three Model.....	125
Table 4.7	Compare Significant of Coefficient Variable between three Models..	126



สถาบันวิทยบริการ  
จุฬาลงกรณ์มหาวิทยาลัย

## LIST OF DIAGRAM

	Page
Diagram 1      The individual as an Economic Actor.....	3
Diagram 1.10.1    Year wise detection of HIV/AIDS in Nepal(1988-2007) .....	19
Diagram 1.10.2    Key achievement of VCT service 2007.....	21
Diagram 1.10.3    Cumulative HIV & AIDS Situation of Nepal as of 12 Feb.2008.. ...	22
Diagram 1.10.4    Cumulative HIV infection    of male by sub-group    in pie chart.....	23
Diagram1.10.5    Cumulative HIV infection of female by sub-groups in pie chart.....	24
Diagram1.10.6    Cumulative HIV infection by age and sex.....	26
Diagram 4.1.1    Histogram of respondents according with gender.....	74
Diagram 4.1.2    Distribution of Bardigram of respondents according with Ethnicity.....	75
Diagram 4.1.3    Compare Result of Utilization of q1, q2, q3 and q4.....	77
Diagram 4.1.4    Distribution of People's Knowledge showing in Histogram.....	79
Diagram 4.1.5    Distribution of respondents age showing in Histogram.....	80
Diagram 4.1.6    Distribution of correlation of respondents between age vs Knowledge.....	83
Diagram 4 .1.7    Distribution of frequency, Schooling years of the respondents showing in Histogram.....	88
Diagram 4.1.8    Distribution of frequency, Dependency of family size of the respondents showing in Histogram.....	90
Diagram4.1.9    Distribution of frequency, of Average household income of the respondents showing in Histogram.....	92
Diagram 4.2.1    Normal P-P Plot of Regression Standardized Residua.....	99
Diagram 4.3.1    Normal P-P Plot of Regression Standardized Residua.....	109
Diagram 4.4.1    Standardized Residual error (e).....	122
Diagram 4.4.2    Normal P-P Plot of Regression Standardized Residual.....	123

## LIST OF ABBREVIATIONS

AIDS	Acquired immune deficiency syndrome
HIV	Human immuno- deficiency virus
IDUs	Injecting drug users
IEC	Information, education, and communication
MOHP	Ministry of Health and Population
NCASC	National Center for AIDS and STD Control
NGO	Non-Governmental Organization
STD	Sexually Transmitted Disease
STI	Sexually Transmitted Infection
SWs	Sex-Workers
UNAIDS	Joint United Nations Programme on HIV/AIDS
USAID	United States Agency for International Development
VDC	Village Development committee
WHO	World Health Organization
GIS	Geographic Information System
FHI	Family Health International
EHP	Environmental Health Project
EDCD	Epidemiology and Disease Control Division
DPHO	District Public Health Office
DOHS	Department of Health Services
CDC	Centers for Disease Control and Prevention
CBS	Central Bureau of Statistics
CBO	Community –Based Organization
ART	Anti-retroviral Therapy
ARH	Adolescent Reproductive Health
CEDPA	Centre for Development and Population Activities
CREHPA	Centre for Research on Environment Health and Population Activities
DAART	Directly Administered Antiretroviral Therapy
UNDP	United Nation Development Program
HDI	Human development index
PPP	purchasing power parity
HDR	Human development Report

MSM	Men having sex Men
FSW	Female Sex Workers
NACC	National AIDS coordination committee
DACC	District AIDS coordination committee
NAC	National ADIS Council
PEP	Post Exposure Prophylaxis
PLHA	Persons Living With HIV/AIDS
UN	United Nations
GFATM	Global Fund for AIDS , Tuberculosis and Malaria
NAP	National Action Plan
DFID	Department for International Development
IBBSs	Integrated Bio-Behavioral Survey
MARPs	Most-At- Risk Populations
PMTCT	Pregnant Mother To Child Transmitted
WAD	World AIDS Day
ARV	Anti-retro-viral
VCT	Voluntary Counseling –Testing
PLWHAs	People Living With HIV/AIDS
M&E	Monitoring and evaluation
INGO	International Non- Government Organization
UA	United Agency
ANC	Anti- Natal Care
DOTS	Direct Observe Treatment Short course
LMD	Logistic Management Division
GON	Government of Nepal
VAT	value Added Tax
Govt	Government
GAMT	Global for AIDS , Malaria and Tuberculosis
Ph. D.	Doctor of Philosophy
UNFPA	United Nation Population fund
WHO	World Health Organization
MD	Management Division
HMIS	Health Management Information System
STID	Sukra Raj Tropical And Infectious Disease

UCTP	Utilization of precounseling-Testing and Post counseling
UTCTRP	Utilization of precounseling-Testing for result and Post counseling
Cum	Cumulative
Prob	Probability
Ln	Natural log with base e
W	Knowledge
Utofc	Utilization of counseling
Utof(c+t)	Utilization of counseling and testing



สถาบันวิทยบริการ  
จุฬาลงกรณ์มหาวิทยาลัย

# CHAPTER I

## INTRODUCTION

### 1.1 INTRODUCTION :

AIDS (Acquired Immune Deficiency Syndrome) is caused by the Human Immunodeficiency Virus (HIV). The virus to attack a person's immune system, it has to enter the bloodstream and there are three ways may occur:

1. Through sexual intercourse - this includes both heterosexual and homosexual intercourse, although most infections in the developing world are transmitted heterosexually.
2. Directly into the bloodstream through use of contaminated blood or blood products, or sharing of intravenous drug-injecting equipment.
3. From mother to child - it is estimated that about one third of infants born to infected mothers will be infected.

The possible responses to the epidemic are well documented. Risk of sexual transmission can be reduced by use of condoms, cutting down on numbers of partners and treating other sexually transmitted infections. Blood and blood products can be made safer through screening of donors and their blood.

Drug users can be encouraged to sterilize or exchange needles. Work on developing means of reducing mother to child infection is underway.

One of the crucial points that has to be made about the HIV/AIDS epidemic and consequently requires a different and much broader response – one. The factors that make it unique are:

- It is a new epidemic. AIDS was first recognized as a specific condition only in 1981 in USA and it was detected by test in 1984 that the cause

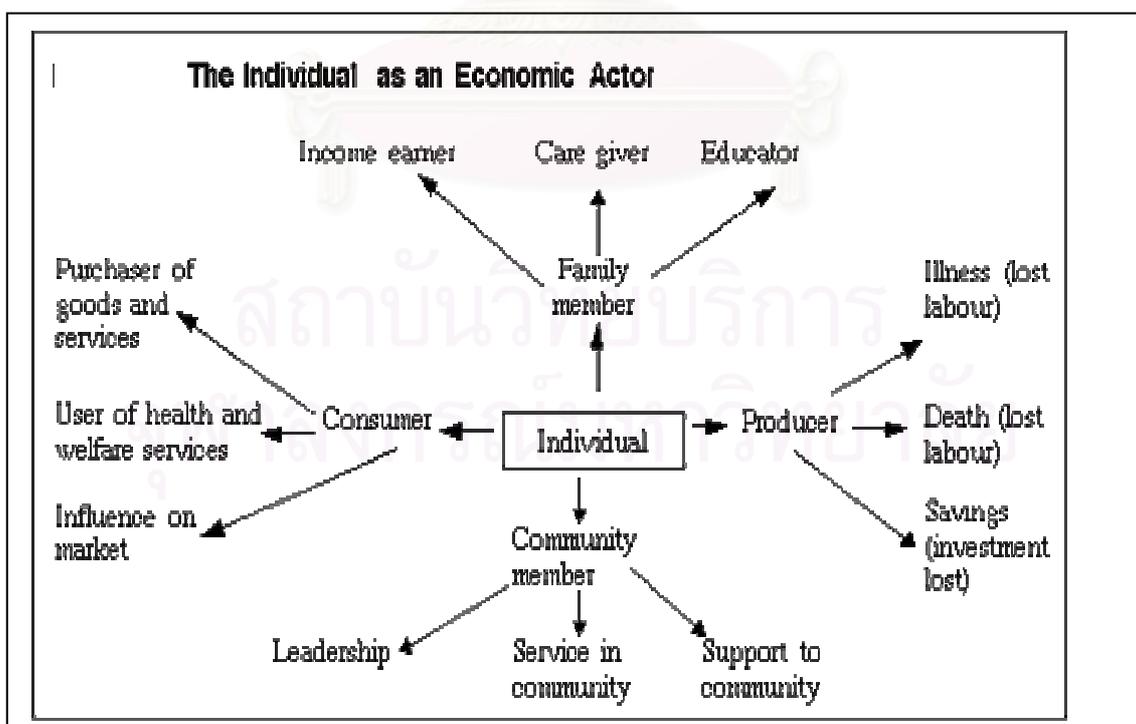
was identified the virus producing AIDS. AIDS was discovered at the first in France and in USA.

- It has a long incubation period. Persons who are infected by the virus may have many years of productive normal life, although they can infect others during this period. It is not certain how long this latent period is; estimates range from five to fifteen years, with the shorter period being found in the developing world, where people are less healthy and well nourished. It is known that good health and nutrition, and early treatment of opportunistic infections, will extend the period of healthy and productive life. Unfortunately infected children will, for the most part, die before their fifth birthdays.
- The prognosis for people infected with HIV is bleak. At the end of the incubation period, a person will usually experience periods of sickness increasing in severity, duration and frequency, until he/she dies.
- The disease is found mainly in two specific age groups: children under five, and adults aged between 20-40 years. For various reasons there seem, in the developing world, to be slightly more females than males infected, and women develop the disease at a younger age.
- The scale of the epidemic is also different from most other diseases. As Table 1 shows, in some settings, up to 30 per cent of ante-natal clinic attendees are infected. This means that between 20-25 per cent of sexually active adults may be infected.
- HIV is mainly sexually transmitted, which means it is passed on through one of the most fundamental human activities.

- There are links between HIV and other diseases, most notably tuberculosis, which has further implications for public health.
- In general, the epidemic is still spreading in the developing world, although there are signs that the level of infection may have peaked in some areas.

The effect of an infection is felt first and most immediately by the person who falls ill and their family. It then spreads like a ripple out through the household, community, and then through the country as a whole. This interaction is illustrated in the following diagram 1. It should be remembered that while an individual may not be a producer, he or she will always be a consumer and have social roles. Broad areas of concern for development assistance, where we expect the epidemic to have an impact, are demographic, economic and developmental.

**Diagram 1 The individual as an Economic Actor**



Source: ( Way and Stanecki, 1994).

## **1.2 Demographic Consequences**

AIDS will not stop population growth, nor cause populations to fall, thus any idea that “AIDS is the solution to the population problem” is unfounded( Way and Stanecki, 1994). Of particular concern is the increased mortality in the 20-40 year age group. This has the effect of reducing the working age population and increasing the dependency ratio. Most women will complete their child-bearing before falling ill so the number of orphans will rise.

## **1.3 Economic Effect**

AIDS will have an effect on economies at various levels. The most obvious is at the household level. If the infected person is an adult then their labour will be lost, which may affect income if the person was in paid employment or producing goods for sale, and will reduce household welfare.

The macro-economic impact is also uncertain. It is believed that AIDS will affect national economic growth through diversion of savings to care and consumption (thus reducing investment), and through the illness and death of productive members of the society.

There have been attempts to model the economic impact for specific countries. These models show that HIV will reduce the rate of economic growth, over a period of 20yrs, this may be significant.

## **1.4 The Effect on Development**

It is increasingly argued that development is about more than economic growth and increases in GDP per capita. It is on the development indicators that the impact of the epidemic will be felt first and worst.

Particularly vulnerable are the indicators of life expectancy; infant mortality rates; child mortality rates and the crude death rate. Infant mortality rates may nearly

double in Zambia and Zimbabwe and increase by 50 per cent in Kenya and Uganda. Child mortality rates will increase even more, as many children survive beyond their first birthday. Life expectancy is predicted to fall by an estimated 9 years in Zaire to more than 25 years in the worst affected countries by the year 2010 (Way and Stanecki, 1994).

The effect of AIDS will be to reverse hard-won development gains and to make people and nations worse off. It is possible that these effects may last for decades. The people who fall ill and die are the parents and leaders in society, which means that a generation of children may grow up without the care role models they would normally have.

#### 1.5 **WORLD SCENARRIO:**

To date around 65 million people have been infected with HIV and AIDS has killed more than 25 million people since it was first recognised in 1981. The vast majority of the 38.6 million people living with HIV in 2005 are unaware of their status. AIDS is among the greatest development and security issues facing the world today. In 2005 AIDS claimed the lives of 2.8 million people and over 4 million people were newly infected with the virus. At around 17.3 million, women make up almost half of the total number of people living with the virus, 13.2 million of which live in sub-Saharan Africa (76% of all women living with HIV). Sub-Saharan remains the most affected region in the world. Two thirds of all people living with HIV are in sub-Saharan Africa where 24.5 million people were living with HIV in 2005. Growing epidemics are underway in Eastern Europe and Central Asia where 220,000 people were newly infected with HIV in 2005. Declines in HIV prevalence have been noted in Kenya, Zimbabwe, urban parts of Haiti and Burkina Faso and four Indian states including Tamil Nadu. (Dominique De Santis, Sophie Barton-Knott/UNAIDS Geneva,).

## **1.6 Developing Country Overview- Asia:**

Latest estimates show that some 8.3 million people were living with HIV in Asia at the end of 2005—more than two-thirds of them in one country, India. Over a quarter of the total number of people living with HIV in Asia were adult women – 2.4 million. An estimated 180,000 children were living with HIV. Approximately 930,000 people were newly infected with HIV in 2005, while AIDS claimed an estimated 600,000 lives. The number of people receiving antiretroviral therapy rose from 70,000 in 2003 to 180,000 at the end of 2005. About one in six people (16%) in need of antiretroviral Treatment in Asia is now receiving it. HIV prevalence has been declining in four states in India, in Cambodia and in Thailand. However, HIV prevalence is increasing in some countries including China, Indonesia and Viet Nam, and there are signs of HIV outbreaks in Bangladesh and Pakistan. (Dominique De Santis, Sophie Barton-Knott/UNAIDS Geneva,).

## **1.7 Country developments**

In India, the world's second most populous country, an estimated 5.7 million adults and children were living with HIV in 2005 and adult national prevalence stood at 0.9%. HIV prevalence tends to be higher in the industrialized peninsular states. HIV prevalence for 15–24-year-old pregnant women in Andhra Pradesh, Karnataka, Maharashtra and Tamil Nadu, declined from 1.7% in 2000 to 1.1% in 2004. The latter two states were among the earliest in India to respond to the epidemic, and current Trends reflect their sustained HIV prevention efforts over the past several years. Most HIV infections in India (more than 80% of reported AIDS cases) are due to Unprotected heterosexual intercourse. Injecting drug use is the main driver of the HIV Epidemics in the north-east, and there is a substantial overlap between injecting drug use and paid sex in some parts of the country. In Tamil Nadu, HIV prevalence of 50% has been found

among some sex workers. In 2005, well below 10% of people needing Antiretroviral treatment were receiving it in India (which has more than 70% of the Region's total treatment needs). Around 650,000 people in China were living with HIV in 2005. Injecting drug user Account for almost half (44%) of people living with HIV. Almost one-half of China's Injecting drug users share needles and syringes, and one in ten also engage in high-risk Sexual behavior. As HIV spreads from drug users, sex workers and their clients to China's general Population, the proportion of HIV infections in women has been increasing. In 2004, Women constituted 39% of reported HIV cases compared with 25% just two years earlier. In parts of Yunnan, Henan and Xinjiang provinces, HIV prevalence already exceeds 1% among pregnant women and those receiving premarital and clinical HIV testing. China's 'Four Frees and One Care' programme, which offers free antiretroviral drugs, Free drugs to prevent mother-to-child transmission, free schooling for orphaned children and care and economic assistance to affected households, may provide a model for other nations in supporting families and societies affected by AIDS. In 2005, around 25% of those in need of antiretroviral drugs in China were receiving them. At 1.6%, adult national HIV prevalence in Cambodia was one-third lower in 2005 than in the late 1990s—due mainly to a combination of rising mortality rates and HIV prevention efforts that helped reduce unprotected paid sex. However, the country is still burdened with one of the worst epidemics in Asia with women constituting a growing share of people living with HIV – an estimated 47% in 2003, compared with 37% in 1998. In Thailand, national adult HIV prevalence was estimated at 1.4% in 2005. Prevention efforts have resulted in declining levels of HIV since the late 1990s as fewer men bought sex and condom use rates rose. However, recent studies show that premarital sex has become more commonplace among young Thais and more than one-third of HIV infections in 2005 were among women who had been infected by

their long-term partners. Official figures indicate that an estimated 80,000 HIV-positive Thais had received Antiretroviral treatment by end 2005. The roll-out of antiretroviral treatment in recent Years has coincided with a drastic drop in the number of officially reported AIDS-related deaths—from 5,020 in 2004 to 1,640 in 2005. Myanmar has one of the most serious epidemics in the region. In 2005 an estimated 360,000 people were living with HIV and national adult HIV prevalence stood at 1.3%. However, recently efforts have been stepped up and have resulted in a decline in National HIV prevalence in pregnant women from 2.2% in 2000 to 1.8% in 2004. In Viet Nam, HIV has spread to all 59 provinces and all cities. Around 260,000 people were living with HIV in 2005, more than double the number in 2000. National adult HIV prevalence was an estimated 0.5% in 2005. Official estimates are that almost 40,000 people are being infected with HIV each year. Injecting drug users and sex work are the main factors driving the epidemic. HIV prevalence among injecting drug users increased from 9% in 1996 to 29% in 2002 and 32% in 2003, and HIV infection levels as high as 40% have been found in some cities. In Pakistan, around 85,000 people were living with HIV in 2005. The country will need to improve its prevention efforts if it is to avoid serious HIV outbreaks. Almost one in four injecting drug users tested in Karachi was HIV-positive in 2004; less than one year earlier the same community yielded only one HIV-positive case. In Indonesia, a serious HIV epidemic is underway in Papua where HIV has spread beyond sex workers and their clients and almost 1% of adults in five villages tested HIV positive. HIV prevalence as high as 48% has been found in injecting drug users at Rehabilitation centre in Jakarta and even higher infection levels have been reported in Pontianak on the island of Borneo. In Bangladesh, national adult HIV prevalence is still very low at under 0.1%, partly due to focused prevention efforts, which have helped keep HIV prevalence below 1% among men who have sex with men and among female

sex workers. The Philippines and Lao People's Democratic Republic are experiencing very limited epidemics with prevalence at under 0.1% in both countries (Dominique De Santis, Sophie Barton-Knott/UNAIDS Geneva,).

## **1.8 GLOBAL SITUATION OF HIV /AIDS**

Increased HIV prevention and treatment efforts needed to slow and reverse AIDS epidemic, according to new UNAIDS/WHO report GENEVA, 21 November 2005 – There is new evidence that adult HIV infection rates have decreased in certain countries and that changes in behaviour to prevent infection—such as increased use of condoms, delay of first sexual experience and fewer sexual partners—have played a key part in these declines. The new UN report also indicates, however, that overall trends in HIV transmission are still increasing, and that far greater HIV prevention efforts are needed to slow the epidemic. Kenya, Zimbabwe and some countries in the Caribbean region all show declines in HIV prevalence over the past few years with overall adult infection rates decreasing in Kenya from a peak of 10% in the late 1990s to 7% in 2003 and evidence of drops in HIV rates among pregnant women in Zimbabwe from 26% in 2003 to 21% in 2004. In urban areas of Burkina Faso prevalence among young pregnant women declined from around 4% in 2001 to just under 2% in 2003.

These latest findings were published in AIDS Epidemic Update 2005, the annual report by the Joint United Nations Programme on HIV/AIDS (UNAIDS) and the World Health Organization (WHO). The joint report, which this year focuses on HIV prevention, was released today in advance of World AIDS Day, marked worldwide on the first of December. Several recent developments in the Caribbean region (in Bahamas, Barbados, Bermuda, Dominican Republic and Haiti) give cause for guarded optimism—with some HIV prevalence declines evident among pregnant women, signs of increased condom use among sex workers and expansion of voluntary HIV testing and counseling.

Despite decreases in the rate of infection in certain countries, the overall number of people living with HIV has continued to increase in all regions of the world except the Caribbean.

There were an additional five million new infections in 2005. The number of people living with HIV globally has reached its highest level with an estimated 40.3 million people, up from an estimated 37.5 million in 2003. More than three million people died of AIDS-related illnesses in 2005; of these, more than 500,000 were children.

According to the report, the steepest increases in HIV infections have occurred in Eastern Europe and Central Asia (25% increase to 1.6 million) and East Asia. But sub-Saharan Africa continues to be the most affected globally– with 64% of new infections occurring here (over three million people).

“We are encouraged by the gains that have been made in some countries and by the fact that sustained HIV prevention programmes have played a key part in bringing down infections. But the reality is that the AIDS epidemic continues to outstrip global and national efforts to contain it,” said UNAIDS Executive Director Dr Peter Piot. “It is clear that a rapid increase in the scale and scope of HIV prevention programmes is urgently needed. We must move from small projects with short-term horizons to long-term, comprehensive strategies,” he added.

### **1.9 Socio-Economic Situation of Nepal**

Nepal is a highly heterogeneous country in terms of geography, ethnicity, language and culture. The Kingdom of Nepal is landlocked, sharing borders with India and China. Geographically, the country is divided in three regions; Mountain, Hill and Terai. There are 5 development regions and 75 administrative districts. Districts are further divided into smaller units, called Village Development committee (VDC) and Municipality.

The Himalayas cover the northern third of the country from east to west, bordering China. To their south lies a long east-west stretch of lower mountains (the hilly region) whose southern flanks flatten into the Terai, a fertile, sub-tropical plain spanning the border with India. These contours have played a major role in helping to determine the geographical and social diversity that characterizes the nation. There are 60 castes and ethnic groups in this diverse country.

According to UNDP Human Development Report 2004, Nepal's Human Development Index (HDI) score stood at 0.504 – a graduation from low HDI status to medium HDI. But the figure is lower than all the South Asian nations except Pakistan. Moreover, HDI in the urban areas outstrip that of the rural areas (0.452) in which the majority of the Nepali people live. Urban areas have higher per capital income and people in towns and cities have better access to social and health services. Life expectancy at birth, adult literacy and mean years of schooling and the Purchasing Power Parity(PPP) income across regions show a varying pattern reflecting uneven distribution of resources country wide and difference in accessibility as well. Additionally, women have traditionally a lower status than men do and gender inequality is deeply rooted. More boys than girls receive of education, women generally work longer hours than men do, and men have better access to services, including health. Women's life expectancy has improved significantly from 53.5 in 1991 to 61.5 in 2001 surpassing the life expectancy of 60.5 for men.

In some other areas too, the government has registered some successes in recent years, including progress in combating tuberculosis, leprosy, Vitamin A deficiency and measles. But the bigger picture, particularly for rural Nepal, is far less encouraging. The conflict has left most government-run rural clinics - known as health posts - short of medical supplies and skilled staff. According to the Ministry of Health and Population,

diarrhea kills about 30,000 children every year, and acute respiratory diseases affected nearly a million children all over the country. A study conducted in collaboration with Ministry of Health and Population reveals that 94% babies are born at home and only 13% of births are attended by trained health workers. In the mountainous and rural Makwanpur district, the district hospital has ante-natal care and delivery facility.

The Ministry of Health and Population has estimated that nearly 4,500 women die every year from pregnancy-related complications, mostly due to lack of skilled birth attendants and the absence of emergency services and equipment in rural health centers. The country's economic development started late compared to the rest of South Asia. Still, some sectors recorded progress. Nearly 72 percent of boys and girls get themselves enrolled in primary school (UNDP 2001), irrigation coverage has reached 25 percent of cultivated land, road networks have increased from 124 kilometers in 1956 to 15,000 kilometers and the number of households served by electricity has increased from less than 1 percent in 1956 to 15 percent.

However, a rapidly increasing population undermines these advances. The pressure of population growth has led to fragmentation of land and depletion of forest products upon which most of the rural population depends. Nepal's population of 24.1 million (World Bank 2002) is growing at 2.3 percent per year (HDR 2003), and the ratio of population to arable land (around 600 persons per square kilometer) is one of the highest in the world.

Of the 90 percent of Nepal's population living in rural areas, less than half has access to safe water and less than 6 percent has access to sanitation. Many Nepali in the hills still live more than a day's walk from a road, social and political unrest adds to the social strain. Only 28 percent of the populations have access to improved sanitation

(HDR2003). Over-exploitation of government forests has made firewood and fodder extremely scarce in most areas.

Thanks to steady economic growth during the 1990s, Nepal is 'on-track' to reduce the number of people living below the poverty line from 42% (1990) to 21% (2015), but this progress is fragile as the country is wrecked by violence. An estimated 100,000 to 200,000 people are thought to have been internally displaced. Largely from rural communities, they have fled from targeted attacks, violence and increased economic hardship. The majority live with relatives in temporary abodes, or on abandoned plots in district or regional towns, or in the capital. Few statistics are available, not least because most displaced people would not want to attract the attention of the security forces. Up to 2 million people are thought to have left, migrating to India or beyond.

With regard to Millennium Development Goals, Nepal, according to UN is likely to meet targets for cutting infant death rates, and increasing access to safe drinking water. However, the country is unlikely to meet education targets or stem the spread of HIV/AIDS (On Line Anonymous Expert HIV/AIDS Counseling Monday, December 03,2007) .

### **1.10 HIV/AIDS Situation of Nepal**

Since the detection of the first AIDS case in 1988, the HIV epidemic in Nepal has evolved from low prevalence to concentrated epidemic. As of 2007, national estimates indicate that approximately 70,000 adults and children are infected with the HIV virus in Nepal, with an estimated prevalence of about 0.49% in the adult population. As of Ashadh 2064(June,2007), a total of 9756 HIV cases of HIV, 1454 AIDS cases and 423 AIDS deaths had been reported to the National Centre for AIDS and STD control (NCASC). The sex ratio among HIV positive cases is 2:1.

Nepal is categorized as a “Concentrated” epidemic country as some of the sub population groups (IDUs, migrants) are having more than 5% of prevalence.

As in other countries in the region, IDUs, MSM and FSW are the groups most at risk with highest HIV prevalence. Most cases of HIV occur among labor migrants (46%) and an increasing number occur among their wives (a combined 21% of HIV cases in low-risk women in rural and urban areas). Because many young men migrate to higher-prevalence cities in India for short-term employment, there is opportunity for the epidemic to continue to grow here. Of all adults estimated to be living with HIV, a major proportion of HIV infections has consistently been among migrant workers traveling to India for work. In 2005, 46% of estimated HIV infections in Nepal were among seasonal labour migrants and similar pattern is found in 2007. Clients of sex workers account for 19% of HIV infections in 2005 and 16% in 2007. Spouses or female partners of migrant workers and clients of sex workers, now account for 21% of all adult infections. A 2006 study among Nepali migrants traveling to Indian cities for work found that 27% of men engaged in high risk sexual behaviors while in India and frequent sex workers.

**Table 1.10.1 Estimation of HIV infections (2007)**

<b>Population groups</b>	<b>Adults living</b>	
	<b>with HIV</b>	<b>% of cases</b>
IDU	6,516	10.15%
MSM	2,477	3.86%
Female Sex Workers	1,132	1.76%
Clients of Sex workers	9,940	<b>15.49%</b>
Seasonal labour migrants	26,305	<b>40.99%</b>
<b>Sub-total at risk</b>	46,370	72.25%
Trafficked women returned to Nepal	793	1.24%
Urban female low risk	3,492	5.44%
Rural female low risk	13,525	21.07%
<b>Sub-total low risk</b>	17,810	27.75%
<b>Grand total</b>	64,180	

*Source: National Center for AIDS and STD Control, Joint United Nations Programme on HIV/AIDS, World Health Organization, Family Health International, 2007*

### **1.10.1 National Response**

The history of Nepal's response against HIV/AIDS began with the launching of first National AIDS Prevention and Control Program (short term) in 1988. In 1995 National HIV/AIDS Policy with 12 key policy statements and the structure like National AIDS Coordination Committee (NACC) and District AIDS coordination Committee to guide and coordinate the response at central and district level was endorsed. As directed by the National HIV/AIDS Policy a multi-sector National AIDS Coordinating Committee (NACC) chaired by the Minister of Health and Population, with

representation from different ministries, civil society, and private sector was established at central to build the coordination mechanism to implement and monitor the activities through NCASC and to develop the multi sectoral involvement in HIV/AIDS response. Similarly, DACC was established to coordinate and monitor the activities at district level.

In 2002 a National AIDS Council (NAC) was established, chaired by the Prime Minister, to raise the profile of HIV/AIDS. The NAC was meant to set overall policy, lead national level advocacy, and provide overall guidance and direction to the national HIV/AIDS program.

### **1.10.2 Epidemic Situation**

The National Estimates of Adult HIV Infections Nepal, 2005 registered little change from a similar report prepared in 2003. The HIV epidemic continues to be characterized by high prevalence among various sub-groups whose sexual or drug use behavior places them at risk of HIV. IDUs, female sex workers (FSWs) and their clients, MSM and returning migrants have prevalence levels higher than the general population. In addition, many of Nepal's AIDS cases occur among young adults between the ages of 20 and 34.

However, recent IBBSs among female sex workers (FSWs) show that HIV infection has decreased significantly in the 16 eastern Terai highway districts. Sex work and HIV infection tend to be more prevalent in these plains regions bordering India. In 2006, HIV prevalence among FSWs in the 16 terai highway districts in eastern sample was 1.5%, a rate significantly less than what was previously estimated in 2003 (3%) and 1999 (3.9%). Rate of syphilis and gonorrhea have also decreased over time but the prevalence of Chlamydia has gone up in these same districts. HIV in the 6 western Terai highway districts was also about 1.5% in 2006.

### 1.10.3 Other factors that shape the dynamics of the epidemic include;

- Increasing numbers of women are trafficked to India to work in the sex industry. Some 100,000 Nepalese women continue to engage in sex work in Mumbai, India and about 50% of Nepalese FSWs have previously worked there. It is estimated that 50% of Nepalese FSWs in Mumbai brothels are HIV positive.<sup>1</sup>
- Vulnerability of women to HIV/AIDS is increasing. This is supported by estimated HIV cases among low-risk women in rural and urban areas which now comprise 21% of all infections.
- Sentinel data indicates that the number of children aged 0-14 dying from HIV/AIDS has increased nearly four fold from 54 in 2006 to 199 in 2005.
- Recently the number of PLHA receiving ARV from 7 public hospitals has risen to 719 (NCASC data from 10 sites, as of May end 2007).

Recent IBBS data specially those of Kathmandu valley shows reduction of HIV prevalence among MARPs. as summarized in the table below.

**Table 1.10.2 Most at risk populations who are HIV infected**

	2001	2004	2005	2006	2007
<b>FSW (Kathmandu)</b>		2		1.4	
<b>MSW (Kathmandu)</b>		4.8			2.9
<b>IDUs (Kathmandu)</b>	68		51.6		34
<b>MSM</b>		3.9			3.3
<b>Clients of sex workers</b> (Terai Highway)		1.7		1	
<b>Returned migrants</b> (West and Mid to West Nepal)				1.9	

Source : *Integrated Bio-Behavioral Survey (2001-2007)*

<sup>1</sup> NCASC. 2004.

The most dramatic change is for IDUs, where there has been a significant drop in HIV prevalence from 68% to 34% over a six-year period. Moreover, IBBS data shows that prevalence rates for FSW have decreased significantly in the 16 eastern Terai highway districts. Commercial sex work along the trucking routes are characteristic feature of HIV infection in these plains regions bordering India. In 2006, HIV prevalence among FSW in Kathmandu was 1.4% down from 2% in 2004. A similar fall in prevalence was observed in the Terai highway districts from 3% in 2003, 2% in 2004 to 1.5% in 2006.

**Table 1.10.3 HIV/AIDS in Nepal :1988-2007**

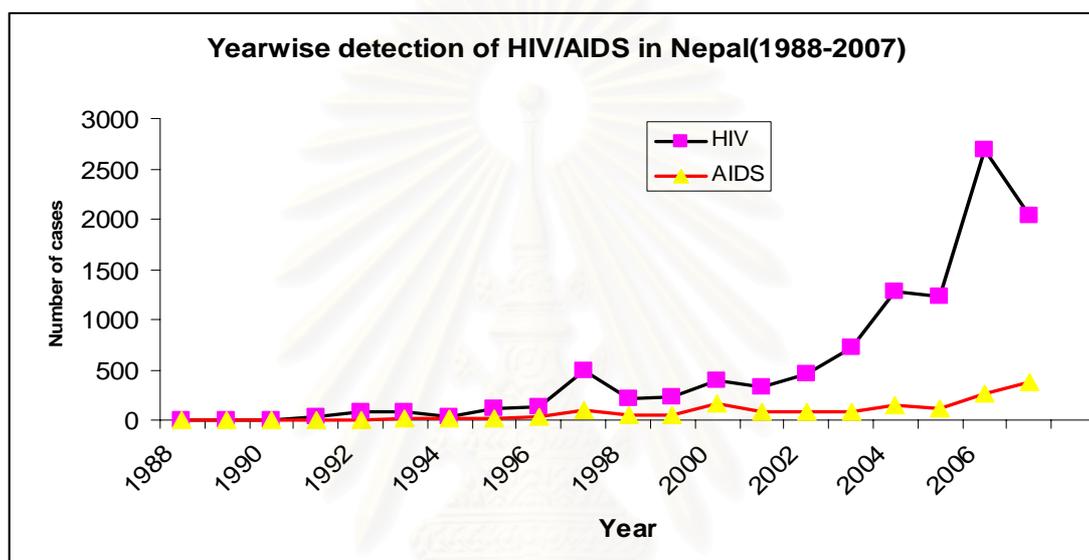
Year	Total Sample	HIV Positive			AIDS		
		male	female	total	male	female	Total
1988	9016	3	1	4	1	1	2
1989	5180	0	2	2	0	0	0
1990	8619	2	3	5	0	2	2
1991	17000	12	14	26	2	3	5
1992	33995	39	38	77	1	4	5
1993	38228	41	40	81	4	6	10
1994	16523	18	22	40	2	9	11
1995	21867	71	39	110	12	4	16
1996	10457	50	85	135	13	18	31
1997	9475	394	95	489	76	24	100
1998	3611	166	54	220	38	16	54
1999	5170	174	48	222	35	19	54
2000	3039	301	95	396	117	48	165
2001	1470	264	60	324	62	23	85
2002	5596	360	107	467	70	14	84
2003	2179	505	209	714	61	19	80
2004	6326	942	340	1282	112	32	144
2005	7654	907	327	1234	90	21	111
2006	16890	1750	931	2681	197	70	267
2007	28103	1239	798	2027	265	119	384
Total	250398	7238	3308	10546	1158	452	1610

Total Death Cases:455

*Source: National Center for AIDS and STD Control*

Table 1.10.3 shows and explain the year-wise detection of HIV/AIDS in Nepal since 1988- 2007, reported in National Centre for AIDS and STD Control, centre Teku, Kathmandu. We can study from the above table, year wise collection of total sample out of HIV positive with male , female and AIDS also male, female were continuously increasing since 1988 -2007 and still now.

**Diagram 1.10.1 HIV/AIDS in Nepal(1988-2007)**



*Source: National Center for AIDS and STD Control*

Diagram 1.10.1 shows and explain the year-wise detection of HIV/AIDS in Nepal since 1988- 2007, reported in National Centre for AIDS and STD Control, centre Teku, Kathmandu. We can study from the above line diagram, year wise HIV positive and out of AIDS also were continuously increasing since 1988 -2007 and still now. Line diagram shows that as in index above line is HIV positive and below line is AIDS, since 1988 were continuously increasing till 1996 respectively and drastically increased in 1997 then fall in 1998 , then after continuously increasing and high peak attained in 2004, fall in 2005. Drastically increased and highest peak attained in 2006 then after slightly fall in 2007.

**Table 1.10.4 Key Achievement of VCT Service 2007 of Nepal**

	<14yrs child	M>15- 24yrs	F>15- 24yrs	M>25	F >25yrs	Total
<b>Pre Test</b>						
Counseling	887	7346	5239	9528	10471	33471
HIV Tested	769	6138	4215	8165	8816	28103
HIV+ve Cases of 2007	194	107	136	1022	578	2037
<b>Post Test</b>						
Counseling	743	6095	4196	8115	8794	27943

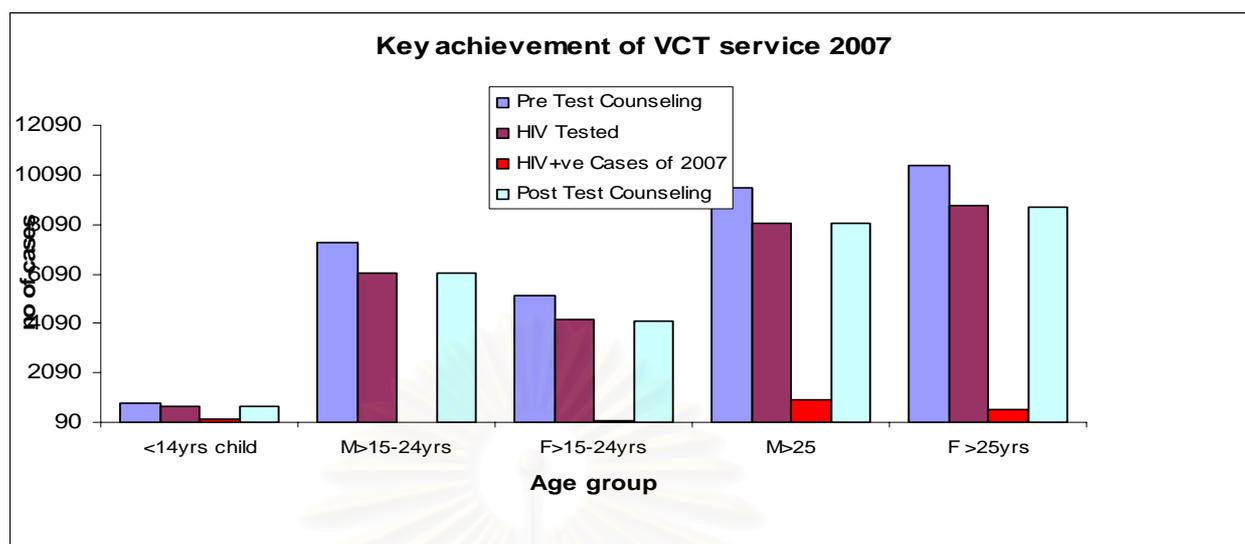
*Source: National Center for AIDS and STD Control*

Table 1.10.4 shows and explain the key Achievement of VCT Service 2007 with Categories wise Pre Test Counseling, HIV Tested, HIV +ve Cases of detection of 2007 and Post Test Counseling . We can separately study in an each and every categories with of <14yrs child , M>15-24yrs, F>15-24yrs, M>25 and F >25yrs, reported in National Centre for AIDS and STD Control, centre Teku, Kathmandu. We can easily further study and analysis more from the above table of 2007.

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Diagram 1.10.2

## Key achievement of VCT service 2007



Source: National Center for AIDS and STD Control

Diagram 1.10.2 shows and explain the year of 2007 of the key Achievement of VCT Service 2007 with Categories wise Pre Test Counseling, HIV Tested, HIV +ve Cases of detection of 2007 and Post Test Counseling. We can separately study in an each and every categories with of <14yrs child, M>15-24yrs, F>15-24yrs, M>25 and F >25yrs, reported in National Centre for AIDS and STD Control, centre Teku, Kathmandu. We can easily further study and analysis more from the above table of 2007. Analysis from above diagram of an each and every categories was found small value in <14yrs child and increasing as age groups as we like M>15-24yrs, F>15-24yrs, M>25 and F >25yrs, which is shown in above diagram respectively. More value in Pre Test Counseling, HIV Tested, Post Test Counseling respectively.

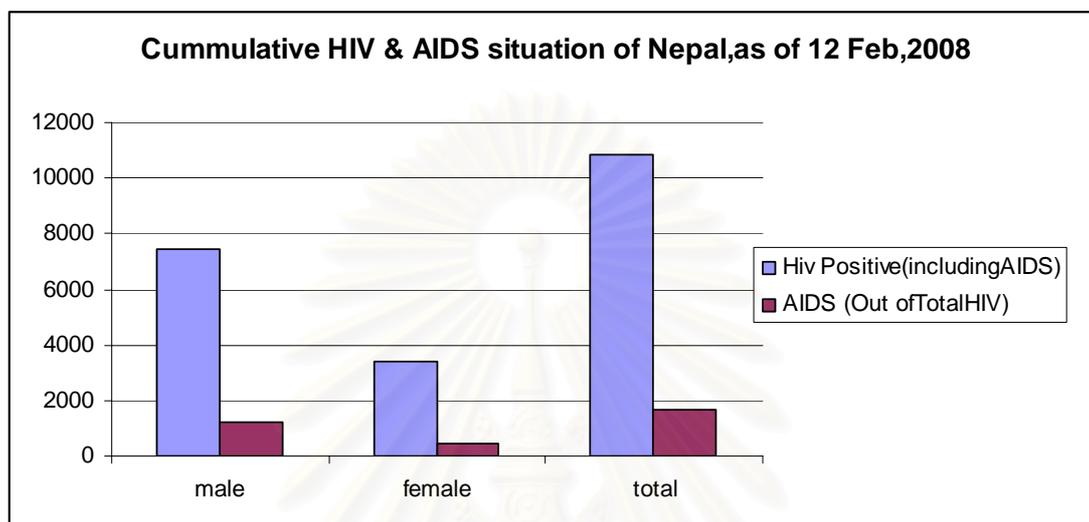
Table 1.10.5 Cumulative HIV and AIDS Situation of Nepal As of 12 Feb 2008

Condition	male	female	total	newcases in
				this month
Hiv				
Positive(includingAIDS)	7445	3423	10868	147
AIDS (Out ofTotalHIV)	1212	470	1682	46

Source: National Center for AIDS and STD Control

Table 1.10.5 shows and explain the Cumulative HIV and AIDS Situation of Nepal As of 12 Feb 2008 as a Condition of HIV Positive(including AIDS) with male ,female and AIDS (Out of Total HIV) respectively which is shown in above table.

**Diagram 1.10.3 Cumulative HIV & AIDS Situation of Nepal as of 12 Feb.2008**



*Source: National Center for AIDS and STD Control*

Diagram 1.10.3 shows and explain in the Y –axis represent the number and X-axis represent the male, female and total of Cumulative HIV and AIDS Situation of Nepal As of 12 Feb 2008 as a Condition of HIV Positive(including AIDS) and AIDS (Out of Total HIV) with male ,female and total which is shown in above Diagram respectively.

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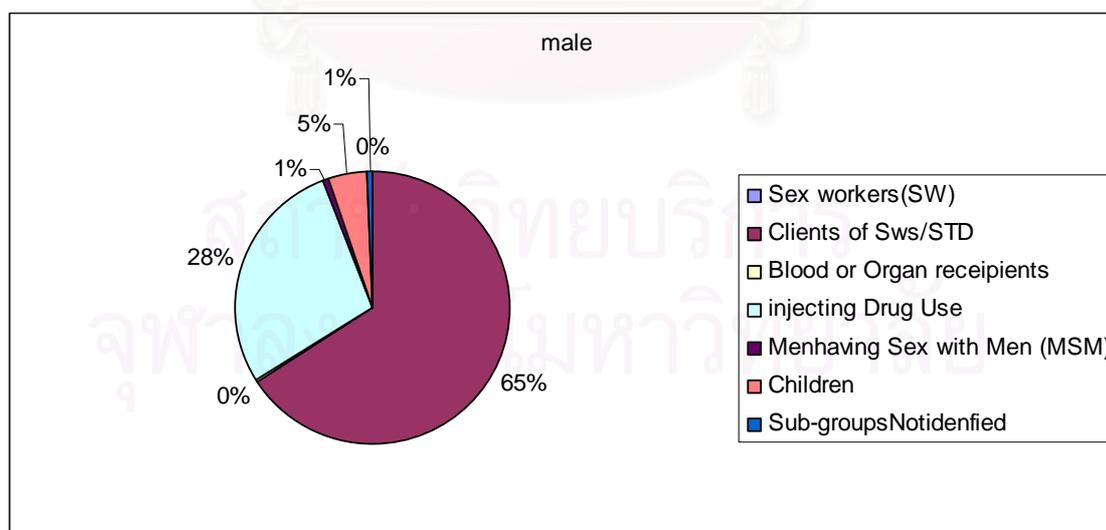
**Table 1.10.6 Cumulative HIV infection by sub-group and sex**

sub-groups	male	female	Total	New cases in this month
Sex workers(SW)	1	726	727	5
Clients of Sws/STD	4893	104	4797	57
Housewives	0	2305	2305	44
Blood or Organ recipients	20	6	26	1
injecting Drug Use	2099	38	2137**	23
Menhaving Sex with Men (MSM)	41	0	41	2
Children	341	227	568	15
Sub-groupsNotidenfied	50	17	67	0
<b>Total</b>	<b>7445</b>	<b>3423</b>	<b>10868</b>	<b>147</b>

\*\* Mode ofTransmission-IDU or Sexual

Source: National Center for AIDS and STD Control

Table 1.10.6 shows and explain the Cumulative HIV infection by sub-group and sex with new cases as a Situation of Nepal As of 12 Feb 2008 with male ,female total and sub – groups which is shown in above table respectively.

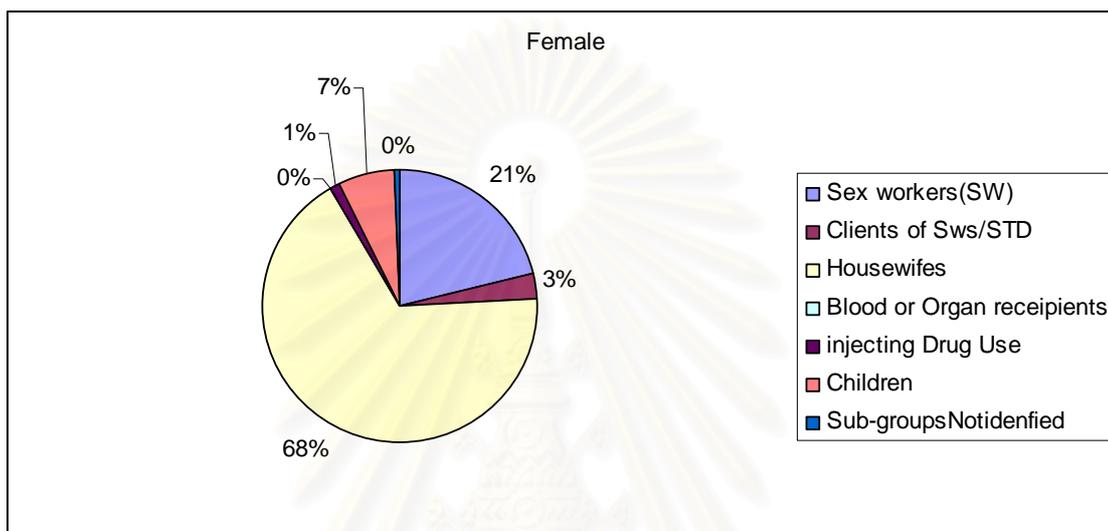
**Diagram 1.10.4 Cumulative HIV infection of male by sub-group in pie chart**

Source: National Center for AIDS and STD Control

Diagram 1.10.4 shows and explain Cumulative HIV infection of only male by sub-group as a Situation of Nepal As of 12 Feb 2008 which is shown in above pie

diagram as of their percentage are 0% of Sex workers(SW) , 65% of Clients of Sws/STD, 0% of Blood or Organ recipients, 28% of injecting Drug Use, 1% of Men having Sex with Men (MSM), 5% of Children, 1% of Sub-groups Not identified respectively.

**Diagram1.10.5 Cumulative HIV infection of female by sub-groups in pie char**



*Source: National Center for AIDS and STD Control*

Diagram 1.10.5 shows and explain the Cumulative HIV infection of only female by sub-group as a Situation of Nepal As of 12 Feb 2008 which is shown in above pie diagram as of their percentage are 21 % of Sex workers(SW) , 3% of Clients of Sws/STD, 68% of Housewife, 0 % of Blood or Organ recipients, 1 % of injecting Drug Use, 7% of Children, 0% of Sub-groups Not identified respectively.

**Table 1.10.7 Cumulative HIV and AIDS Situation of Nepal As of 12 Feb 2008****Cumulative HIV infection by age group and sex**

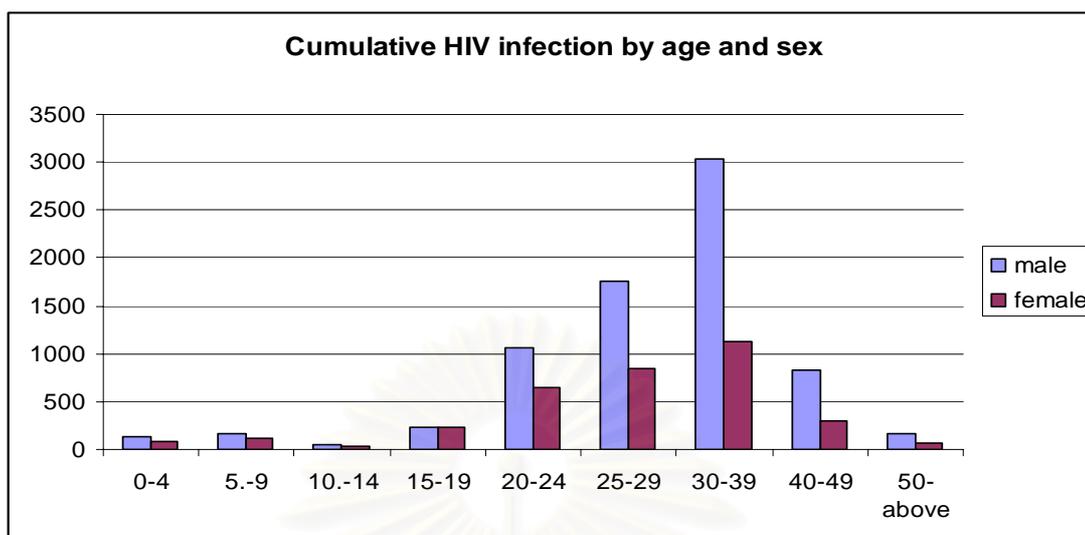
Age group in Years	male	female	Total	New cases in this month
0-4	138	82	220	6
5.-9	167	110	277	5
10.-14	49	39	88	2
15-19	225	235	460	7
20-24	1068	640	1708	22
25-29	1758	842	2600	28
30-39	3043	1123	4166	56
40-49	825	293	1118	19
50-above	172	59	231	2
<b>Total</b>	<b>7445</b>	<b>3423</b>	<b>10868</b>	<b>147</b>

\*cumulative death:462

New death cases in Magh 2064:5

*Source: National Center for AIDS and STD Control*

Table 1.10.7 shows and explain the Cumulative HIV infection by age group and sex with new cases as a Situation of Nepal As of 12 Feb 2008 with male ,female total and age – groups in years like wise 0-4, 5-9, 10-14,15-19,20-24, 25-29,30-39, 40-49 and 50 above which represent their respective numbers and their male, female and also their total number which is shown in above table respectively.

**Diagram1.10.6 Cumulative HIV infection by age and sex**

*Source: National Center for AIDS and STD Control*

Diagram 1.10.6 shows and explain the Cumulative HIV infection by age group and sex as a Situation of Nepal As of 12 Feb 2008 with male ,female total and age – groups in years like wise 0-4, 5-9, 10-14,15-19,20-24, 25-29,30-39, 40-49 and 50 above represent in the X-axis and Y-axis which represent their respective numbers and their male, female which is shown in above diagram respectively. The minimum number in 10-14 years and maximum number in 30-39 years which is shown in above diagram.

#### **1.10.4 Challenges**

Despite many efforts by the Ministry of Health, programs are challenged to provide equitable access to services. Services, especially curative services, which are unevenly distributed between regions. Even where services exist, staffing constraints and motivation problems leave communities underserved. Hospitals have critical gaps in their ability to provide quality services for common health problems. In fact, quality remains a challenge throughout the entire health care system, from top to bottom. Laboratory systems are especially weak, and not able to fully support the scale-up of

Anti-Retroviral Treatment (ART). Access to services is further constrained by a difficult and mountainous geography and social and economic factors as much of Nepal

- Establish HIV/AIDS as an development agenda Establish and strengthen Multi-sect oral partnership
- To have functional three ones: one coordinating Authority, one coordinated national M and E system and framework and one coordinated action framework
- Weak implementation capacity both in public and private sector.
- Lack of clear legal support and guidance for the promotion of rights base services to the vulnerable population.
- Expansion and scaling up of services specially to the rural areas and the among the population with huge size (migrants and MSM)
- Very little is known about the population at risk (migrants, MSM)
- Out of 70,000 estimated HIV positives only a small proportion know their status-limited VCT programs
- Expansion and scaling up of services specially to the rural areas where out of 70,000 HIV positives almost 64% live
- Sustained and committed leadership
- Assuring quality of the services delivered
- Weak monitoring and follow up

#### **1.10.5 Significance:**

1. Knowledge for HIV/AIDS counseling and testing service is an important to expand this services with the aim which is provide to the people of society.

2. The relationship between individual socioeconomic characteristics and knowledge about HIV/AIDS can help the managers, to provide service as target groups.
3. Strong strength between individual socioeconomic characteristics and knowledge about HIV/AIDS may be help for implementing intervention programs efficiently according to characteristic of individual.
4. One factor is most important for knowledge sharing of HIV would have been transmitted from an infected partner to an uninfected one. Ultimately, promoting young people's sexual health calls for a more integrated and joined up approach- and facilitating young people's involvement in HIV/AIDS prevention and care calls for a respect for young people's varied circumstances and needs . Now in the third decade of HIV/AIDS, let us learn the lessons of the past, and work together to apply some of the principles outlined here.
5. Strong strength between knowledge about HIV/AIDS and Utilization of HIV/AIDS counseling-testing service is a basis for adjusting the size and location of this service.
6. Spreading out of knowledge about HIV/AIDS and Utilization accessible to the people of the society as It is help for the program Manager to provide the service to the target groups for HIV/AIDS voluntary counseling and testing Service.

#### **1.10.6 Scopes:**

There are many factors that influence knowledge for HIV/AIDS counseling-testing service about HIV/AIDS of people, this study focuses only on socioeconomic characteristics in perspective of individual and set up Strength between these factors,

knowledge and utilization of HIV/AIDS counseling-testing service of people at Kathmandu district of Nepal.

### 1.10.7 Research Questions:

- 1) What is the proportion of population who have good knowledge about HIV/AIDS in Kathmandu District of Nepal?
- 2) Are the most important socioeconomic characteristics of individual affecting to Knowledge about HIV/AIDS?
- 3) Can socioeconomic characteristics of individual and knowledge about HIV/AIDS improve and affecting for HIV counseling and testing service?

### 1.10.8 Major Achievements

Prevention efforts targeted at most-at-risk populations (MARPs) have begun to stabilize rates of HIV infection in Nepal, as evidenced in recent bio-behavioral surveillance surveys (IBBS) of sex workers and drug users.

**Table 1.10.8 Most at risk populations who are HIV infected**

	2001	2004	2005	2006	2007
<b>FSW (Kathmandu)</b>		2		1.4	
<b>MSW (Kathmandu)</b>		4.8			2.9
<b>IDUs (Kathmandu)</b>	68		51.6		34
<b>MSM</b>		3.9			3.3
<b>Clients of sex workers (Terai Highway)</b>		1.7		1	
<b>Returned migrants (West and Mid to West Nepal)</b>				1.9	

Source : Integrated Bio-Behavioral Survey (2001-2007)

The most dramatic change is for IDUs, where there has been a significant drop in HIV prevalence from 68% to 34% over a six-year period. Moreover, IBBS data shows that prevalence rates for FSW have decreased significantly in the 16 eastern Terai highway districts. Commercial sex work along the trucking routes are characteristic feature of HIV infection in these plains regions bordering India. In 2006, HIV prevalence among FSW in Kathmandu was 1.4% down from 2% in 2004. A similar fall in prevalence was observed in the Terai highway districts from 3% in 2003, 2% in 2004 to 1.5% in 2006.

#### **1.10.9 Prevention**

There are more new HIV infections every year than AIDS-related deaths and as more people become infected with HIV, more people will die of AIDS-related illnesses. Worldwide, less than one in five people at risk of becoming infected with HIV has access to basic prevention services.. Across the world, only one in eight people who want to be tested are currently able to do so. Each day, 1500 children worldwide become infected with HIV, the vast majority of them newborns. In 2005, 9% of pregnant women in low- and middle-income countries were offered services to prevent transmission to their newborns. To get ahead of the epidemic, HIV prevention efforts must be scaled up and intensified, as part of a comprehensive response that simultaneously expands access to treatment and care. Scaling up available prevention strategies in 125 low- and middle-income countries would avert an estimated 28 million new infections between 2005 and 2015, more than half of those that are projected to occur during this period and would save US\$ 24 billion in associated treatment costs. Simultaneous scaling up of both prevention and treatment would avert 29 million new infections by the end of 2020. Improved knowledge and safe behavioral practices of all target groups (safer sex and injecting practices), increased availability and access to

appropriate and differentiated prevention services, increased acceptance of HIV/AIDS and enhance non-discriminatory practices affecting marginalized and most at risk populations, Reduced risk and vulnerability to HIV infection of all target populations.

#### **1.10.10 Treatment care and support**

- increased national capacity to provide quality diagnostic, treatment and care services,
- increased availability of appropriate and differentiated care and support services to infected, affected and vulnerable populations,
- increased involvement of private sectors, civil societies, communities and family for treatment, care and support to infected, affected and vulnerable groups,
- increased importance of the role of support groups of infected, affected and vulnerable people in treatment, care and support,
- established and monitored continuum of prevention to treatment, care and support,
- standardized clinical care, ART, OI and PEP services both in the public and the private sectors,
- Impact mitigation strategies and programs in place, adequately resourced and accessed equitably by the infected, affected and vulnerable groups.

#### **1.10.11 Advocacy, policy and legal reform**

- HIV/AIDS prioritized as national development agenda and included in 11<sup>th</sup> Five Year Plan as program under the social sector,
- rights of infected, affected and vulnerable groups insured through an effective legislative framework,
- networks of PLHA and most at risk populations operational,
- HIV/AIDS response decentralized and coordinated,
- Multi-sectoral response to HIV/AIDS strengthened and expanded.

### **1.10.12 Leadership and management**

- operationalized national strategy through the National Action Plan,
- active champions and leaders at the societal, institutional and individual levels for the HIV/AIDS response,
- mainstreamed HIV/AIDS programs in all development sectors,
- enhanced social inclusion, equitable access and gender equality to AIDS services,
- coordinated and decentralized response to HIV/AIDS.

### **1.10.13 Strategic information**

- trends and changes in HIV prevalence and HIV and STI related risk behaviours among different risk groups tracked over time and across regions in Nepal;
- effectiveness of HIV prevention and care interventions and activities monitored and evaluated;
- all aspects of key programme service delivery areas effectively monitored and evaluated;
- programme coverage and service delivery assessed by target group;
- resources inputs and outputs contributing to the programme monitored.

### **1.10.14 Finance and resource mobilisation**

- 100% of funding mobilized for the implementation of the multi-year National Action Plan from the Government, development partners, NGOs and private sector organizations,
- by 2009, government investment in AIDS activities will be at least 5% of the total HIV/AIDS program budget, and by 2011, at least 10%,
- appropriate multi-sectoral resource allocation under the relevant line ministries,
- an efficient and coordinated financial management system,
- timely and improved resource flow,

- improved accountability at all levels.

#### **1.10.15 Control Of National Action Plan (2006-2008)**

To support the implementation of the national strategy, a national work plan was developed. The *National Consolidated HIV/AIDS Work plan, 2006 to 2008* was produced by the NCASC in consultation with key stakeholders. As per this costed National Action Plan, out of total 64 millions needed to implement the interventions only 33 million is pledged/committed from different donors with 48% resource gap. The work plan takes account of all the current and estimated funding of programs and services by key stakeholders including the government, UN agencies, international and national non-government organizations, and GFATM and aid agencies. As per this costed National Action Plan, out of total 64 millions needed to implement the strategic interventions only 33 million is pledged/committed from different donors with 48% resource gap. To address the priority gaps as shown by NAP, proposal for 7<sup>th</sup> round of Global Fund was developed and submitted.

Geographically, ongoing prevention programmes are implemented in 36 districts. Most of those districts show a pattern of the epidemic dominated by IDUs, MSMs, FSWs and their clients' infection. The implementation of the second round GFATM's programme has play a major role in accelerating responses that address the needs among migrants, with important consequences for their spouses and descendents. The second round GFATM is being implemented in 8 districts affected by migration.

#### **1.10.16 Commitments**

The *Tenth Five Year Development Plan, 2003-2007* identifies the HIV epidemic as a high priority program in the health sector. The plan focuses on the need for prevention programs, within a broader program that addresses the needs for the treatment, care and support of PLHA. The National HIV/AIDS Strategy has been

developed in the policy context established by the five year plan, and recognizes the links between HIV control efforts and broader development goals.

The Government has also committed to various global initiatives such as UNGASS Declaration, the Millennium Development Goals, the Universal Access initiative and the Three Ones principles. The *National HIV/AIDS Strategy, 2006-2011* aims at achieving all HIV and AIDS commitments and targets included within these initiatives.

The Millennium Development Goals declare that the spread of HIV should be halted by 2015 with decreasing epidemic levels. The strategic plan prioritizes reducing the spread of the HIV epidemic and ensuring access to prevention programs. The strategy recognizes that more effort is required to achieve an adequate coverage of MARPs.

#### **1.10.17 Resources**

The contribution of the Government of Nepal to fund the Action Plan has been committed to US \$ 0.145 millions, representing 1% of the total budget. Among the planned measures to improve the national response against the epidemic as developed through National Strategy 2006-2011, an increase of the national resources no lesser than 10% of the total Programme's budget.

Geographically, ongoing prevention programmes are implemented in 36 districts. Most of those districts show a pattern of the epidemic dominated by IDUs, MSMs, FSWs and their clients' infection. The implementation of the second round GFATM's programme has play a major role in accelerating responses that address the needs among migrants, with important consequences for their spouses and descendents. The second Global Fund programme was approved with a total budget of US \$ 11.2 millions for the

HIV/AIDS component. The HIV/AIDS programme is being implemented, from 2003 to 2008, in 8 districts with a special focus in migrant population and youth.

Two other significant sources of funding are from DFID and USAID. In developing this proposal both organizations were asked to provide information on their likely financial commitments to the HIV/AIDS program in Nepal. In addition to DFID and USAID, a range of other donors have made financial commitments until the end of 2008.

#### 1.10.18 Antiretroviral therapy treatment activities:

The national antiretroviral treatment programme was started late in 2004 in the public sector in Kathmandu. By Ashadh(June) 2007, 1003 patients with advanced HIV infection were on treatment in 14 sites across the country, an expansion from 2 sites at the start of 2005.

**Table 1.10.9 ART Centres in Nepal (till 30 June 2007)**

SN	ART Code	ART Centres	District	Launch date	Start Date
1	ART C01	Teku Hospital, Teku	Kathmandu	February 12, 2004	February 12, 2004
2	ART C02	Bheri Zonal Hospital, Nepalgunj	Banke	December 29, 2004	December 29, 2004
3	ART C03	Sparsha Nepal, Sanepa	Kathmandu	December, 2005	December, 2005
4	ART C04	TUTH, Maharajgunj	Kathmandu	January 12, 2006	January 12, 2006
5	ART C05	BPKIHS, Dharan	Sunsari	January 17, 2006	January 17, 2006
6	ART C06	Western Regional Hospital, Pokhara	Kaski	January 28, 2006	January 28, 2006
7	ART C07	Narayani Sub-Regional Hospital, Birgunj	Parsa	February 28, 2006	February 28, 2006
8	ART C08	Mahakali Zonal Hospital, Mahendranagar	Kanchanpur	May 9, 2006	May 9, 2006
9	ART C09	Seti Zonal Hospital, Dhangari	Kailali	December 23, 2006	December 23, 2006
10	ART C10	Doti District hospital, Silgari	Doti	February 13, 2007	February 13, 2007
11	ART C11	Lumbini Zonal hospital, Butwal	Rupandehi	May 23, 2007	May 23, 2007
12	ART C12	Achham District hospital, Achham	Achham	June 7, 2007	June 7, 2007
13	ART C13	Baglung District Hospital, Baglung	Baglung	June 21, 2007	June 21, 2007
14	ART C14	Koshi Zonal Hospital, Biratnagar	Morang	June 26, 2007	June 26, 2007

Source: National Center for AIDS and STD Control

### 1.10.19 Percentage of infants born to HIV infected mothers who are infected

Prevention of mother to child transmission was started in two capital city sites in 2005 and had expanded to 9 sites across Nepal by July 2007, offering ARV prophylaxis to 48 HIV positive pregnant women. The outcome measure for the prevention of HIV transmission from mother to child is the rate of HIV infection among children delivered by HIV positive mothers in the programme. While this data is usually modeled, country routine reporting data shows that of 18 deliveries, fewer than one third of children were tested for HIV at 18 months, highlighting the challenges of post-delivery follow-up and continuum of care for HIV positive mothers and their children. While all 6 of the children who were tested had remained negative, the remaining 12 had either died (n=5) or been lost to follow-up (n=7). It will be critical for the programme to improve its monitoring system.

**Table 1.10.10 PMTCT Centres in Nepal (till 30 June 2007)**

SN	PMTCT Code	PMTCT Centres	District	Launch date	Start Date
1	PMTCT C01	Maternity Hospital, Thapathali	Kathmandu	February 28, 2005	Aug/Sept, 2005
2	PMTCT C02	Bheri Zonal Hospital, Nepalgunj	Banke	February 2005	Aug/Sept, 2005
3	PMTCT C03	BPKIHS, Dharan	Sunsari	February 2005	Jul/Aug, 2005
4	PMTCT C04	TUTH, Maharajgunj	Kathmandu	January 15, 2006	Mar/Apr, 2006
5	PMTCT C05	Narayani SubRegional Hospital, Birgunj	Parsa	February 2006	Jun/Jul, 2006
6	PMTCT C06	Western Regional Hospital, Pokhara	Kaski	February 2006	Mar/Apr, 2006
7	PMTCT C07	Mahakali Zonal Hospital, Mahendranagar	Kanchanpur	March, 2006	Jun/Jul, 2006
8	PMTCT C08	Achham District hospital, Achham	Achham	June 7, 2007	June 7, 2007
9	PMTCT C09	Koshi Zonal Hospital, Biratnagar	Morang	June 26, 2007	June 26, 2007

*Source: National Center for AIDS and STD Control*

### 1.10.20 Achievements against the targets

planned under NCASC direct implemented program both of Government and as Principal Recipient of Global Fund are as follows:

**Table 1.10.11.1 TARGET vs. Achievement FY 2063/64 (2006/2007) (Government)**

S.No	Activities	Target vs. Achievement			
		Unit	Target	Achievement	Target vs. Achievement (%)
<b>1</b>	<b>Media</b>				
I	Advertisement material development	Times	15000	12000	80
II	Advertisement broadcasting	Times	6	6	100
<b>2</b>	<b>Medicine</b>				
I	Procurement & distribution of drugs	Times	3	3	100
II	Procurement & distribution of Test Kits	Packet	25	25	100
<b>3</b>	<b>Programme Expense</b>				
I	Conduct HIV/AIDS advocacy program	Times	12	12	100
II	School Health Education Program (In Community Schools of 75 districts)	Class	750	750	100
III	DACC Meeting (Twice in a Year)	Times	150	150	100
IV	District level WAD day celebration in 75 districts	Times	1	1	100
V	Orientation and street drama for awareness raising program of HIV/AIDS	Times	20	23	100
<b>4</b>	<b>Programme Expense (Travel)</b>				
I	Regular monitoring of district level programs	Times	6	6	100
<b>5</b>	<b>Training Expenses</b>				
I	Job oriented & other training program for HIV/AIDS infected	Persons	50	50	100
II	Conduct workshop for Health workers on HIV/AIDS in districts	Times	5	4	80

Source: National Center for AIDS and STD Control

**Table 1.10.11.2 GFATM Activities for FY 2063/64**

S.N	Activities	Target	Achievement	Target v s. Achievement (%)
1	Number of health facilities providing the minimum package of PMTCT	12	9	75
2	Number (& Percent) of HIV +ve mothers receiving a complete course of ARV prophylaxis in accordance with nationally approved treatment protocol.	75	48	64
3	Number of health care providers trained in the provision of PMTCT	47	65	100
4	Number of VCT center established	18	22	100
5	Number of people receiving testing and counseling for HIV	9,045	6,752	75
6	Number of Health workers and pharmacists received training on STI Case Management	772	572	74
7	Number of STI diagnosed, treated and counseled	8,000	8,916	100
8	Number of health providers trained to deliver ART, according to national/international standards	384	309	80
9	Number of health facilities with capacity & conditions to provide advanced HIV/AIDS clinical care and psychosocial support, including providing and monitoring ARV combination therapy	11	14	100
10	Percentage (& Number) of people with advanced HIV infection receiving antiretroviral combination therapy	800	1,003	100
11	Number of cases of OIs treated among PLWHAs	2,000	2,977	100
12	No. of care providers (community members, PLWHAs, and health staff) trained on home based care for PLWHA	1,375	1,250	91
13	Number of staff from central to district level trained on M&E	38	21	55

*Source: National Center for AIDS and STD Control*

**1.10.21 General objective:**

To analysis of socioeconomic factors and knowledge about HIV/AIDS of individual affecting counseling –testing visit about HIV/AIDS for VCT services of individual.

**1.10.22 Specific objectives:**

To study the proportion of population who have good knowledge about HIV/AIDS in Katmandu district of Nepal.

To define the hypothetical relationship between socioeconomic factors of people and knowledge about HIV/AIDS.

To determine the hypothetical relationship between socioeconomic factors of people and knowledge for HIV/AIDS counseling-testing service

**1.10.23 Usefulness of the study:**

1. It will be benefited to the Health planner to prepare the Health planning of the ministry of Health and Population as distribution of Resource allocation , Health expenditure , Human Resources Management, training and awareness about HIV/AIDS to the People of the Society .
2. It will be benefited to the stakeholder like Ministry of Health and Population, Programme Manager, Patients and hospital's staff and physician to take timely precaution about HIV/AIDS..
3. Strong strength between individual socioeconomic characteristics and knowledge about HIV/AIDS may be help for implementing intervention programs efficiently according to characteristic of individual.

## CHAPTER II

### LITERATURE REVIEW

#### 2.1 Concept of Knowledge ,Transfer and use

The Southern Alberta Child & Youth Health Network (SACYHN) is a voluntary joining of parents and youth, government ministries, provincial organizations, regional authorities, First Nations, and local agencies to focus on optimizing the health and well being of children and youth. The mission of the *Network* is to “use its collective strength to build and sustain linkages that optimize the health and well being of children, youth and families.” facilitate linkages and connections across a number of geographic regions; professional disciplines; and child serving sectors such as health, education, and children’s services. The website [www.sacyhn.ca](http://www.sacyhn.ca) provides detailed information on the activities and membership of the *Network*. In a literature review on networks, Hill (2002) describes education as a core function of networks enabling identification of staff from a variety of agencies with their larger community, rather than Education of providers, and indeed families, holds the potential for improving health within the community.

In keeping with this, a core function of SACYHN is to build community capacity to address broad child health issues through education, or the transfer of knowledge. The present literature review was therefore commissioned by SACYHN in order to investigate the transfer of knowledge in the context of networks. The main purpose of the review was to find information them to members of the community.

The key question guiding the review was as follows:

What should be SACYHN’s role in education and/or knowledge transfer/  
management with an end goal of increasing the capacity of professionals  
and children/families to enhance health care within their community?

The review did not intend to provide recommendations to SACYHN in its role relating to knowledge transfer. Its purpose was to present a background of relevant research which the *Network* itself could use to examine this role and its execution. A representative committee met with the writer to create guidelines and to provide feedback on the review during its preparation. Information was acquired through the use of Medline, with grey literature accessed by Google.com and ask.com. In a literature review that deals with such a 'hot topic' as knowledge transfer, research can be outdated or superseded by the time it becomes available. This is especially true with any material related to information technology. Therefore, material used in the review was, for the most part, published since 2000. However, criteria for inclusion were based on relevance more than date, so older publications are referred to where appropriate.

## **2.2 Spreading Knowledge**

Voluntary health networks are in the knowledge transfer business – more or less. The lack of certainty exists due to an increasing number of terms which are associated with the same, or very similar, activity. The current literature review unearthed the following variations. Not all of them are assumed to refer to identical processes, but they are all related to the deliberate spread of information about HIV/AIDS.

Knowledge development and application as:

Knowledge dissemination, Knowledge exchange ,Knowledge management, Knowledge mobilization, Knowledge transfer, Knowledge utilization, Research implementation And Research utilization ,*Graham & Logan (2004); Backer (2000); Racher & Annis, (2005); Barwick, Boydell & Omrin (2002)*

For purposes of the present review, the terms knowledge transfer and knowledge exchange are used without preference or bias. The review begins with a discussion on general issues related to knowledge transfer and networks and continues with Previous

Related Research in different countries and differentiate Authors have been done. Some selected Research topics and their findings have been mentioned here.

### **2.3 Knowledge of HIV/AIDS and attitude towards voluntary counseling and testing among adults.**

Nigeria has the third highest population of people living with human immunodeficiency virus (HIV). Despite this, the knowledge of HIV/AIDS and uptake of voluntary counseling and testing (VCT) is still low, especially in the rural areas. This study assessed knowledge of HIV/AIDS and attitude towards VCT among adults in a rural community in northern Nigeria. A pre-tested questionnaire was administered on a cross-section of 210 adults in Danbare village, northern Nigeria. Information about knowledge of HIV/AIDS and attitudes toward VCT was elicited among respondents.

The majority of respondents (59%) did not know the causative agent of AIDS; however, knowledge of route of disease transmission was high, with 71% and 64% of study participants mentioning sexual activity and unscreened blood transfusion, respectively, as possible transmission routes. Respondents listed avoidance of premarital sex, outlawing prostitution, condom use and screening of blood before transfusion as protective measures. Overall, 58 (27.6%), 80 (38.1%) and 72 (34.3%) of the respondents had good, fair and poor knowledge of HIV/AIDS, respectively. After adjusting for confounders, female gender and formal education remained significant predictors of HIV/AIDS knowledge. Reasons for rejection of VCT included fear of stigma, marital disharmony, incurable nature of the disease and cost of treatment. Formal education, female gender and HIV knowledge significantly predicted positive attitude toward VCT for HIV/AIDS among the study population. More than half of the respondents had adequate knowledge of HIV/AIDS, and the majority were willing to have VCT. However, misconceptions, fear, gaps in knowledge and limited access to VCT remain

prevalent. Our findings suggest the need to provide health education and scale up VCT services in northern Nigeria by targeting the efforts of international and local development partners to underserved rural areas( Iliyasu, et al.2006).

#### 2.4 **Youth Have Startling Little Knowledge about HIV/AIDS**

Young people must be better informed in order to curb the global spread of HIV/AIDS. That's the alarming message in a new report released by the United Nations Children's Fund (UNICEF), the Joint United Nations Programme on HIV/AIDS (UNAIDS) and the World Health Organization (WHO) just days before the start of the XIV International Conference on AIDS, which is being held in Barcelona, Spain from 7 to 12 July. "Young People and HIV/AIDS: Opportunity in Crisis" shows that even though adolescence is the stage of life at which many become sexually active, most young people do not know how HIV/AIDS is transmitted or how to protect themselves from the disease. "Young people need assistance to deal with the thoughts, feelings and experiences that accompany physical maturity", said Dr. Gro Harlem Brundtland, Director-General of WHO. "Evidence from around the world has clearly shown that providing information and building skills on human sexuality and human relationships help to avert health problems and create more mature and responsible attitudes."

The rate of HIV/AIDS prevalence amongst young people is staggering. Statistics show that more than half of those newly infected with HIV today are between 15 and 24 years old. An estimated 11.8 million young people aged 15 to 24 are living with the disease, and each day nearly 6,000 more become infected with HIV. Frighteningly, however, only a fraction of them know they are infected. In Somalia, the report indicates only 26 per cent of girls have heard of AIDS and only 1 per cent knows how to avoid infection. By contrast, 99 per cent of girls in Ukraine have heard of the disease, but only 9 per cent could correctly identify the three primary ways of avoiding sexual transmission, defined

as abstinence, being faithful to one partner and consistently using a latex condom properly. Misconceptions about HIV/AIDS abound worldwide, according to the report. Surveys from 40 countries indicate that more than 50 per cent of young people aged 15 to 24 harbor serious misconceptions about how the disease is transmitted. These include the belief that HIV can be transmitted through witchcraft or mosquito bites, or that a healthy-looking person cannot have the AIDS virus. Many others believe that they are not at risk or that their individual risk is low. The report uncovers findings that show that in Nigeria 95 per cent of girls aged 15 to 19 perceived their risk of getting AIDS to be minimal or non-existent. In Haiti, the figure is as high as 93 per cent and holds for all adolescents, both male and female. A study in Malawi showed that many girls believed they were safe from the risk of infection if they had sexual relations with a boy whose mother knew their family. The report calls for a ten-step, youth-oriented strategy to prevent HIV/AIDS:

**1. End the silence, stigma and shame.**

Fear of stigma and discrimination prevents many young people from adopting preventive measures, such as using condoms, seeking testing, adhering to treatment or disclosing their HIV status to sexual partners. Leaders and role models must encourage open, non-judgmental dialogue about adolescent sexuality, drug use and violence against women, and ensure that young people have the information, services and support they need.

**2. Provide young people with knowledge and information.**

Schools, communities and media must work together to ensure that young people have the facts they need to protect themselves before they become sexually active. This information needs to be regularly reinforced and built upon both in the classroom and beyond.

### **3. Equip young people with life skills and put knowledge into practice.**

Negotiation, conflict resolution, critical thinking, decision-making and communication skills are essential tools for young people. Life-skills training has enabled young people to counsel and train their peers and has been linked to reduced teen pregnancy, HIV/AIDS and drug abuse rates.

### **4. Provide youth-friendly health services.**

Centers geared towards offering young people access to condoms, voluntary counseling and HIV-testing should be made available. They, ideally, should provide a full range of services and information and offer a welcoming, confidential, convenient and affordable environment.

### **5. Promote voluntary and confidential HIV-counseling and testing.**

Statistics show that 9 out of 10 people living with HIV/AIDS do not know that they are infected. Voluntary and confidential HIV-counseling and testing are important tools for preventing the spread of the disease.

### **6. Work with young people and promote their participation.**

Young people can be extremely effective messengers and should be given the necessary skills and encouraged to get involved in prevention efforts.

### **7. Engage young people who are living with HIV/AIDS.**

Involving young people living with the disease is a powerful way of reinforcing information and convincing them that HIV/AIDS can indeed strike anyone, including themselves.

### **8. Create safe and supportive environments.**

Parents, schools and social institutions need to be supplied with the knowledge and skills to create an environment in which girls and boys are safe from harm, cared for equally and treated with respect.

## **9. Reach out to young people most at risk.**

Young people especially at high risk for contracting HIV - males having sex with males, child soldiers, young refugees, drug users, children living on the street, those who are sexually exploited or orphaned by AIDS - are often on the periphery of society and face enormous difficulties in obtaining help. Reaching out can protect them and prevent concentrated epidemics from spreading into the wider population.

## **10. Strengthen partnerships and monitor progress.**

The commitment and resources of all sectors must be mobilized and coordinated, and channeled to families and communities (Zahra Sethna . UN Chronicle, Online Edition).

### **2.5 Knowledge and attitude towards voluntary counseling and testing for HIV: a community based study in northwest Ethiopia.**

The attitude of the respondents towards People Living with HIV/AIDS (PLWHA) Was also assessed. Urban dwellers are in most cases, in a better position (i.e., more knowledgeable) with regard to the modes of HIV transmission and its preventive measures. For example, subjects residing in urban centers were nearly 3 times more knowledgeable about the protective effect of the “correct use of condoms for every sexual intercourse” compared to people living in rural areas and this difference was statistically significant (OR= 2.8, P<0.001). Moreover, urban dwellers were 7.6 times more knowledgeable with regard to the fact that healthy- looking people could be carriers of HIV compared to the rural settlers. (=7.6, P<0.001)

In relation to the question who needs VCT service, there was a considerable disparity between the responses of the urban and rural dwellers. In particular, the response of the rural respondents was more than 3 times greater than the urban dwellers in citing that the female sex workers are the ones who need VCT service (OR= 3.4, 95%)

C.I(2.6 to 4.4),  $P < 0.001$ ). The same table shows the various responses of the study subjects with regard to the measures that a person would take if he/she is found positive /negative for HIV by taking account of urban-rural differentials. When asked whether they would agree to accept anti retroviral treatment during pregnancy in order to protect the new born from infection , the majority of the women(426 or 85.5%) agreed to take the antiretroviral drug . The male respondents were also asked the same question whether they would support if their partners take antiretroviral drug during pregnancy. In this regard, the majority (444 or 90.8%) of the male respondents replied that they would support their female partners.

When we compared the urban and the rural residents about their willing for VCT service, the urban dwellers showed 3.9 times more willing than the rural ones and the difference was statistically significant (OR = 3.9, 95% CI ( 2.7<OR<5.4, $P < 0.001$ ).

## **2.6 Acceptability of HIV counseling and testing among tuberculosis patients in south Ethiopia**

### **2.6.1 Patient characteristics**

Between January and August 2005, 190 adult TB patients received treatment at the hospital. 52% (98) of the patients were men, and the median age of the study participants was 30 years (range, 15–68). 102 (54%) patients came from rural areas and about three-quarter (74%) had monthly income below \$ 20 USD. 45% (102/190 patients) were unemployed. Twenty-eight of 190 patients (15%) gave previous history of at least one episode of tuberculosis and in 26 of these, the episode was in the last five years. At the interview, 40% (78/190), 36% (68/190) and 23% (44/190) of the patients were on treatment for sputum positive pulmonary tuberculosis (PTB+), extra pulmonary tuberculosis (EPTB), and smear negative pulmonary tuberculosis (PTB-), respectively.

### 2.6.2 Previous HIV diagnosis and treatment

Of 190 patients, 49 (26%) were previously HIV tested (27 men and 22 women). 42% (37 of 88 patients) and 12% (12/102) of urban and rural residents, respectively reported previous history of testing ( $\chi^2 = 22.6$ ,  $P < 0.001$ ). 59% (29/49 patients) of those previously tested were HIV positive, 33% (6/49) were HIV negative and 8% (4/49) did not know their result. HIV prevalence was higher among the urban residents (70% [26/37]) than among patients from the rural areas (25% [3/12]) ( $\chi^2 = 7.7$ ,  $df = 2$ ,  $p = 0.021$ ). The HIV prevalence rate was higher among women than men but this was not statistically significant (men 52% vs. women 68%,  $\chi^2 = 4.6$ ,  $p = 0.102$ ). 86% (25/29) of the HIV positive patients were already registered with the HIV unit for clinical follow up. 14 of the 25 patients (56%) received cotrimoxazole prophylaxis, 20% (5/25) antiretroviral therapy and one patient received both cotrimoxazole prophylaxis and antiretroviral therapy.

### 2.6.3 Perceived HIV risk and awareness

Over a quarter of the patients (50/190) perceived themselves as being at high-risk of HIV infection. The same number of patients (50/190) rated their HIV-related awareness as 'poor'. Only 11% (21/190) of the patients said they had "very good" knowledge about HIV and 62% (119/190) said they had 'good' knowledge.

### 2.6.4 Willingness and acceptability of HIV testing

Of 161 patients (excluding 29 patients with previously confirmed HIV positive results), 118 (73%) were willing to be counseled and tested. Nevertheless, only 58% (68/118) of those willing were counseled and tested. Fifty-six of those tested attended the post-test counseling session making the post-test counseling acceptability rate 82% (56/68). Thus, the overall acceptability rate was 35% (56/161) [Figure 1].

Fourteen patients of those tested were HIV infected, making the HIV prevalence rate 20.6% (14/68) among the newly tested. The HIV and TB co-infection rate was higher among women (32.3% versus 10.8% among men;  $\chi^2 = 4.7$ ;  $p = 0.029$ ). The prevalence among rural and urban residents was similar (16.3% rural versus 28.0% urban;  $\chi^2 = 1.3$ ;  $p = 0.249$ ). The combined previous (29/49) and current (14/68) HIV infection rate was 36.7% (43/117).

On logistic regression analysis, self-perceived high-risk of being HIV infected was associated with initial willingness to be tested (OR [95%CI] = 5.0 [1.1–22.4];  $p = 0.036$ ) but it was not associated with actually being counseled and tested (OR [95%CI] = 0.6 [0.2–1.5,  $p = 0.266$ ]). On the other hand, unemployed patients were more likely to be both willing (OR [95%CI] = 2.6 [1.1–5.5];  $p = 0.010$ ) and accepting the test (OR [95%CI] = 3.7 [1.6–8.6];  $p = 0.002$ ). Both willingness and accepting the test were not affected by age, gender, education, marital status of the patient, or phase of TB treatment ( $P > 0.1$  in all). The results show as of the logistic regression analyses (Jerene, et al. 2007).

## **2.7 Effect of an HIV counseling and testing program on AIDS-related knowledge and practices in tuberculosis clinics in Abidjan, Côte d'Ivoire**

Two out-patient tuberculosis treatment centers, Abidjan, Côte d'Ivoire.

To assess the effect of a human immunodeficiency virus (HIV) counseling and testing program on acquired immune-deficiency syndrome (AIDS) related knowledge and behaviors among persons with newly diagnosed tuberculosis.

Since 1994, patients with newly diagnosed tuberculosis have received individual or group HIV pretest counseling, informed consent, free HIV testing for those who consent, and post test counseling. From January 1995 through August 1996 in Abidjan's

two largest tuberculosis clinics, knowledge and beliefs about HIV/AIDS were assessed before and immediately after the group pretest sessions, and again 4 months later.

Prior to pretest counseling, 68.9% and 68.0% of the 559 enrolled subjects could correctly identify five modes of HIV transmission and five modes of HIV prevention. These proportions increased significantly immediately after pretest counseling (90.0%, 86.6%, respectively), and remained higher 4 months later (83.7%, 87.7%) (all  $P < 0.01$ ). Among men, consistent condom use during the preceding 4 months with a partner who was not a commercial sex worker increased from 9.9% at enrollment to 23.6% at the 4-month visit ( $P = 0.001$ ), but not for women (6.3% vs. 9.5%,  $P = 0.40$ ).

An HIV pretest counseling program conducted in an out-patient tuberculosis clinic was well accepted, and significantly increased the level of HIV/AIDS knowledge and, among men, self-reported condom use (Wiktor, et al. 2004).

## **2.8 Evaluation of 2 techniques of HIV pre-test counselling for pregnant women in West Africa**

This study compares the effect of group and individual pre-test counseling on uptake of HIV voluntary counseling and testing (VCT) by African pregnant women and knowledge about HIV/AIDS in 2 antenatal clinics of BoboDioulasso, Burkina Faso. Pre-test counseling was offered to 3958 pregnant women, 927 by group counseling and 3031 by individual counseling. Acceptance of the test improved with individual counseling, which was already high with group counseling (93.3% versus 89.4%). The return rate for results was independent of the pre-test counseling technique. At post-test session, knowledge about HIV/AIDS was better after group than individual counseling, except for reporting the existence of an asymptomatic stage of HIV infection. At a public health level, group pre-test counseling can be easily integrated into existing sessions of

antenatal care counseling, routinely performed by the current clinic staff. Our findings may help programme managers in the field of maternal and child health to choose optimal options of pre-test counseling adapted to local circumstances in resource-poor settings (Cartoux, et al. 1999).

## **2.9 Women's Knowledge About Treatment to Prevent Mother-to-Child Human Immunodeficiency Virus Transmission**

Of the 55,712 women aged 18 to 44 years (representative of 53.3 million U.S. women) who responded to the survey in 2001, we excluded 516 respondents for whom data on knowledge about HIV treatments were missing. The sociodemographic distribution of the respondents (Table 1\*) is comparable with those of the U.S. population (<http://www.census.gov/population/projections/nation/summary/np-t4-b.txt>, accessed August 22, 2003). Among those surveyed, 4.3% (95% confidence interval 4.0%, 4.6%) reported that they were pregnant at the time of interview, and 58.3% (95% confidence interval 57.6%, 59.0%) reported ever having been tested for HIV. The percentage of women who correctly stated that treatment existed to help prevent mother-to-child transmission (58.6%) was substantially lower than the percentage of women who stated that treatment existed to help HIV-infected persons live longer (87.6%). Among the population groups studied, the percentage of women who correctly stated that treatment existed to help prevent mother-to-child transmission varied between 50.4% and 65.8%. The multivariate model, which contained all of the categories shown in, indicated that knowledge about treatment to prevent mother-to-child HIV transmission was independently associated with being black, younger age (18–34 years), college level education, ever having been tested for HIV, and living outside the midwest or south regions. Although knowledge rate among pregnant women was higher than average (64.7%), pregnancy at the time of interview was not an independent predictor of

having knowledge about treatment to prevent mother-to-child transmission. Although this survey collects information on history of HIV testing, such questions are not specific to pregnancy-related HIV testing. State-specific estimates indicate that there was considerable variation in knowledge among states(John E, et al 2003)

## **2.10 HIV testing and counseling**

Over the past 20 years, voluntary counselling and testing programs (VCT) have helped millions of people learn their HIV status, yet more than 80% of people living with HIV in low and middle-income countries do not know that they are infected. Efforts are urgently needed to increase the provision of HIV testing through a wider range of effective and safe options. HIV testing is a critical entry point to life-sustaining healthcare services for people living with HIV and AIDS and service delivery models need to be expanded to testing in antenatal care, sexually transmitted infection clinics, in-patient wards as well as free-standing client-initiated testing centres. World AIDS Day will focus on leadership, the theme set by the World AIDS Campaign under the five-year slogan "Stop AIDS, Keep the Promise"( General secretary Statement, et al. 2007)

## **2.11 Sexual Risk Behaviors for HIV/AIDS in Chuuk State, Micronesia: The Case for HIV Prevention in Vulnerable Remote Populations**      **Survey of know ledge, attitudes, and behaviors**

A total of 333 persons participated in the survey of HIV-related risk behaviors, knowledge, and attitudes. Among these, 174 (52%) were female. The median age was 33 years (range 13 to 76 years). Among 269 participants who provided information on their educational level, 169 (63%) reported completing <12 years education.

Of the 333 participants, 218 (65%) reported that they had heard of HIV. Most (80%) were aware that HIV is incurable and can be spread through unprotected sex (81%),

sharing of drug injection equipment (61%), or transfusion of infected blood (64%). However, only 31% indicated that they knew HIV can be transmitted from mother to child during birth. Some individuals also indicated that they thought HIV could be transmitted through mosquito bites (31%), kissing (23%), or handshaking (11%). Most participants reported being afraid of HIV-infected persons (72%), thought that HIV-infected persons “deserved it” (72%) or that HIV-infected persons should be jailed (58%).

Among the 333 participants, 224 (67%) reported ever having had sex. Among the 161 of these participants who specified the type of sex (vaginal, oral, and/or anal), 95% had had vaginal, 14% oral and 6% anal sex. A total of 159 participants (90 female and 69 male) reported they were sexually active in the past 12 months. Among these 159 individuals, the male participants, when compared to female participants, were younger, less likely to have had <12 years of education or to be married, and more likely to have initiated sex at a younger age and to have used injection drugs. Regarding self-reported sexual behaviors in the previous 12 months, male participants were more likely than female participants to have had multiple partners, to have been drunk during sex, and were less likely to have used a condom during sex

Among individuals who were sexually active in the previous 12 months, there were several self-reported behaviors which may indicate high risk for HIV infection. Male-to-male sex was reported by 11 (16%) of the 69 men surveyed. Sixty (38%) – including 45 men and 15 women – had multiple ( $\geq 2$ ) sex partners, and 25 (42%) of the 60 were married. Among the 45 men with multiple partners, 9 (20%) were men who had sex with men, and 8 of these 9 men also reported having had female partners in the past 12 months. Most (63%) individuals with multiple sex partners reported some condom use [endorsed using condoms either “every time”, “most of the time”, or “some of the

time”] during sex in the previous 12 months. Although 58% of men with multiple partners reported condom use during sex at least “some of the time,” only 9% reported condom use “most of the time,” and 4% reported condom use “every time.” Among 15 women with multiple partners, only 4 (29%) reported condom use “most of the time,” and none reported condom use “every time.”

### **2.12 HIV counseling and rapid testing**

A total of 370 individuals received pre-test counseling, gave consent and provided specimens for HIV testing using the Determine and Oraquick rapid tests. Of these, 368 specimens had negative results on both rapid tests. Two other blood specimens had discordant results on the rapid tests, but both specimens showed negative HIV-1 Western Blot results, and were thus considered to be overall negative tests. Of the 370 individuals who were tested for HIV, 357 (96%) returned for post-test counseling (Russell, et al. 2007).

### **2.13 Counseling and Testing for HIV**

The global demand for HIV counseling and testing (CT) services is growing dramatically due to the intensified effort to expand access to antiretroviral therapy (ART). Donors and international public health organizations accordingly regard CT as a critical component of comprehensive HIV/AIDS programs.

**"HIV counseling and testing"** has multiple definitions. For purposes of this brief, we define it in the following manner:

**HIV counseling** is a confidential process that enables a person to assess his or her relative risk of acquiring or transmitting HIV. Counseling also helps a person determine whether to be tested and provides support when a person receives the test results.

**HIV testing** involves analysis of blood or body fluids for the presence of antigens or antibodies produced in response to HIV. There are many technologies available today, including a proliferation of high-quality rapid tests.

#### **2.14 CT services serve two principal purposes:**

CT services may also promote a positive community response to the disease. Knowledge about HIV might stimulate discussion and reduce stigma and discrimination. It could also result in community action to address the issue, including adoption of HIV/AIDS-sensitive policies.

**Several types of CT** have emerged in the last decade. They meet different objectives and provide services to different groups, but they are all voluntary and require client consent. The following approaches are increasingly used internationally:

##### **Client-initiated CT:**

- **Voluntary counseling and testing (VCT)** is provided in stand-alone sites, health facilities and through outreach and mobile services to communities and individual homes. This approach often best suits the needs of couples and young people.

##### **Provider-initiated CT:**

- **Routine testing** occurs in a clinical setting as part of a standard program of medical services. Where HIV is prevalent, the provider offers testing during the patient evaluation. Routine testing is increasingly the approach used in settings where pregnant women receive PMTCT services, and in tuberculosis and sexually transmitted infections clinics.

- **Diagnostic testing** takes place as part of the diagnostic work-up and clinical management of patients with symptoms possibly attributable to HIV or an illness associated with HIV. When these symptoms are present, diagnostic HIV testing should be offered as part of standard care. The chief purpose of diagnostic testing is to identify

HIV patients so they can receive comprehensive care in health care settings. It should be accompanied by prevention counseling. \*

Several service delivery models support these three approaches, including stand-alone (such as walk-in and anonymous VCT centers), integrated (antenatal care sites, tuberculosis clinics and hospitals), quasi-integrated (such as community-based VCT), private sector, mobile and home-based.

**A client's rights** should be respected in each of these settings. International public health organizations suggest providers:

- Ensure an ethical testing process where the purpose of the test and its benefits are explained to the client. The process should also include counseling, and guarantee the confidentiality of all medical information.
- Make certain the testing is voluntary and accords the client the right of refusal.
- Address the implications of a positive test result, including the need for access to sustainable treatment and care.

The following should be present for **high-quality, comprehensive CT**:

- **Political will and government policies:** Political commitment to provide adequate funding for CT must be present. This should be accompanied by government policies that protect people affected by HIV, including those using CT services. Stigma and discrimination are common, limiting access to key services for people either known or believed to be HIV-positive, such as health care, employment and housing. Sometimes there is also violence against those whose HIV status is disclosed. Therefore anti-discrimination laws need to be enacted and enforced.
- **Personnel:** Counselors and lab staff need to be trained in CT. Increasingly these roles are performed by the same people. This helps to improve client flow, provide results to clients and facilitate immediate client enrollment in appropriate treatment, care and

support services. The staff members must be trained in HIV/AIDS awareness, pre- and post-test counseling, rapid HIV testing, ways to address difficult issues (such as death and dying), HIV prevention and ongoing referral mechanisms. High-quality CT service delivery also requires proper personnel management. This includes skillfully supervising staff and identifying capacity-building needs.

- **Infrastructure:** The minimal physical requirements for CT include a counseling space that ensures auditory and visual privacy, and a space that can accommodate HIV testing and waste disposal. The need for an elaborate laboratory infrastructure is declining because of rapid HIV tests.
- **Commodities and supplies:** CT services require adequate supplies of tests and reagents, prevention materials (including condoms) and other medical products. Systems and procedures must be in place for the forecasting, procurement and management of these medical supplies.
- **Quality assurance:** Mechanisms should be established to ensure that ethical and technical medical standards are upheld for both counseling and testing services.
- **Linkages and referrals:** Relationships should be established among CT points of service, health facilities and community organizations so that clients receive comprehensive prevention, care, treatment and support services. This will also help ensure that all CT clients (both infected and uninfected) have access to ongoing services, such as psychosocial and legal services. (Who, et al. 2003,2004 and Nieburg, Phillip et al. 2005 ,2006).

#### 2.15 Previous study in Thaibinh city of Vietnam:

This study conducted among 300 respondents in Thaibanh City with the aim to find out the relationship between knowledge about HIV/AIDS and Socioeconomic characteristics of individual.

This study could help the finding as the transmission of HIV in Thaibinh city increased quickly caused by many reasons in which the lack of knowledge about HIV/AIDS especially basic knowledge related to the ways of transmission and how to prevent in Thaibinh community was the most important factor contributing to the spreading of HIV epidemic. The lack of knowledge of HIV/AIDS could be the consequences of ineffective campaigns of HIV/AIDS education and communication. The campaigns providing knowledge have not yet focused on remote area and rural area which were the living place of people who had lowest level, lowest education, limited living conditions. The resources allocated to improve knowledge about HIV were not enough in terms of human resource, budgeting and supported equipments.

Educational level was the most important characteristics of individual affecting to knowledge about HIV/AIDS with high sensitivity. The part of discussion to explain why in general, education level in urban area was higher than in rural area but the number of HIV infected people in urban area is still higher than in rural area. General education may not have impact on HIV prevention, only specific education could affect HIV transmission.

Individual income also had very important role for improvement the knowledge about HIV/AIDS of people . Income was an important factor to assess the living standard of people and it had strong relationship with knowledge about HIV/AIDS of people in Thaibinh city . From the study found that income could increase knowledge of HIV. But it does not mean that increase in individual income alone can prevent HIV. Income of individual should be invested in education to improve the correct knowledge of HIV in order to change the behavior needed for prevent HIV infection ( Thai , et al .2004).

## 2.16 Determinants of individual

**2.16.1 Age :** As many study mentioned, age is the one of important characteristics that can affect to the knowledge about HIV/AIDS of people and also age may be a risk characteristics with people in age of active sexuality from 15-49yrs. People with higher experience in the life usually have better knowledge about HIV/AIDS or in other word when the age of people increase the knowledge about HIV/AIDS also increase. The utilization of HIV for counseling and testing service depends on age and knowledge about HIV/AIDS. People with high knowledge and experience of living are willing more utilization of HIV counseling and testing service.

**2.16.2 Gender:** Gender is a culture-specific construct. There are significant differences in what women men can or cannot do in one culture as compared to another. But what is fairly consistent across cultures is that there is always a distinct difference between women's and men's roles, access to productive resources , and decision making authority. Typically, men are expected to be responsible for the productive activities outside the home while women are expected to be responsible for the reproductive and productive activities within the home . In addition , in almost every country worldwide women have less access to and control of productive resources than men , creating an unequal balance of power that favors men . Gender gaps between women and men in literacy, school enrollment, labor force participation, land ownership, and access to credit testify to this imbalance in power(UNIFEM 2000).In the ear of HIV/AIDS the gap in knowledge is an important reason that can explain the high prevalence in women . Many study showed that in general man had better knowledge about HIV/AIDS than woman and man also more often access the service of HIV such as counseling and testing service.

- 2.16.3 **Place of living:** There are differences between urban and rural areas, such as the presence of good road connections, market activities and health related programs . Those characteristics could indicate the level of exposure to different external information sources as well as creating different patterns of receptiveness and interpretation of information about HIV/AIDS spread and its consequences. Generally , people in urban area have higher knowledge in comparison with people in rural area(Laura Bernardi). Many evidences convinced that people in urban area are willing for HIV/AIDS counseling and testing higher than people in rural area.
- 2.16.4 **Educational level:** Level of education is the most important characteristics of people it influences most to knowledge about HIV/AIDS . Knowledge about HIV/AIDS increase as the level of education increases. Education leads to the acquisition of information and increases the extent to which such information is processed, used and passed on the individuals or members of a social network (Uche C. Isiugo-Abanihe). The people with higher education realize the importance of knowledge and the source of knowledge provision like HIV/AIDS counseling and testing service. The utilization of HIV/AIDS counseling and testing service increases as the level of education and knowledge increase.
- 2.16.5 **Income:** Income of individual has been considered as an important characteristics that can affect to knowledge about HIV/AIDS and utilization of counseling and testing service. In general, when income of people increase their knowledge and utilization of HIV/AIDS counseling and testing service also increase.

## **CHAPTER III**

### **RESEARCH METHODOLOGY**

#### **3.1 Study design:**

This research is cross-sectional descriptive study,

The time of study: March 2008

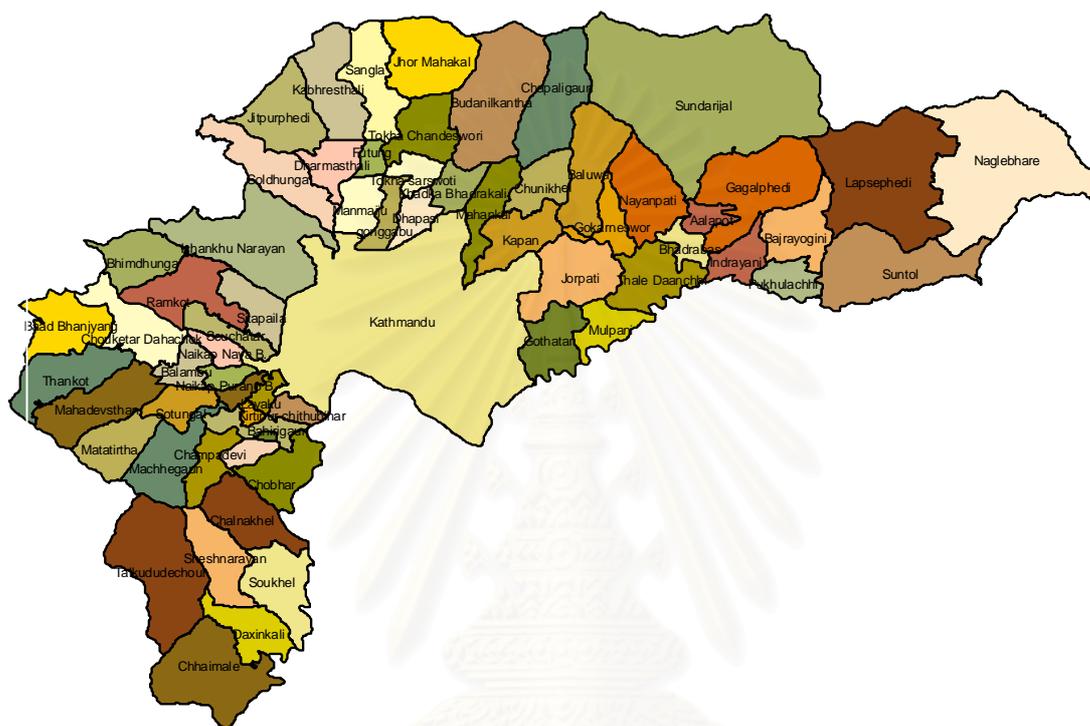
#### **3.2 Methodology:**

3.2.1 Research questionnaire will be made and data will be collected primary sources to describe the socioeconomic characteristics of people. Knowledge about HIV/AIDS and utilization of HIV/AIDS for counseling-testing service in Kathmandu district.

3.2.2 Use Regression analysis module to estimate the parameters, relationship between dependent and independent variables.

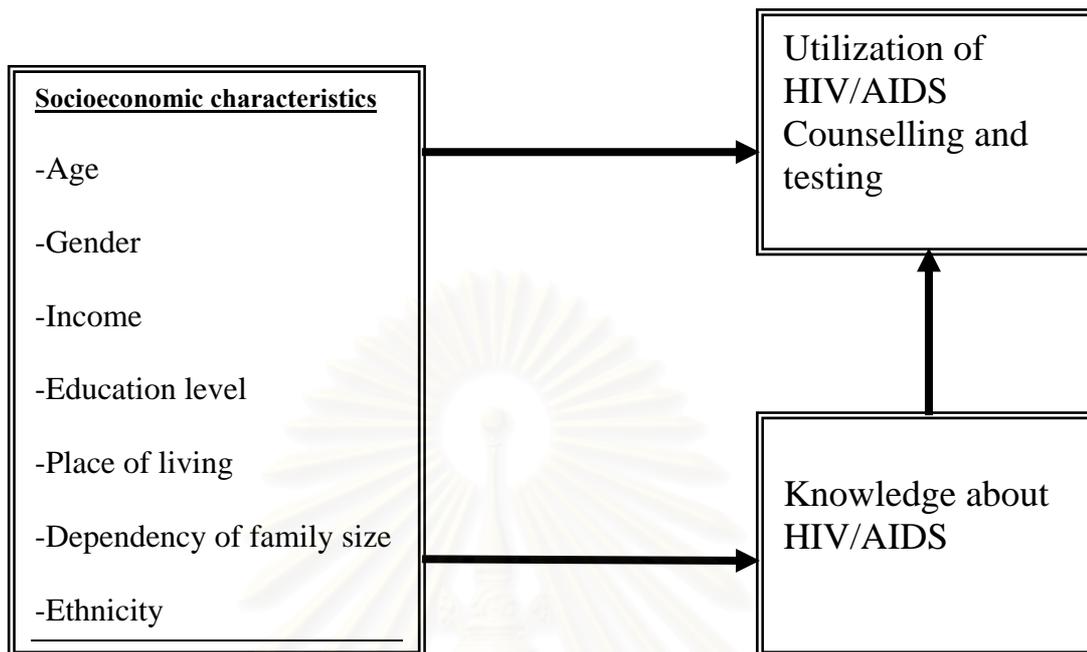
3.3 Study area: Kathmandu is a district name of Bagmati zone, The name of Kathmandu district is the symbolic name of Kasthmandap. It is situated near the Bagmati River. Kathmandu is the capital city of Nepal, It is also busy city of the country. It is also called Nepalese cultural and Hindus and Buddha's temples city of the country of Nepal. Kathmandu district is divided into rural and urban area, In rural area have 57 village development committee(VDC) and One metropolitan city and One Municipality . The rural and urban total Population of Kathmandu district have 1304954. It has further more, all the elements of economy ,culture, education, health sectors and tourism are also developing very strongly and rapidly.

### 3.4 The Map of Kathman



สถาบันวิทยบริการ  
จุฬาลงกรณ์มหาวิทยาลัย

### 3.5 Conceptual Framework:



### 3.6 . Operational Definitions:

#### 3.6.1 dependent variables:

Knowledge of HIV/AIDS is defined as basic knowledge that can help people to prevent the transmission of HIV through three main transmitted ways including sexual relation, injecting during use and transmission from mother to child. People's knowledge of HIV/AIDS depends on various factors including socioeconomic factors of people and society, the quality of communication campaign on HIV/AIDS, the quality of intervention programs, quality and availability and to expand HIV/AIDS of counseling-testing service in Kathmandu District of Nepal.

.This variable is gathered from a survey through a questionnaire including basic questions related to HIV/AIDS and it is illustrated by a ratio between right answers and total questions and plus one.

In this study, individual socioeconomic characteristics are focused on in order to describe the relationship between these variables and basic knowledge about HIV/AIDS of people.

Utilization of HIV/AIDS for counseling and testing:

This variable is defined as the number of people utilization of HIV/AIDS to be counseled and tested in the Kathmandu district. The demand of utilization of HIV/AIDS for counseling and testing in Kathmandu district may increase or decrease.

### **3.6.2 Independent variables:**

3.6.2.1 Age of respondents will vary from 15-49years. This population can assure that they start attending the labour force and in the sexual active group- the targeted group of HIV transmission.

3.6.2.2 Gender: Male or Female

3.6.2.3 Place of living: It referred to urban or rural area.

3.6.2.4 Individual income: It was assessed based on average household income of individual per month. Income was summed up from major items: Rice, cereal crops ,industrial plants/ fruit tree forest, livestock, fish/ shrimp patching, business, salary ,hired-labor, supplementary benefit, and other resources.

3.6.2.5 Education level: Refer to highest educational attainment of the respondents according to the educational system in Nepal as illiterate, literate, primary level, lower secondary level, secondary level, higher secondary level, higher level and professional level. In this study , education level is a continuous variable , and it is classified the years of schooling of person interviewed.

### 3.7 Sample size Estimation:

$$n = \frac{Z_{1-\alpha/2}^2 PQ}{d^2}$$

Where,

n=Estimate the Sample Size

$Z_{1-\alpha/2}$  = The standard normal deviation is set at 1.96 corresponding 95% confidence interval ( $\alpha$  equal to 0.05)

P= Proportion of people having knowledge about HIV/AIDS, which is estimate equal to 0.80.(DHS survey 2006)

Q= 1-P =1-0.80=0.20 , Proportion of people having no knowledge about HIV/AIDS,

d = degree of accuracy set at 5%

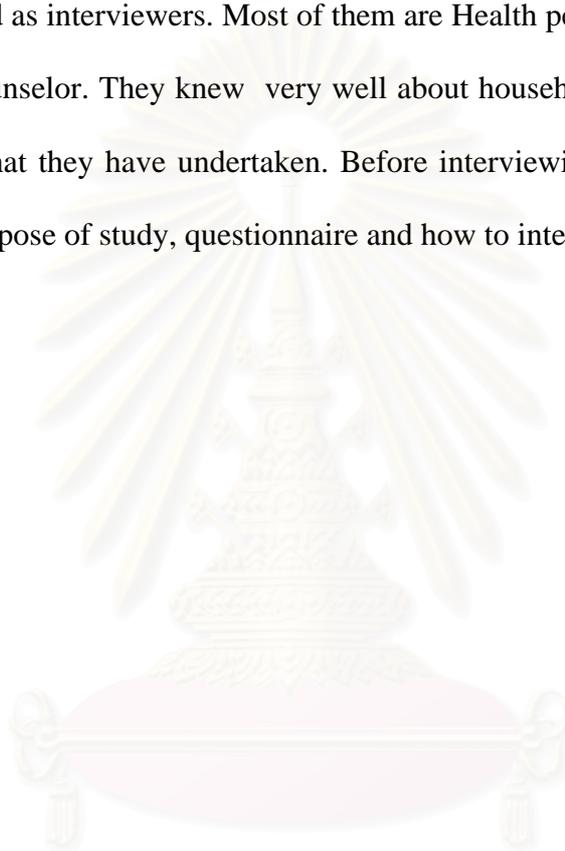
$n = ((1.96)^2 * 0.80 * 0.20) / (0.05)^2 = 245.86$  For my study sample sizes will be taken approximately 280.

3.8 Sampling Procedure: The area of Kathmandu district is divided into two regions Urban and rural areas. In this study ,The total Population of Kathmandu nearly 1304954 people who are living in kathmandu district, out of them target Population 15-49 years both male and female nearly 612489. In this out of target Population as we were selected already used target group code for study purpose .The target group(TG) code happens 01 to be female sex woker, 02 Client of female sex worker, 03 Injecting Drug user (male), 04 Injecting Drug user (female), 05 male Migrant, 06 female Migrant, 07 Wife of Migrant, 08 Husband of Migrant, 09 male having sex with male(MSM), 10 male sex worker , 66 Other male 67 other female, 68 Not known male and 69 Not known female.(YVIHS, Putali Sadak, Kathmandu). The Sample size is 280 .Among those

target group codes with Population in age of 15-49years was prepared, at each rural and urban area has 280 individuals randomly selected to interview.

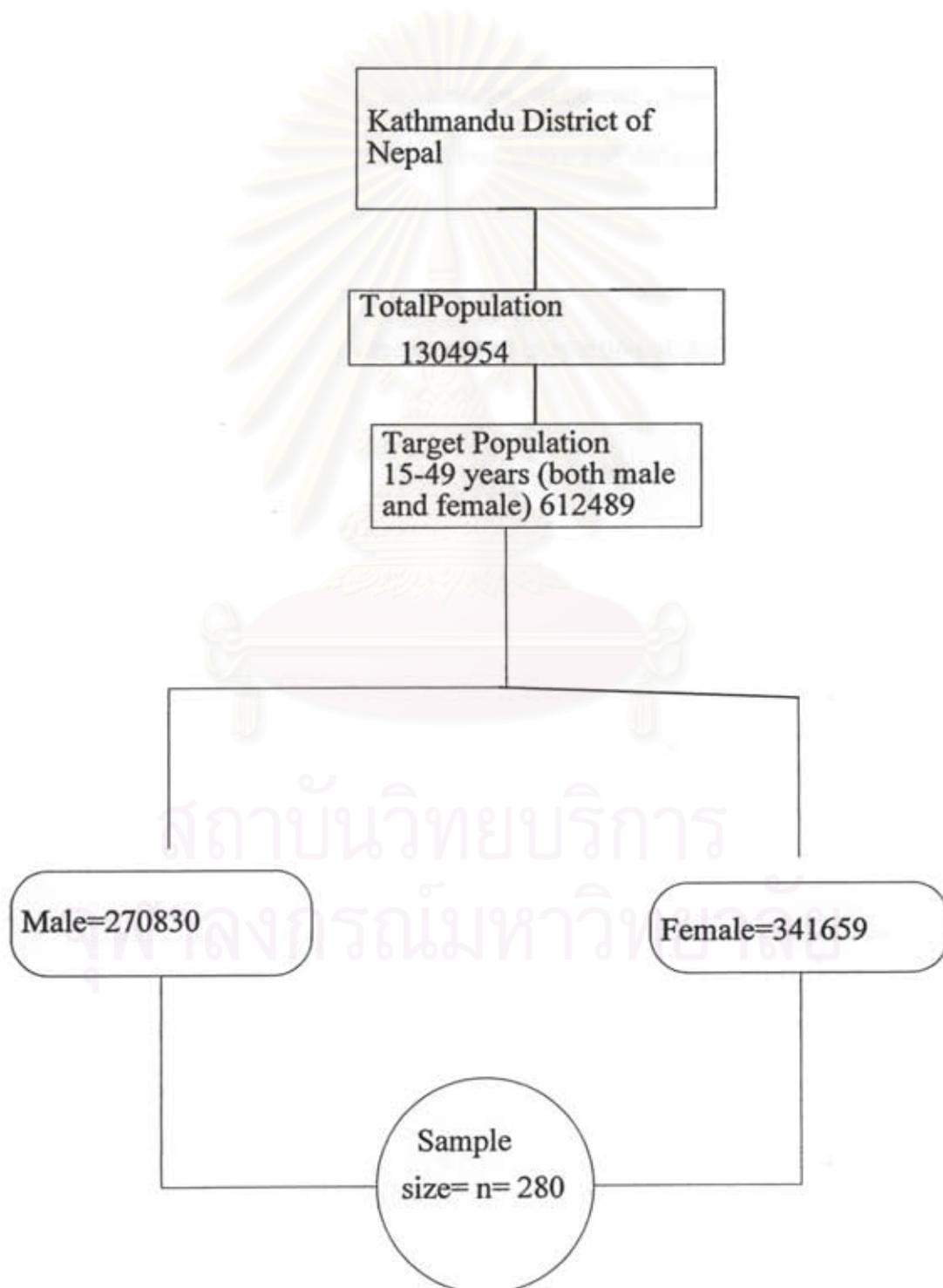
### **3.9 Data collection:**

Data will be collected from primary source and use random stratify sampling method. A team including 15 persons established to support for collecting data, these persons will attend as interviewers. Most of them are Health personnel at grass-root level and Voluntary counselor. They knew very well about household's situation in the rural and urban area that they have undertaken. Before interviewing they will be trained to familiarize the purpose of study, questionnaire and how to interview individuals.



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### 3.10 Total Population of Kathmandu District



### 3.11 INCLUSION AND EXCLUSION CRITERIA:

In my research, I will use random stratify sampling in target population group.

Inclusion criteria: 15-49 years(both male and female) are include.

Exclusion criteria: 0-14 years and 50 years above(both male and female) are exclude.

### 3.12 Data Analysis:

#### 3.12.1 Descriptive Analysis:

Using descriptive method to describe frequency, mode, and median, mean variance, standard deviation of independent variables and define the proportion of people who have knowledge about HIV/AIDS.

#### 3.12.2 Define knowledge:

Knowledge= knowledge is the Expected proportion of the Population joining X's of people about HIV/AIDS (ratio between right answer of the questions and total questions and plus one)

$$\text{Knowledge} = \frac{(\text{Number of the correct answer of the questions}) + 0.5}{\text{Total number of questions (30) +1}}$$

$$\begin{array}{ccccccc} \text{I} & \text{I} & \text{I} & \text{I} & \text{I} & \text{I} & \text{I} \\ -0.5 & 0 & & & & 30 & 30.5 \end{array}$$

### 3.12.3 Regression Analysis:

3.10.3.1 The Socioeconomic characteristics of individual and knowledge about HIV/AIDS of the people affects the utilization of the number of counseling and testing service of HIV/AIDS visit per year. The following regression model can be used to analyze data. After analysis statistically then our result interpreted based on knowledge among questionnaires.

$$\ln(\text{knowledge}/1-\text{knowledge}) = \beta_0 + \beta_1 \ln X_1 + \beta_2 X_2 + \beta_3 D_1 + \beta_4 X_3 + \beta_5 X_4 + \beta_6 D_2 + u$$

Where,

Knowledge= knowledge is the Expected proportion of the Population joining X's of people about HIV/AIDS (ratio between right answers of the question and total questions and plus one)

ln= natural log (base e log)

$X_1$ = income

$X_2$ = Education years of schooling

$D_1$ = 1 if gender is male

= 0 otherwise (female)

$X_3$  =age of person interviewed

$X_4$  = Dependency of family size

$D_2$ = 1 if place of living is urban area

= 0 Otherwise (rural area)

knowledge = knowledge is the Expected proportion of the Population joining X's of people about HIV/AIDS

Expectation the sign of coefficients:

Independent Variables	Expected sign of Coefficients
Income	+
Level of Education	+
Gender(male)	+
Age	+
Place of living(urban)	+

3.12.3.2. Using Regression analysis to express the relationship between socioeconomic characteristics of individual, Knowledge about HIV/AIDS and utilization of HIV/AIDS for counseling and testing service, semi-log linear regression is used and estimated, In this model knowledge was used in expected value (Knowledge) ,which was automatically estimated in the software application.

$$\begin{aligned}
 UT_{(of C)} = & \gamma_0 + (\gamma_{10} + \gamma_{11} \text{ knowledge}) \ln X_1 + (\gamma_{20} + \gamma_{21} \text{ knowledge}) X_2 \\
 & + (\gamma_{30} + \gamma_{31} \text{ knowledge}) D_1 + (\gamma_{40} + \gamma_{41} \text{ knowledge}) X_3 \\
 & + (\gamma_{50} + \gamma_{51} \text{ knowledge}) X_4 + (\gamma_{60} + \gamma_{61} \text{ knowledge}) D_2 + \gamma_7 \text{ knowledge} + e.
 \end{aligned}$$

Where,

$UT_{(of C)}$  = Utilization, number of counseling visit per year.

$X_1$  = income

$X_2$  = Education years of schooling

$D_1$  = 1 if gender is male

= 0 otherwise (female)

$X_3$  = age of person interviewed

$X_4$  = Dependency of family size

$D_2 = 1$  if place of living is urban area

= 0 Otherwise (rural area)

knowledge = knowledge is the Expected proportion of the Population joining X's of people about HIV/AIDS

$$3.12.3.3. \quad UT_{of(C+T)} = \gamma_0 + (\gamma_{10} - \gamma_{11} \text{ knowledge}) \ln X_1 + (\gamma_{20} + \gamma_{21} \text{ knowledge}) X_2 \\ + (\gamma_{30} + \gamma_{31} \text{ knowledge}) D_1 + (\gamma_{40} + \gamma_{41} \text{ knowledge}) X_3 \\ + (\gamma_{50} + \gamma_{51} \text{ knowledge}) X_4 + (\gamma_{60} + \gamma_{61} \text{ knowledge}) D_2 + \gamma_7 \text{ knowledge} + e.$$

Where,

$UT_{of(C+T)}$  = Utilization, number of (counseling + Testing )visit per year.

$X_1$  = income

$X_2$  = Education years of schooling

$D_1$  = 1 if gender is male

= 0 otherwise (female)

$X_3$  = age of person interviewed

$X_4$  = Dependency of family size

$D_2 = 1$  if place of living is urban area

= 0 Otherwise (rural area)

knowledge = knowledge is the Expected proportion of the Population joining X's of people about HIV/AIDS

If the value of F test is greater than critical value or P value less than 0.05 that means we reject null- hypothesis and accept alternative hypothesis, in this case all coefficients are not equal to zero simultaneously, then using T test and P value to check the significance of each coefficient. If coefficients are significant that means independent

variables can affect dependent variables or Utilization (UTI) depends on socio economic characteristics of individual and knowledge about HIV/AIDS.

If the value of F test is less than critical value or P value less than 0.05 that means we have to accept null-hypothesis or in other word all coefficients are equal to zero simultaneously. In this case we can conclude that Utilization(UTI) does not depend on socioeconomic characteristics and knowledge of individual.

#### **3.12.3.4. Interpretation the result of regression:**

Regression coefficients: Allow us to make predictions for the dependent variable based on the values of the independent variables, in terms of the original units of measurement. Suppose in this case the sign of  $\beta_1$  is positive we can conclude that if income of individual increases one percent, Utilization(UTI) of HIV/AIDS for counseling-testing increases one unit.

3.12.3.5.  $R^2$  (R-Squared): Indicates the amount of variation in the dependent variable explained by the combination of independent variables in the model, there by indicating whether the model is good predictor of the dependent variable. We expect that the value of  $R^2$  would be high enough in this case.

Correlation Coefficients (r): Indicate the strength of association between two variables.

## CHAPTER IV

### RESULTS AND DISCUSSIONS

According to the methodology outline in the previous chapter, 280 people who are suitable as research design were interviewed basing on questionnaire. A selected team was established with the aim is to support to collect data. The data was collected from 6<sup>th</sup> March 2008 to 24<sup>th</sup> March 2008 in Kathmandu district. This chapter will show research results and discuss about results to answer research questions, objectives exposed in the first chapter of this study.

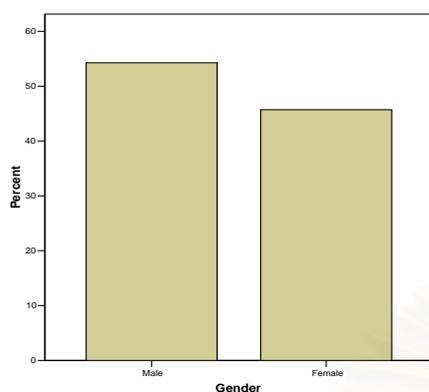
#### 4.1 Data Description

**Table 4.1.1** Distribution of respondents according with gender

	Frequency	Percent	Cumulative Percent
gender male	152	54.3	54.3
female	128	45.7	100.0
Total	280	100.0	

Source: Field Survey 2008

From the table 4.1.1 shows that both male and female Respondents were strongly participated in the research survey questionnaire about HIV/AIDS for interview. The number of 152 (54.3%) Male respondent and 128 (45.7%) Female respondent were given the answer of socio-economic factors, knowledge and utilization of VCT counseling –testing survey questionnaire.

**Diagram 4.1.1 Histogram of respondents according with gender**

From the Diagram 4.1.1 Shows that the male and female respondents are 152 (54.3%) and 128 (45.7%) respectively and total number of 280 respondents were symmetrically and normally distributed in the research questionnaire for interview.

**Table 4.1.2 Distribution of respondents according with Ethnicity**

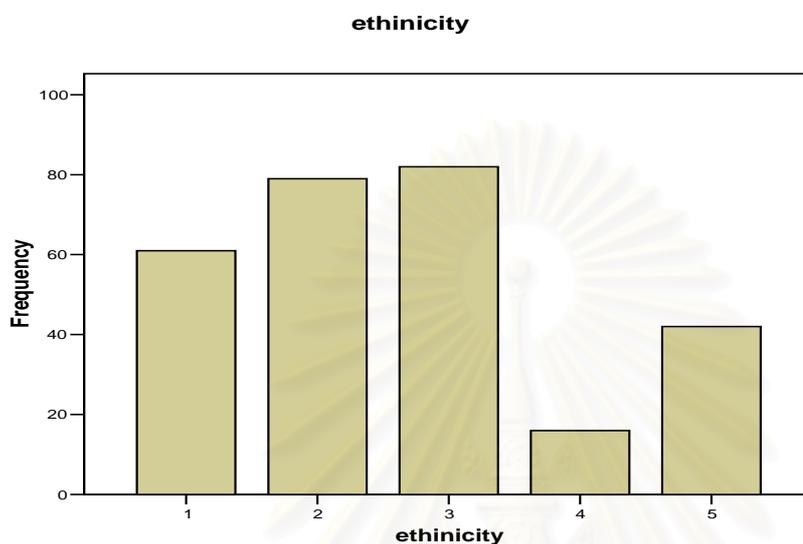
		Frequency	Percent	Cumulative Percent
Ethnicity	Newar	61	21.8	21.8
	Chhetry	79	28.2	50.0
	Brahmin	82	29.3	79.3
	Dalit	16	5.7	85.0
	Janajati	42	15.0	100.0
	Total	280	100.0	

Source: Field Survey 2008

From the table 4.1.2 shows that both male and female Respondents were strongly participated in the research questionnaire as Ethnicity. They were Newar, Chhetry, Brahmin dalit and Janajati. The number of 61(21.8%), 79(28.2), 82(29.3), 16(5.7) and 42(15.0) , including altogether 280 Respondents were Newar, Chhetry, Brahmin dalit and Janajati respectively. They were given the correct answer of socio-economic

factors, knowledge and utilization of VCT counseling –testing survey questionnaire in the basing of Kathmandu district of Nepal.

**Diagram 4.1 .2 Distribution of Bardigram of respondents according with Ethnicity**



Index: 1=Newar 2= Chhetry 3=Brahmin 4=Dalit 5=Janajati

From the Diagram 4.1.2 Shows that the X- axis represents the Ethnicity and Y- axis represents the number of frequency of Ethnicity. The maximum number of Brahmin 82(29.3%) and minimum number of Dalit 16 (5.7%) respondents were participated in the research questionnaire of the interviewed.

**Table 4.1.3 Pretest counseling(q<sub>1</sub>), HIV test(q<sub>2</sub>), HIV+(q<sub>3</sub>), Post test Counseling(q<sub>4</sub>) VS \* ethnicity**

**CrosstabulationCount**

	ethnicity					Percentage
	Newar	Chhetry	Brahmin	Dalit	Janajati	
q1	61	79	82	16	42	100.00%
q2	60	79	80	16	42	98.93%
q3	12	9	12	3	9	16.07%
q4	60	79	80	16	42	98.93%

Source: Field Survey 2008

From the table 4.1.3 Shows that the pretest –counseling( $q_1$ ) as 100.00% visit per year, HIV Tested( $q_2$ ) as 98.93% visit per year and missing of 1.07% visit per year, HIV+ result of blood( $q_3$ ) as 16.07% and Post –test counseling( $q_4$ ) as 98.93% were randomly selected through target groups VS ethnicity Cross as respondents to the socio-economic factors, knowledge and utilization of VCT counseling –testing survey questionnaire for interview. The target groups code are to be happens as 01(Female sex worker), 02(client of Female sex worker), 03(Injecting Drug User Male), 04(Injecting Drug User Female), 05(Male Migrant), 06(Female Migrant) , 07(Wife of Migrant), 08(Husband of Migrant), 09(Male having sex with Male), 10 (Male sex worker),66(other male), 67(Other Female ),68(not know Male) and 69 (not know Female). These respondents were different ethnicity and different places of Kathmandu district. Our Research Assistant , Supervisor , Health worker and Counselor were interviewed them on the sport of the counseling center, blood testing centre, laboratory ,treatment centre, Hospital, playing ground, working place and their residence. They said that, first of all they went to the counseling center, were taking HIV/AIDS counseling. After counseling they should tested blood for HIV. After the result of blood test of HIV, they went for post counseling for HIV/AIDS. If the tested blood for HIV had HIV+, They should recently two sample blood tested for confirmed HIV+

From the table 4.1.3 explain the number of people visited pre test counseling( $q_1$ ) for HIV/AIDS counseling were 61,79,82,16 and 42 including all together 280 as Newar Chhetry, Brahmin, Dalit and Janajati respectively. To provide the service from the Sukra Raj infectious disease hospital Teku Kathmandu and Youth Vision VCT center at Putali Sadak in Kathmandu. Similarly other service as  $q_2, q_3$  and  $q_4$  as shown and explain from the above table respectively.

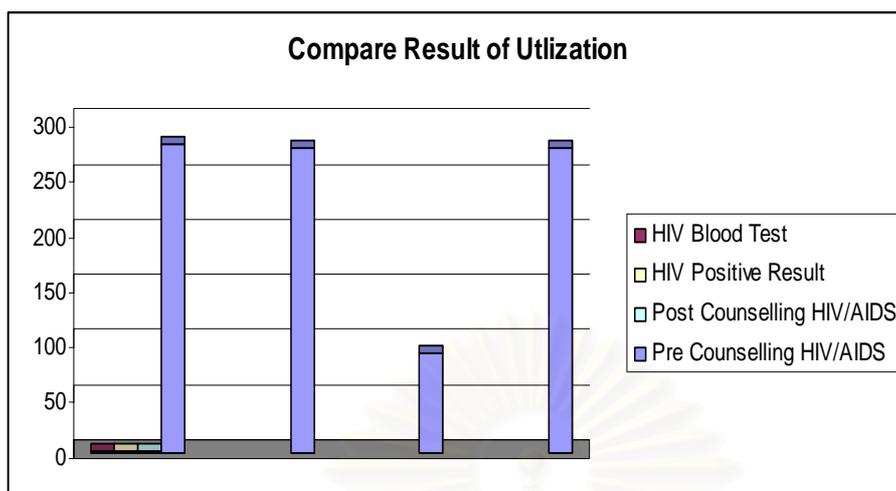
**Diagram 4.1.3 Compare Result of Utilization of q<sub>1</sub>, q<sub>2</sub>, q<sub>3</sub> and q<sub>4</sub>**

Diagram 4.1.3 Shows and explain the total number of 280 respondents were visited for HIV/AIDS Pretest counseling(q<sub>1</sub>), 280 HIV blood tested(q<sub>2</sub>), 45 HIV + blood tested(q<sub>3</sub>) and Post counseling for HIV/AIDS(q<sub>4</sub>) were visited per year respectively

**Table 4.1.4 Distribution of People's Knowledge VS Gender about HIV/AIDS**

knowledge \* gender Crosstabulation

	knowledge	gender		Total
		Male	Female	
	.47	2	0	2
	.50	0	1	1
	.53	1	2	3
	.56	1	2	3
	.60	4	1	5
	.63	3	1	4
	.66	4	6	10
	.69	8	4	12
	.73	4	8	12
	.76	14	10	24
	.79	7	8	15
	.82	12	8	20
	.85	13	9	22
	.89	20	10	30
	.92	22	19	41
	.95	22	19	41
	.98	15	20	35
Total		152	128	280

Source: Field Survey 2008

From the table 4 .1.4 shows and explain the people's knowledge about HIV/AIDS according to gender in Kathmandu district. There were including all together 280 respondents out of them 152 male and 128 female respondents participated for research questionnaire about HIV/AIDS. There were asked individually 30 survey questionnaire for knowledge about HIV/AIDS and collected respondents answer. After collection the respondents answer and Analyze to find their individual knowledge about HIV/AIDS on the basing of their correct answer of the respondents as the target group and people of Kathmandu district. From the table 4 .1.10 shows that people's knowledge have varies from 47% to 98% of Kathmandu district. Minimum 47% knowledge about HIV/AIDS have 2 male and Maximum 98% knowledge about HIV/AIDS have 35 persons, out of them 15 male and 20 female respectively.

**Table4 .1.5 Distribution of People's Knowledge VS Place of living about HIV/AIDS**

**knowledge \* place of living Cross tabulation**

		Place of living		Total
		Rural	Urban	
knowledge	.47	0	2	2
	.50	0	1	1
	.53	0	3	3
	.56	1	2	3
	.60	3	2	5
	.63	3	1	4
	.66	5	5	10
	.69	3	9	12
	.73	3	9	12
	.76	13	11	24
	.79	9	6	15
	.82	6	14	20
	.85	9	13	22
	.89	13	17	30
	.92	23	18	41
	.95	20	21	41
	.98	13	22	35
Total		124	156	280

Source: Field Survey 2008

From the table 4 .1.5 shows and explain the people's knowledge about HIV/AIDS according to Place of living in Kathmandu district. There were including all together 280 respondents out of them 124 rural and 156 urban respondents participated for research questionnaire about HIV/AIDS.

From the table 4 .1.5, shows that and comparing the number of people between rural and urban. The number of urban people have more in the level of knowledge than the number of rural people .All percentage level of knowledge of HIV/AIDS have more number of urban people than the number of rural people but except the percentage level of knowledge of HIV/AIDS(0.60,0.63, 0.76,0.79 and 0.92) have more number of rural people than the number of urban people.

**Diagram4 .1.4 Distribution of People's Knowledge showing in Histogram**

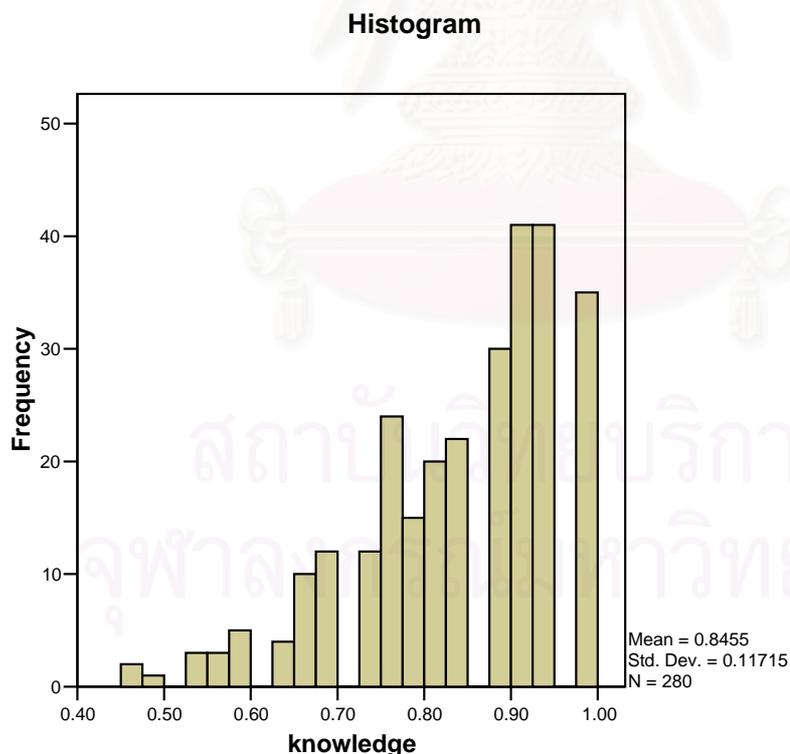
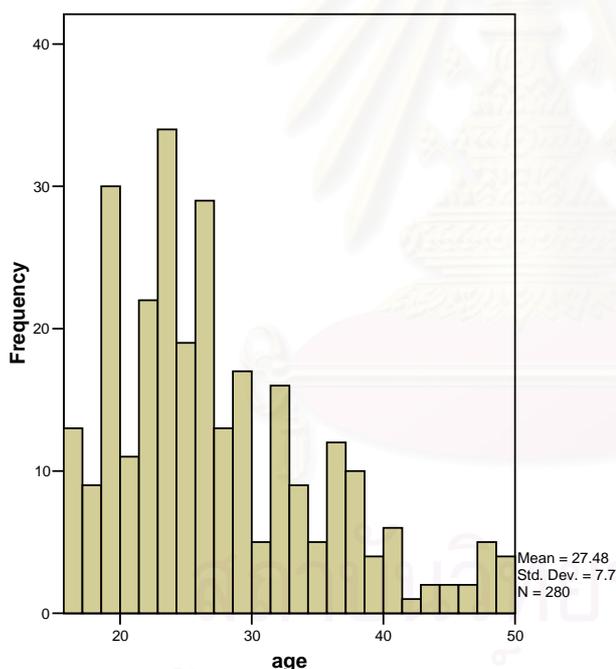


Diagram 4 .1.4 Shows and explain the People's knowledge about HIV/AIDS in Kathmandu district. The distribution of people's knowledge about HIV/AIDS varies from 47% to 98% in Kathmandu district. The minimum number as 2 persons at 47% of level of knowledge and maximum number as 41 and 41 persons at 92% and 95% of level of knowledge, similarly 35 persons at 98% of level of knowledge. The mean of knowledge(85%),Std. Deviation ( 11.715%) and total number of 280 respondents were participate and gave answer of survey questionnaire for HIV/AIDS knowledge. The number of respondents and their correct answer are as symmetrically distributed and shown in normal curve.

**Diagram4 .1.5 Distribution of respondents age showing in Histogram**



From the diagram4 .1.5 shows and explain the age of the respondents in Kathmandu district. The respondents age varies from 16 years to 49 years. The maximum number or frequency distributed of the respondents age are 19years to 25 years and minimum number or frequency distributed of the respondents age are 42years to 44years. The mean age of the respondents is 27.48 years and Std Dev is 7.7years. The

total number of respondents are 280. The number of respondents and their age are as symmetrically distributed and shown in normal curve.

**Table 4 .1.6 Distribution of correlation of respondents between age VS knowledge**



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knowledge																		
Age	.47	.50	.53	.56	.60	.63	.66	.69	.73	.76	.79	.82	.85	.89	.92	.95	.98	Tot
16	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	4
17	0	0	0	0	0	0	0	0	1	1	1	2	0	1	2	0	1	9
18	0	0	0	0	0	0	1	0	0	0	0	0	4	3	0	0	1	9
19	0	0	0	0	0	0	0	1	0	1	0	2	0	1	2	3	0	10
20	0	0	0	1	0	0	0	1	0	2	2	0	1	4	5	2	2	20
21	0	0	0	0	0	0	2	0	0	1	0	0	1	1	1	2	3	11
22	1	1	1	0	0	0	3	0	3	1	0	1	3	2	3	2	1	22
23	0	0	0	0	2	0	1	2	0	0	0	1	1	1	2	3	2	15
24	0	0	0	1	2	0	1	0	0	1	2	4	2	2	2	1	1	19
25	0	0	0	1	0	0	2	0	1	2	0	2	0	0	3	4	4	19
26	0	0	1	0	0	0	0	2	1	3	0	1	0	2	1	3	2	16
27	0	0	0	0	0	0	0	2	1	1	3	1	0	2	2	1	0	13
28	0	0	0	0	0	0	0	0	0	3	2	0	1	1	1	2	3	13
29	0	0	0	0	0	1	0	0	0	0	0	2	0	1	3	0	1	8
30	0	0	0	0	0	1	0	1	1	0	1	0	0	0	0	4	1	9
31	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	0	1	5
32	1	0	0	0	0	0	0	1	0	2	0	0	3	2	2	3	2	16
33	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	1	4
34	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	2	1	5
35	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2	1	5
36	0	0	0	0	0	0	0	0	1	0	0	0	2	2	3	0	1	9
37	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	3
38	0	0	0	0	0	0	0	2	1	1	1	0	0	1	3	1	0	10
39	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	4
40	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	2	6
42	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
43	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
45	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	2
46	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	2
48	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	2	5
49	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	1	4
Total		1	3	3	5	4	10	12	12	24	15	20	22	30	41	41	35	280

**diagram 4 .1.6 Distribution of correlati on of respondents betw een age VS knowledge**

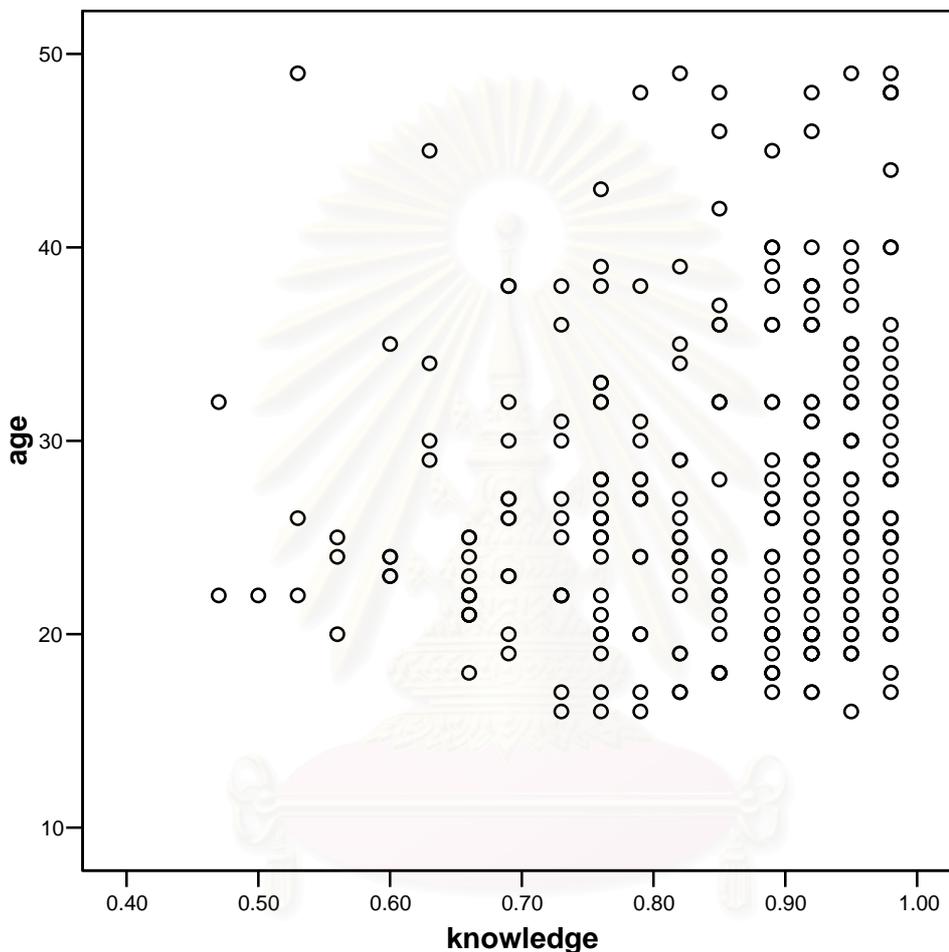


Diagram 4 .1.6 shows and explain the respondents age and their cross pendent knowledge about HIV/AIDS in Kathmandu district. Respondents age varies from 16 years to 49 years and knowledge about HIV/AIDS varies from 47% to 98%. The number of respondents increases at the age of 17 years along with increases knowledge to maximum at the age of 22years as continue 26 years and slidely decreasing after 40 years. The maximum correlation pressure between age and knowledge shown as above scatter diagram.

**Table4 .1.7 Distribution of frequency mean, Standard Deviation, Range, Minimum and Maximum of Knowledge and socio-economic factors of respondents**

		Statistics				
		knowledge	age	schooling years	Average household income	dependence family size
N	Valid	280	280	280	280	280
Mean		.8455	27.48	10.69	10385.71429	5.20
Std. Deviation		.11715	7.700	4.775	7933.040307	1.991
Range		.51	33	20	48000.000	11
Minimum		.47	16	0	2000.000	1
Maximum		.98	49	20	50000.000	12

From table 4 .1.7 shows and explain the respondents knowledge about HIV/AIDS and their socio-economic factors of the society in Kathmandu district. The total number of 280 respondents were participated in the interview and Analysis their correct answer as obtained the findings. The mean of knowledge, age, years of schooling, average house hold income and dependency family size of respondents are 85% ,27.48 years, 10.69 years of schooling, Rs10385.72 and 5.20 respectively. The Std. deviation of knowledge, age, years of schooling, average house hold income and dependency of family size of respondents are 0.11715 ,7.700 years, 4.775 years of schooling, Rs7933.04 and 1.991 respectively. The Range of knowledge, age, years of schooling, average house hold income and dependency family size of respondents are 0.51, 33 years, 20 years of schooling, Rs 48000.000 and 11 respectively. The minimum of knowledge, age, years of schooling, average house hold income and dependency family size of respondents are

0.47,16years, 0 .0 years of schooling, Rs2000.000 and1 respectively. The maximum of knowledge, age, years of schooling, average house hold income and dependency family size of respondents are 0 .98, 49years, 20years of schooling,Rs50000.000 and 12 respectively.

**Table4 .1.8 Distribution of frequency mean, Standard Deviation, Minimum and Maximum of Utilization of counseling and testing about HIV/AIDS**

**Statistics**

		pretest counselling	HIV test	HIV positive	post counselling
N	Valid	280	277	45	276
	Missing	0	3	235	4
Mean		1.00	1.00	2.00	1.00
Std. Deviation		.000	.000	.000	.000
Minimum		1	1	2	1
Maximum		1	1	2	1

From table 4 .1.8 shows and explain the respondents Utilization of counseling and testing about HIV/AIDS and their socio-economic factors of the society and target groups in Kathmandu district. The total number of 280 respondents were participated in the interview and Analysis their correct answer as obtained the findings. The mean(1), Standard Deviation(0.00), Minimum(1) and Maximum(1) of Utilization of pretest counseling of Target group in the society in the kathmandu district.

The total number of 280( 3 out of them missing) respondents were participated in the interview and Analysis their correct answer as obtained the findings. The mean(1), Standard Deviation(0.00), Minimum(1) and Maximum(1) of Utilization of HIV tested of Target group in the society in the kathmandu district.

The total number of 280( 45 out of them HIV+) respondents were participated in the interview and Analysis their correct answer as obtained the findings. The mean(2),

Standard Deviation(0.00), Minimum(2) and Maximum(2) of Utilization of HIV+ tested result of Target group in the society in the kathmandu district.

The total number of 280(4 out of them missing) respondents were participated in the interview and Analysis their correct answer as obtained the findings. The mean(1), Standard Deviation(0.00), Minimum(1) and Maximum(1) of Utilization of post counseling of Target group in the society in the kathmandu district The total number of 280(4 out of them missing) respondents were participated in the interview and Analysis their correct answer as obtained the findings. The mean(1), Standard Deviation(0.00), Minimum(1) and Maximum(1) of Utilization of post counselling of Target group in the society in the kathmandu district.

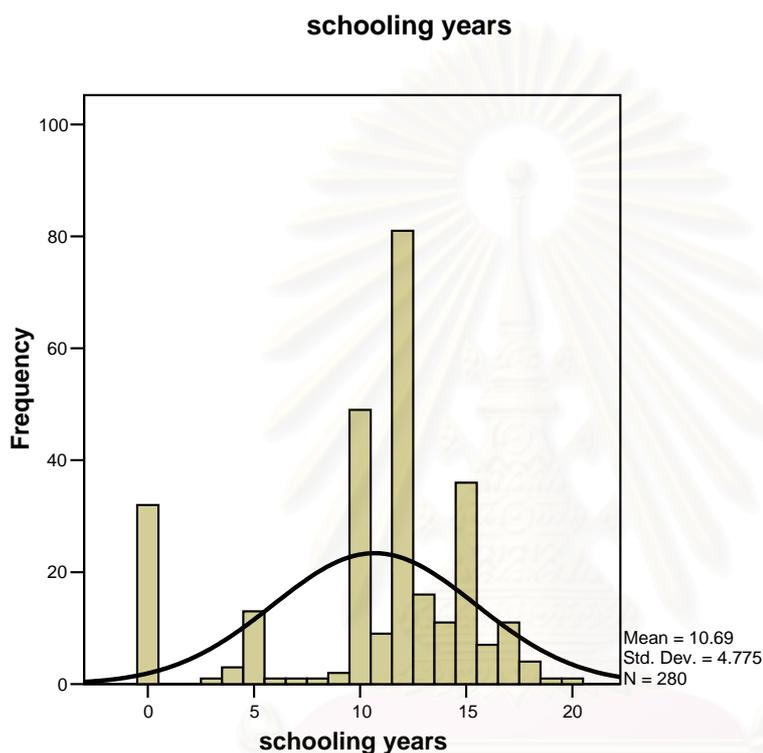
**Table4 .1.9 Distribution of frequency, Percent of Schooling of the respondents**

**schooling years**

schooling years		Frequency	Valid Percent	Cumulative Percent
Valid	0	32	11.4	11.4
	3	1	.4	11.8
	4	3	1.1	12.9
	5	13	4.6	17.5
	6	1	.4	17.9
	7	1	.4	18.2
	8	1	.4	18.6
	9	2	.7	19.3
	10	49	17.5	36.8
	11	9	3.2	40.0
	12	81	28.9	68.9
	13	16	5.7	74.6
	14	11	3.9	78.6
	15	36	12.9	91.4
	16	7	2.5	93.9
	17	11	3.9	97.9
	18	4	1.4	99.3
	19	1	.4	99.6
	20	1	.4	100.0
Total		280	100.0	

From the table 4.1.9 Shows and explain the Education of schooling years of the respondents affecting as their socio-economic factors of the society in Kathmandu district. The total number of 280 respondents were participated in the interview and Analysis their correct answer as obtained the findings. From the table 4.1.14 as shown zero(0) schooling years means that there were no schooling years education, i. e. illiterate and some literate people. The zero(0) schooling years number of respondents are 32(11.4%). The one to five(1-5) schooling years education means primary level education. The one to five(1-5) schooling years number of respondents are 17(6.10%). The six to eight(6-8) schooling years education means lower secondary level education. The six to eight(6-8) schooling years number of respondents are 3(1.10%). The nine to ten(9-10) schooling years education means secondary level education. The nine to ten(9-10) schooling years number of respondents are 51(18.20%). The eleven to twelve (11-12) schooling years education means higher secondary level education. The eleven to twelve (11-12) schooling years number of respondents are 90(32.10%). The bachelor level above(13 years +) schooling years education means higher study (professional) level education. The bachelor level (13-15) schooling years number of respondents are 63(22.50%). The Masters level (16-17) schooling years number of respondents are 18(6.50%). The Masters level above or double Masters (17+) schooling years number of respondents are 6(2.20%).

**Diagram 4 .1.7 Distribution of frequency, Schooling years of the respondents showing in Histogram**



From the diagram 4 .1.7 as shown zero (0) schooling years number 32, one to five(1-5) schooling years number 17, six to eight(6-8) schooling years number 3 , nine to ten(9-10) schooling years number 51 , eleven to twelve (11-12)schooling years number 90, are in order to no level of schooling years, Primary level, lower secondary level, secondary level, and Higher secondary level of schooling years of the respondents respectively. Bachelor level above (13 years +) schooling years education means higher study (professional)level education. The bachelor level (13-15) schooling years number of respondents are 63, Masters level (16-17) schooling years number are 18 , Masters level above or double Masters (17+) schooling years number of respondents are 6. From the above diagram 4 .1.18 as shown minimum frequency distribution at lower secondary

level(6-8) of respondents are 3 and maximum frequency distribution at higher secondary level(11-12) respondents are 90. The mean frequency distribution of the respondents is 10.69 and Std Deviation of the respondents 4.775. The total frequency distribution of the 280 respondents of Schooling years are as symmetrically distributed and shown in normal curve.

**Table 4 .1.10 Distribu tion of frequency, Percent of Dependency of family size of the respondents**

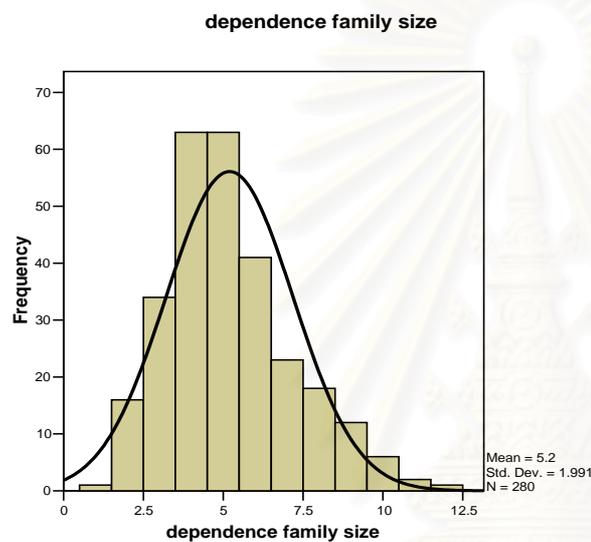
**Dependency of family size**

<b>Dependency of family size</b>	<b>Frequency</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
Valid 1	1	.4	.4
2	16	5.7	6.1
3	34	12.1	18.2
4	63	22.5	40.7
5	63	22.5	63.2
6	41	14.6	77.9
7	23	8.2	86.1
8	18	6.4	92.5
9	12	4.3	96.8
10	6	2.1	98.9
11	2	.7	99.6
12	1	.4	100.0
Total	280	100.0	

From the table 4 .1.10 shows and explain the Dependency of family size of the respondents affecting as their socio-economic factors of the society in Kathmandu district. The total number of 280 respondents were participated in the interview and Analysis their correct answer as obtained the findings. From the table4.1.16 as shown, the minimum dependency of family size member of respondents is 1 and its frequency

distribution is also 1(0.4%) and the maximum dependency of family size member of respondents is 12 and its frequency distribution is also 1(0.4%). The 4 and 5 dependency of family size member of respondents have their same maximum frequency distribution are 63(22.5%).

**Diagram 4.1.8 Distribution of frequency, of Dependency of family size of the respondents showing in Histogram**



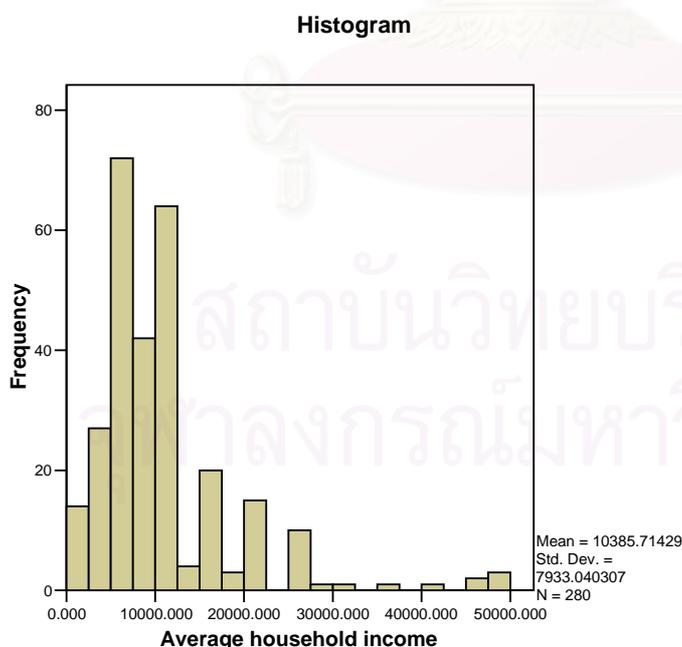
From the diagram 4.1.8 shows and explain the Dependency of family size of the respondents, the minimum dependency of family size member of respondents is 1 and its frequency distribution is also 1 and the maximum dependency of family size member of respondents is 12 and its frequency distribution is also 1. The 4 and 5 dependency of family size member of respondents have their same maximum frequency distribution are 63. The mean of the dependency of family size member of respondents 5.2 and its Std. Deviation is 1.991, The total dependency of family size member of respondents and their frequency distribution of the 280 respondents are as symmetrically distributed and shown in normal curve.

**Table 4 .1.11 Distribu tion of freq uency, Percent of Average household income of the respondents**

		Frequency	Valid Percent	Cumulative Percent
Valid	2000.000	14	5.0	5.0
	3000.000	11	3.9	8.9
	4000.000	16	5.7	14.6
	5000.000	31	11.1	25.7
	6000.000	20	7.1	32.9
	7000.000	21	7.5	40.4
	8000.000	30	10.7	51.1
	9000.000	12	4.3	55.4
	10000.000	44	15.7	71.1
	11000.000	5	1.8	72.9
	12000.000	15	5.4	78.2
	13000.000	3	1.1	79.3
	14000.000	1	.4	79.6
	15000.000	17	6.1	85.7
	16000.000	1	.4	86.1
	17000.000	2	.7	86.8
	18000.000	3	1.1	87.9
	20000.000	13	4.6	92.5
	21000.000	1	.4	92.9
	22000.000	1	.4	93.2
	25000.000	10	3.6	96.8
	28000.000	1	.4	97.1
	30000.000	1	.4	97.5
	35000.000	1	.4	97.9
	40000.000	1	.4	98.2
	45000.000	2	.7	98.9
	50000.000	3	1.1	100.0
	Total	280	100.0	

From the table 4.1.11 shows and explain the Average household income of the respondents affecting as their socio-economic factors of the society in Kathmandu district. The total number of 280 respondents were participated in the interview and Analysis their correct answer as obtained the findings. From the table4.1.18 as shown, the minimum Average household income of respondents is Rs 2000.000 and its frequency distribution are 14 (5.0%) and the maximum Average household income of respondents is Rs 50000.000 and its frequency distribution are 3(1.1%). The Average household income have Rs10000.000 of respondents and their maximum frequency distribution are 44(15.7%) But household income of respondents are as Rs 14,000.000, 16,000.000, 21,000.000, 22,000.000, 28,000.000, 30,000.000, 35,000.000, 40,000.000 have one 1 (0.4%) frequency distribution repeated respondents are as respectively.

**Diagram4.1.9 Distribution of frequency, of Average household income of the respondents showing in Histogram**



From the diagram 4.1.9 shows and explain the Average household income of the respondents. From the table4.1.19 as shown, the minimum Average household

income of respondents is Rs 2000.000 and its frequency distribution are 14 and the maximum Average household income of respondents is Rs 50000.000 and its frequency distribution are 3. The Average household income have Rs10000.000 of respondents and their maximum frequency distribution are 44. But Average household income of respondents are as Rs 14,000.000, 16,000.000, 21,000.000, 22,000.000, 28,000.000, 30,000.000, 35,000.000, 40,000.000 and 1 frequency distribution repeated respondents are as respectively.

**Table 4.1 .12 Distribution of frequency, Percent of Source of income of the respondents**

<b>Source of income</b>				
Source of income(code)	of	Frequen cy	Valid Percent	Cumulative Percent
Salary	1	153	54.6	54.6
trading	2	56	20.0	74.6
supplementary benefit	3	11	3.9	78.5
outsidesupport	4	12	4.0	82.5
Agriculture	5	34	12.1	94.6
other	6	14	5.0	100.00
Total		280	100.00	

From the table 4 .1.12 shows and explain the Source of income of the respondents affecting as their socio-economic factors of the society in Kathmandu district. The total number of 280 respondents were shearing of their source of income and

participated in the interview and Analysis their correct answer as obtained the findings. From the table 4.1.20 as shown, the salary is the main component of Average household income of respondents. Its frequency distribution are 153(54.6%) , Similarly trading are 56(20.0%), supplementary benefit are 11(3.9%), outside support are 12(4.0%) Agriculture 34(12.10%) and others are 14(5.0%) as respectively.

#### 4.2 Regression (First Model)

Analysis of dependent variable  $\ln(\text{knowledge}/1-\text{knowledge})$  and independent variables Income, education years of schooling, Gender, Age of persons interviewed, dependency of family size and place of living

**Table 4.2.1 OLS estimated for knowledge about HIV/AIDS**

Variables	Coefficient	Std. Error	t-Statistic	Prob.
constant	-1.365591	0.376894	-3.623276	0.0003*
ln ( income)	0.516808	0.097466	5.302447	0.0000*
Education	0.014454	0.005889	2.454485	0.0147*
gender	-0.080251	0.054061	-1.484447	0.1388
age	0.006258	0.003534	1.770961	0.0777*
dependency	-0.002513	0.013446	-0.186870	0.8519
place	-0.062061	0.054331	-1.142272	0.2543

\*sign in above table is significant

$$\ln(\text{knowledge}/1-\text{knowledge}) = -1.365591 + 0.516808 \ln(\text{income}) + 0.014454 (\text{education}) - 0.08025 (\text{Gender}) + 0.006258 (\text{Age}) - 0.002513 (\text{dependency}) - 0.062061 (\text{place}) + u$$

t-Statistic      (-3.623276)      (5.302447)      (2.454485)      (-1.484447)      (1.770961)      (-0.186870)      (-1.142272)

R-squared=0.154979    Adjusted R-squared= 0.136407    S.E. of regression=0.441105  
 Sum squared resid= 53.11867    F-statistic=8.344809  
 Prob(F-statistic)= 0.000000

#### 4.2.2 Setting Hypothesis:

Null Hypothesis        :  $H_0 : \beta_i = 0$

Alternative Hypothesis:  $H_a : \beta_i \neq 0$

F-ratio for a test of overall significance as a matter of course. The value of the F-statistic(8.344809) is a calculated value of F or  $F_{cal}(8.344809)$  The critical F- value or table value of F at degree of freedom(k, N-k-1), where k=6, N=280

At,  $\alpha=0.05$  level of significance  $F_{tab}(6, 273)=2.10$  and p value at 0.05 level of significance(1.96) , calculated value of  $F >$  critical F- value

i.e.  $F_{cal}(8.344809) > F_{tab}(6, 273)=2.10$ , So  $F_{cal\ value} > F_{tab}$

This means all coefficients in above regression model were not equal to zero simultaneously. So we can reject the null hypothesis and we can't reject the Alternative hypothesis . Therefore we conclude that the regression equation does indeed have a significant overall fit. So our model is accepted.

#### 4.2.3 Factors affecting knowledge about HIV/AIDS of people in Kathmandu District.

In order to establish a model that describes the relationship between knowledge as a dependent variable and socio-economic factors of people's characteristics as independents variables, some necessary characteristics of 280 respondents were collected to analyze the association between these variables, which were Income,

education years of schooling, Gender, Age of persons interviewed, dependency of family size and place of living. Use ordinary least square method (OLS) to estimate values of coefficients and other indicators. The results were listed as below

In the table 4.2.1, The value of R-squared 0.154979 that means 15.50% of independent variables can explain for dependent variable, the other of 84.5% should be needed to be modified by error term. Value of F test ,the calculated value of F was 8.344809 and table value of F with degree of freedom( $F_{at6,273}=2.10$ ),and verify with p value, F value > 0.05 of p value this means all coefficients in above regression model were not equal to zero simultaneously or in other word dependent variable depends on some independent variables. So we can reject the null hypothesis and conclude that the regression equation does indeed have a significant overall fit. So our model is accepted. Adjusted R-squared was equal to 0.136407 its means all independent variables could explain 13.64% for dependent variables if insignificant variables were rejected from model and degree of freedom(  $F_{at6,273}$ ) would be set off.

**Age variables :** Coefficient of age variable were quite significant at 95% of confidence interval because p values quite to 0.05 that means knowledge about HIV/AIDS of people quite depends on age in other words age quietly affect to knowledge about HIV/AIDS of people. The coefficient of age was positive it implies that Healthy education and knowledge with associated with age of the people in the society. Therefore policy should focused on younger age.

**Gender variable :** Coefficient of Gender variable was insignificant at 95% of confidence interval because p values > 0.05 that means knowledge about HIV/AIDS of people did not depends on gender in other words gender did not affect to knowledge

about HIV/AIDS of people .In this model gender may used as dummy variable one for male , zero for female. Female as the base, there was statistically difference between male and female in terms of knowledge about HIV/AIDS. In this model male have 8.02%knowledge higher than female. But negative sign of the coefficient of gender , if gender = 1 for male implies that focus on male about HIV/AIDS in the society . so policy should focused on female to rise the knowledge about HIV/AIDS in the society.

**Education variables:** Coefficient of Education variable were significant at 95% of confidence interval because p values<0.05 that means knowledge about HIV/AIDS of people depends on Educational level, the sign of coefficient of education was positive it implies that education increases, knowledge also increases .Knowledge and education are correlated to each other .Therefore policy should focused and adopted to rise the education and knowledge in the society. In this model education increased by 1year then odd ratio increased by 1.44% about HIV/AIDS of people in the society.

**Place of living variable:** Coefficient of place of living variable was insignificant at 95% of confidence interval because p values >0.05 that means knowledge about HIV/AIDS of people did not depends on place of living But place as used in this model as dummy variable as in the base of rural, there was statistically difference between urban and rural in terms of knowledge about HIV/AIDS. In this model urban have 6.2%knowledge higher than rural. But negative sign of the coefficient of place shows that urban has less knowledge about HIV/AIDS in the society so policy should focused on urban to rise the knowledge about HIV/AIDS in the Kathmandu district.

**Dependency variable:** Coefficient of Dependency of family size variable was insignificant at 95% of confidence interval because p values >0.05 that means knowledge about HIV/AIDS of people did not depends on Dependency of family size in other words Dependency of family size did not affect to knowledge about HIV/AIDS of

people .The negative sign of the coefficient implies that the dependency family size should be less. So policy should focused and adopted to family planning.

**Income variable:** Income in this model used as natural logarithm from with the aim is to describe the change in percentage of income .Coefficient of income was very significant at 95% of confidence interval because p value  $<0.05$  and the sign of coefficient was positive, it means income could increase knowledge about HIV/AIDS of people . In this case when income increased one percent, odd ratio would increase 0.52% with the condition was other independent variables are holding constant.

In order to forecast what level of income ( with condition of other independent variables were held constant) can reach knowledge about HIV/AIDS of people to 100% we can use above model to estimate as follow.

When income increased 1% , knowledge of people would increase 0.52% . in order to knowledge about HIV/AIDS of people reached from 85%(average level) to 100% need 15% added. So the percentage of income is added to make odd ratio increasing from  $(0.85/1-0.85)$  to  $(30/31-30)$  equal:  $5.67/30.00=0.19$  from the average value of income .we can calculate the absolute amount of money need to add so that odd ratio could reach to 100% is  $0.19*10,385.72+10,385.72=Rs12,359.01$

So in order to income, odd ratio of people about HIV/AIDS reach to 100%, the income per month of people need to increase from Rs 10,385.72to Rs12,359.01 on an average.

Residual error(U):

Residual error(u) of this model are as

Minimum(.865951776504517),Maximum(1.183123230934143),

Mean(.0000000000000001) and Std. Deviation(.436336464998617)

Diagram 4.2.4 Standardized Residual error (u):

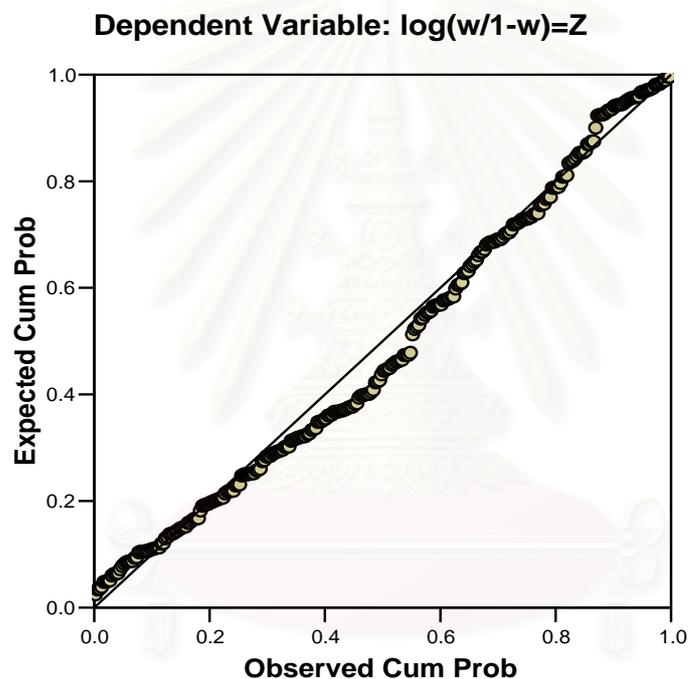
Standardized Residual error (u ) of this model are as

Minimum(-1.963), Maximum(2.682), Mean(.000),

Std. Deviation(.989), and N(280)

Diagram 4.2.1 Normal P-P Plot of Regression Standardized Residual

### Normal P-P Plot of Regression Standardized Residual



From the diagram 4.2.1 shows and explain the regression model about knowledge and socio- economic characteristics of the people in society of Kathmandu district as strongly participated in the survey questionnaire about HIV/AIDS for interviewed. Here knowledge as a dependent variable and socio-economic characteristics as independent variables .,Normal P-P Plot of regression standardized residual diagram shows that X-axis as observed cumulative probability value and Y-axis as Expected cumulative probability value. The diagonal smooth straight line show that sample as normal probability distribution. Observed cumulative probability value as approximately

coincide on the diagonal smooth straight line. It means that observed sample as normally distributed. So model is accepted and significant.

#### 4.3 Regression (Second Model)

Analysis of dependent variable Utilization of counseling ( $UT_{(of C)}$ ) and independent variables Income, education years of schooling, Gender, Age of persons interviewed, dependency of family size, place of living and Knowledge

**Table 4.3.1 OLS estimated for Utilization of Counseling about HIV/AIDS**

Variables	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-0.464007	4.360227	-0.106418	0.9153
ln(Income)	0.437670	1.129151	0.387610	0.6986
Knowledge*income	-0.313866	1.327637	-0.236410	0.8133
Education	-0.004310	0.071500	-0.060275	0.9520
Knowledge*Education	-0.016439	0.086005	-0.191143	0.8486
Gender	0.673669	0.712657	0.945292	0.3454
Knowledge*gender	-0.359031	0.826871	-0.434205	0.6645
Age	0.000808	0.048588	0.016626	0.9867
Knowledge*age	0.009085	0.055835	0.162707	0.8709
Dependency	0.360153	0.179660	2.004637	0.0460*
Knowledge*dependency	-0.451148	0.209970	-2.148630	0.0326*
Place	0.607565	0.725990	0.836878	0.4034
Knowledge*place	-0.834487	0.844604	-0.988021	0.3240
Knowledge	3.567667	5.147302	0.693114	0.4888

\*sign in above table is significant

$$UT_{(of C)} = -0.464007 + 0.437670 \ln(\text{Income}) - 0.313866 (\text{knowledge}) * \ln(\text{Income})$$

$$t\text{-Statistic}(-0.106418) \quad (0.387610) \quad (-0.236410)$$

$$- 0.004310 (\text{education}) - 0.016439(\text{knowledge}) * (\text{education})$$

$$(-0.060275) \quad (-0.191143)$$

$$+0.673669 (\text{Gender}) - 0.359031(\text{knowledge}) * (\text{Gender})$$

$$(0.945292) \quad (-0.434205)$$

$$+0.000808 (\text{Age}) + 0.009085(\text{knowledge}) * (\text{Age}) + 0.360153 (\text{dependency})$$

$$(0.016626) \quad (0.162707) \quad (2.004637)$$

$$-0.451148(\text{knowledge}) * (\text{dependency}) + 0.607565 (\text{place})$$

$$(-2.148630) \quad (0.836878)$$

$$-0.834487(\text{knowledge}) * (\text{place}) + 3.567667 (\text{knowledge}) + e.$$

$$(-0.988021) \quad (0.693114)$$

$$R\text{-squared} = 0.115776 \quad \text{Adjusted R-squared} = 0.072562$$

$$S.E. \text{ of regression} = 0.756113 \quad \text{Sum squared resid} = 152.0739$$

$$F\text{-statistic} = 2.679139 \quad \text{Prob}(F\text{-statistic}) = 0.001485$$

Residual error(e):

Residual error(e) of this model areas

Minimum(.865951776504517),

Maximum(1.183123230934143),

Mean(.0000000000000001) and

Std. Deviation(.436336464998617)

### 4.3.2 Setting Hypothesis:

Null Hypothesis :  $H_0 : \gamma_i = 0$

Alternative Hypothesis:  $H_a : \gamma_i \neq 0$

F-ratio for a test of overall significance as a matter of course. The value of the F-statistic(2.679139) is a calculated value of F or  $F_{cal}(2.679139)$  The critical F- value or table value of F at degree of freedom(k, N-k-1), where k=13 ,N=280

At,  $\alpha=0.05$  level of significance  $F_{tab}(13, 266)=1.75$  and p value at 0.05 level of significance(1.96) , calculated value of  $F >$  critical F- value

i.e.  $F_{cal}(2.679139) > F_{tab}(13, 266)=1.75$ , So  $F_{cal\ value} > F_{tab\ value}$

This means all coefficients in above regression model were not equal to zero simultaneously. So we can reject the null hypothesis and we can't reject the Alternative hypothesis . Therefore we conclude that the regression equation does indeed have a significant overall fit. So our model is accepted.

### 4.3.3 Factors affecting Utilization of Counseling about HIV/AIDS of people in Kathmandu District.

In order to establish a model that describes the relationship between Utilization of Counseling as a dependent variable and combine affects knowledge, socio-economic factors of people, some necessary characteristics, knowledge as of independents variables of 280 respondents were collected to analyze the association between these variables, which were Income, education years of schooling, Gender, Age of persons interviewed, dependency of family size and place of living. Use ordinary least square method (OLS) to estimate values of coefficients and other indicators. The results were listed as below.

In the table 4.3.1, The value of R-squared 0.115776 that means 11.58% of independent variables can explain for dependent variable, the other of 88.42% should be

needed to be modified by error term. Value of F test ,the calculated value of F was 2.679139 and table value of F with degree of freedom( $F_{at13,266}=1.75$ ),and verify with p value, F value $>0.05$  of p value this means all coefficients in above regression model were not equal to zero simultaneously or in other word dependent variable depends on some independent variables. So we can reject the null hypothesis and we can't reject the Alternative hypothesis . Therefore we conclude that the regression equation does indeed have a significant overall fit. So our model is accepted. Adjusted R-squared was equal to 0.072562 its means all independent variables could explain 7.26% for dependent variables if insignificant variables were rejected from model and degree of freedom( $F_{at13,266}$ ) would be set off.

**Income variable:** Income in this model used as natural logarithm from with the aim is to describe the change in percentage of income .Coefficient of income was insignificant at 95% of confidence interval because p value $>0.05$ , it means utilization of counseling about HIV/AIDS of people did not depends on income of people . In other words income did not affect to utilization of counseling about HIV/AIDS of people .It is not benefited to investment money to the utilization of counseling visit about HIV/AIDS program in the society. The sign of coefficient of income was positive But statistically no meaningful to increase in income to utilization of counseling visit about HIV/AIDS program in the society. the individual as well as policy maker focuses it may excluded from the model.

**The cross variable know ledge and income (Knowledge\*income ):** Income in this model used as natural logarithm from with the aim is to describe the change in percentage of income. Coefficient of Knowledge\*income was insignificant at 95% of confidence interval because p value $>0.05$ , it means utilization of counseling about HIV/AIDS of people did not depends on Knowledge\*income of people . in other words

Knowledge\*income did not affect to utilization of counseling about HIV/AIDS of people . The negative sign of the coefficient of Knowledge\*income implies that higher income reduce effectiveness of knowledge on the utilization of counseling about HIV/AIDS. If more knowledge and income to have the people less utilization of counseling visit about HIV/AIDS ,so the program could not be run successfully in the society. It is not statistically meaningful to increase the knowledge and income in this model. so it may excluded from the model.

**Education variable:** Coefficient of Education variable were insignificant at 95% of confidence interval because p values>0.05 that means utilization of counseling about HIV/AIDS of people did not depends on Educational level in other words Educational level did not affect to utilization of counseling about HIV/AIDS of people. The negative sign of the coefficient of Education reduces the utilization of counseling about HIV/AIDS. If more Education to have the people less utilization of counseling visit about HIV/AIDS . Utilization of counseling visit program could not be run successfully in the society. It is not statistically meaningful to increase the Education in this model . so it may excluded from the model.

**The cross (Knowledge\*Education)variable:**

Coefficient of Knowledge\*Education variable were insignificant at 95% of confidence interval because p values>0.05 that means utilization of counseling about HIV/AIDS of people did not depends on Educational level in other words Knowledge\*Education level did not affect to utilization of counseling about HIV/AIDS of people. The negative sign of the coefficient of knowledge and Education implied that higher education unexpectedly reduce the effectiveness of knowledge on the utilization of counseling about HIV/AIDS. If more knowledge and Education to have the people less utilization of counseling visit about HIV/AIDS . Utilization of counseling visit

program could not be run successfully in the society. It is not statistically meaningful to increase the Education in this model . so it may excluded from the model.

**Gender variable:** Coefficient of Gender variable was insignificant at 95% of confidence interval because p values  $>0.05$  that means utilization of counseling about HIV/AIDS of people did not depends on gender in other words gender did not affect to utilization of counseling about HIV/AIDS of people .In this model gender may used as dummy variable one for male , zero for female. Female as the base, there was statistically difference between male and female in terms of utilization of counseling about HIV/AIDS. In this model male have 67.36% visit of utilization of counseling about HIV/AIDS higher than female. But insignificant and positive sign of the coefficient of gender statistically meaningless visit of utilization of counseling about HIV/AIDS in the society so policy focuses that it may excluded from the model.

**Knowledge\*gender variable:** Coefficient of Knowledge\*gender variable was insignificant at 95% of confidence interval because p values  $>0.05$  that means utilization of counseling about HIV/AIDS of people did not depends on Knowledge\*gender in other words Knowledge\*gender did not affect to utilization of counseling about HIV/AIDS of people. The negative sign of the coefficient of knowledge and gender if gender = 1 for male implied that higher male unexpectedly reduce the effectiveness of knowledge on the utilization of counseling about HIV/AIDS. If more gender for male less utilization of counseling visit about HIV/AIDS in the society .So policy should focused on female to rise the knowledge about HIV/AIDS on utilization of counseling visit for VCT service.

**Age variables:** Coefficient of age variable were insignificant at 95% of confidence interval because p values  $>0.05$  that means utilization of counseling about HIV/AIDS of people did not depends on age. In other word age implies that being older does not affect

the effectiveness on utilization of counseling about HIV/AIDS of people. The coefficient of age was positive it implies that Healthy education and knowledge with associated with age of the people in the society. Therefore policy should focused on younger age.

**Knowledge\*age variables:** Coefficient of Knowledge\*age variable were insignificant at 95% of confidence interval because p values  $>0.05$  that means utilization of counseling about HIV/AIDS of people did not depends on Knowledge\*age in other words Knowledge\*age implies that being older does not affect the effectiveness of knowledge on utilization of counseling about HIV/AIDS of people. The coefficient of Knowledge\*age was positive it implies that Healthy education and knowledge with associated with age of the people in the society. Therefore policy should focused on younger age.

**Place of living variable:** Coefficient of place of living variable was insignificant at 95% of confidence interval because p values  $>0.05$  that means utilization of counseling about HIV/AIDS of people did not depends on place of living in other words place of living rural and urban did not affect to utilization of counseling about HIV/AIDS of people. People use dummy variable as place of living in this model .In this model use one as urban and zero to rural , rural as the base, there was statistically difference between urban and rural in terms of utilization of counseling about HIV/AIDS. In this model urban have more visit of utilization of counseling about HIV/AIDS than rural. Therefore priority should be given to rural as development in the society. But insignificant and positive sign of the coefficient of place of living statistically meaningless visit of utilization of counseling about HIV/AIDS in the society . But it could be benefited to the consumers as well as service provider to achieve the target of the programs. So policy focuses that it may expansion everywhere as well as rural area of Kathmandu district of Nepal. Therefore there may available many facilities

as people may use more utilization of counseling visit about HIV/AIDS per year. But statistically insignificant variable may be excluded from the model

**Knowledge\*place of living variable:** Coefficient of Knowledge\*place of living variable was insignificant at 95% of confidence interval because p values  $>0.05$  that means utilization of counseling about HIV/AIDS of people did not depend on Knowledge\*place of living in other words Knowledge\*place of living rural and urban implies that being higher urbanization place of living unexpectedly reduce the effectiveness of knowledge on utilization of counseling about HIV/AIDS of people. People use dummy variable as place of living in this model. In this model use one as urban and zero to rural, rural as the base, there was statistically difference between urban and rural in terms of utilization of counseling about HIV/AIDS. In this model urban have more visit of utilization of counseling about HIV/AIDS than rural. Therefore priority should be given to rural as development in the society. But insignificant and negative sign of the coefficient of Knowledge\*place of living implies that being higher urbanization if urban=1 and more people have been living in the urban area, they have unexpectedly reduced the effectiveness of knowledge, they use less utilization of counseling about HIV/AIDS for VCT service. It could not be benefited to the consumers as well as service provider to achieve the target of the programs. So policy focuses that it may expand knowledge everywhere as well as rural area of Kathmandu district of Nepal. Therefore there may be available many facilities as people may use more utilization of counseling visit about HIV/AIDS per year. But statistically insignificant variable may be excluded from the model.

**Knowledge variable:** Coefficient of Knowledge variable was insignificant at 95% of confidence interval because p values  $>0.05$  that means utilization of counseling about HIV/AIDS of people did not depend on Knowledge in other words Knowledge

did not affect to utilization of counseling about HIV/AIDS of people. The sign of coefficient of knowledge was positive and insignificant implies that being higher knowledge does not affect the effectiveness on utilization of counseling about HIV/AIDS. In this model knowledge as of separately use are statistically insignificant

**Dependency variable:** Coefficient of Dependency of family size variable was significant at 95% of confidence interval because  $p$  values  $< 0.05$  that means utilization of counseling about HIV/AIDS of people depends on Dependency of family size in other words Dependency of family size affect to utilization of counseling about HIV/AIDS of people. If more Dependency of family size member use more utilization of counseling about HIV/AIDS of people. The sign of Coefficient of Dependency of family size variable was positive implies that being higher Dependency of family size increased utilization of counseling about HIV/AIDS of people. In this model when Dependency of family size member increased one percent (1%), utilization of counseling about HIV/AIDS would increase 36.01% people visit per year with the condition other independent variables are holding constant.

**Knowledge\*dependency variable :** Coefficient of Knowledge\*dependency of family size variable was significant at 95% of confidence interval because  $p$  values  $< 0.05$  that means utilization of counseling about HIV/AIDS of people depends on Knowledge\*dependency of family size in other words Knowledge\*dependency of family size affect to utilization of counseling about HIV/AIDS of people. If more knowledge to have People's family size member use less utilization of counseling about HIV/AIDS of people. The sign of Coefficient of Knowledge\*dependency of family size variable was  $-ve$ (negative) implies that higher dependency family size member unexpectedly reduce the effectiveness of knowledge on utilization of counseling about HIV/AIDS of people. In this model when one percent (1%) of Knowledge and

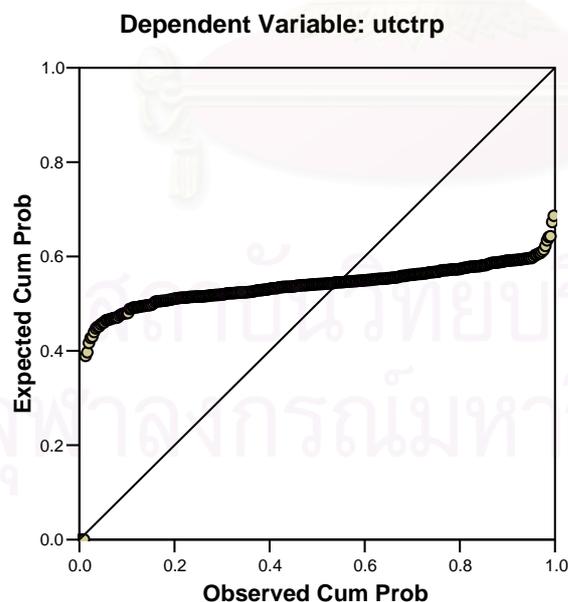
dependency family size member increased per year, it would reduced the number of visit per year by 45.11% on utilization of counseling about HIV/AIDS with the condition other independent variables are holding constant. Therefore policy should be focused and implemented to rise the knowledge and reduced the dependency family size member among the people of the society then it will be benefited to the stakeholder .

Standardized Residual error (e:)

Standardized Residual error (e) of this model are as Minimum(-1.963), Maximum(2.682), Mean(.000), Std. Deviation(.989), and N(280)

Diagram 4.3.1

**Normal P-P Plot of Regression Standardized Residual**



From the diagram 4.3.1 shows and explain the regression model about knowledge and socio- economic characteristics of the people in society of Kathmandu

district as strongly participated in the survey questionnaire about HIV/AIDS for interviewed. Here Utilization of Counseling (utctrp) as a dependent variable and knowledge combine affect with socio-economic characteristics as independent variables. Normal P-P Plot of regression standardized residual diagram shows that X-axis as observed cumulative probability value and Y-axis as Expected cumulative probability value. The diagonal smooth straight line show that sample as normal probability distribution. But Observed cumulative probability value as not approximately coincide on the diagonal smooth straight line. It is rise from(0.4) Y-axis as Expected cumulative probability value along with observed sample smoothly distributed and cross the diagonal smooth straight line and also rise to end at(0.7) of expected value. It means that observed sample as normally distributed but small value. So model is accepted and significant.

#### **4.4 Regression (Third Model)**

Analysis of dependent variable Utilization of counseling and Testing ( $UT_{of(C+T)}$ ) and independent variables Income, education years of schooling, Gender, Age of persons interviewed, dependency of family size, place of living and Knowledge

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**Table 4.4.1 OLS estimated for Utilization of Counseling and testing visit about HIV/AIDS**

Variables	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.693147	1.93E-12	3.59E+11	0.0000*
Income	7.11E-12	5.00E-13	14.23775	0.0000*
Knowledge*income	-8.54E-12	5.87E-13	-14.54176	0.0000*
Education	-1.01E-14	3.16E-14	-0.317901	0.7508
Knowledge*Education	1.28E-14	3.81E-14	0.336793	0.7365
Gender	2.23E-13	3.15E-13	0.708708	0.4791
Knowledge*gender	-3.27E-13	3.66E-13	-0.894568	0.3718
Age	7.91E-14	2.15E-14	3.677681	0.0003*
Knowledge*age	-9.04E-14	2.47E-14	-3.659080	0.0003*
Dependency	1.17E-13	7.95E-14	1.473156	0.1419
Knowledge*dependency	-1.50E-13	9.29E-14	-1.611389	0.1083
Place	8.28E-13	3.21E-13	2.576938	0.0105*
Knowledge*place	-8.87E-13	3.74E-13	-2.373555	0.0183*
Knowledge	3.69E-11	2.28E-12	16.19404	0.0000*

---

\*sign in above table is significant

$$UT_{of(C+T)} = 0.693147 + 7.11E-12 \ln(\text{Income}) - 8.54E-12(\text{knowledge}) * \ln(\text{Income})$$

$$t\text{-Statistic}(3.59E+11) (14.23775) \quad (-14.54176)$$

$$-1.01E-14 (\text{education}) + 1.28E-14 (\text{knowledge}) * (\text{education})$$

$$(-0.317901) \quad (0.336793)$$

$$+ 2.23E-13(\text{Gender}) - 3.27E-13(\text{knowledge}) * (\text{Gender})$$

$$(0.708708) \quad (-0.894568)$$

$$+ 7.91E-14 (\text{Age}) - 9.04E-14(\text{knowledge}) * (\text{Age}) + 1.17E-13 (\text{dependency})$$

$$(3.677681) \quad (-3.659080) \quad (1.473156)$$

$$-1.50E-13(\text{knowledge}) * (\text{dependency}) + 8.28E-13 (\text{place})$$

$$(-1.611389) \quad (2.576938)$$

$$-8.87E-13 (\text{knowledge}) * (\text{place}) + 3.69E-11 (\text{knowledge}) + e.$$

$$(-2.373555) \quad (16.19404)$$

$$R\text{-squared} = 1.000000 \quad \text{Adjusted R-squared} = 1.000000$$

$$S.E. \text{ of regression} = 3.35E-13 \quad \text{Sum squared resid} = 2.98E-23$$

$$F\text{-statistic} = 2.11E+11 \quad \text{Prob}(F\text{-statistic}) = 0.000000$$

#### 4.4.2 Setting Hypothesis:

Null Hypothesis :  $H_0 : \gamma_i = 0$

Alternative Hypothesis:  $H_a : \gamma_i \neq 0$

F-ratio for a test of overall significance as a matter of course. The value of the F-statistic(2.11E+11) is a calculated value of F or  $F_{cal}(2.11E+11)$  The critical F- value or table value of F at degree of freedom(k, N-k-1), where k=13 ,N=280

At,  $\alpha=0.05$  level of significance,  $F_{tab}(13, 266=1.75)$  and p value at 0.05 level of significance(1.96) , calculated value of  $F >$  critical F- value

i.e.  $F_{cal}(2.11E+11) > F_{tab}(13, 266=1.75)$ , So  $F_{cal \text{ value}} > F_{tab \text{ value}}$

This means all coefficients in above regression model were not equal to zero simultaneously. So we can reject the null hypothesis and we can't reject the Alternative hypothesis. Therefore we conclude that the regression equation does indeed have a significant overall fit. So our model is significant and accepted.

**R-square:** The value of R-square 1 means perfect R-square, this shows that our third model fit perfectly in our data i.e. there is no error term associate it. The observed value of pretest counseling, HIV tested, HIV+ve tested and post test counseling were got from 280 respondents interviewed. Each and every respondents had taken all service as one (1) by one (1) visit respectively in Hospital and VCT centers. These four visit use as in U(c+t) utilization of counseling and testing about HIV/AIDS. The mean of U(c+t) was exactly one(1) So

$$R^2 = 1 - \frac{RSS}{TSS} = 1 - \frac{\sum e^2}{\sum (UT_{(c+t)} - \bar{UT}_{(c+t)})^2} \text{ where } \sum e = 0, \sum (UT_{(c+t)} - \bar{UT}_{(c+t)}) = 0$$

Therefore  $R^2 = 1$

#### **4.4.3 Factors affecting Utilization for HIV/ AIDS counseling and testing service in Kathmandu district :**

Model expressed factors that affected to Utilization included for counseling and Testing service as dependent variable and Socio-economic characteristics of people and expected knowledge about HIV/AIDS, as were independent variables which were Gender, Living of place, income, Education level, Age and Dependency of family size. To use independent variables, and OLS least square method was used to estimate the model. Because, standard linear regression models assume that error term in the dependent variable are uncorrelated with independent variables. When this is not the case, linear regression using ordinary least square OLS, no longer provides optimal model estimates.

In order to establish a model that describes the relationship between Utilization of Counseling and testing of HIV/AIDS as a dependent variable and combine affects knowledge, socio-economic factors of people, some necessary characteristics, knowledge as of independents variables of 280 respondents and their interview were collected to analyze the association between these variables, which were Income, education years of schooling, Gender, Age of persons interviewed, dependency of family size and place of living. Use ordinary least square method (OLS) to estimate values of coefficients and other indicators. The results were listed as below.

The value of In this model All coefficients were not equal to zero simultaneously because F value was very significant that means we can rejected null Hypothesis ( $\gamma_i = 0$ ), and we can't rejected Alternative Hypothesis( $\gamma_i \neq 0$ ), that means accepted.

In the table 4.4.1 Value of R Square was equal to 1.000000 it means that 100.00% of dependent variable could be explained by combination of independent variables.

Value of F test ,the calculated value of F was (2.11E+11) and table value of F with degree of freedom( $F_{at13,266}=1.75$ ),and verify with p value, F value>0.05 of p value this means all coefficients in above regression model were not equal to zero simultaneously or in other words dependent variable depends on some independent variables. So we can reject the null hypothesis and we can't reject the Alternative hypothesis . Therefore we conclude that the regression equation does indeed have a significant overall fit. So our model is significant and accepted. Adjusted R-squared was equal to 1.000000 it means all independent variables could explain100.00% for dependent variables if insignificant variables were rejected from this model and degree of freedom(  $F_{at13,266}$ ) would be set off.

**Income variable:** Income in this model used as natural logarithm from with the aim is to describe the change in percentage of income .Coefficient of income was very significant at 95% of confidence interval because p value  $<0.05$  and the sign of coefficient was positive, it means income could increase utilization of counseling and testing about HIV/AIDS of people. In this case when income increased one percent, utilization of counseling and testing about HIV/AIDS of people would increase 711. E-12 visit per year with the condition was other independent variables are holding constant. Therefore policy focuses on individual income maintained, applicable and priority should be given to the target groups as implemented programs.

**Knowledge\*income variable:** Income in this model used as natural logarithm from with the aim is to describe the change in percentage of income. Coefficient of Knowledge\*income was more significant at 95% of confidence interval because p value $<0.05$ , it means utilization of counseling and testing about HIV/AIDS of people depends on Knowledge\*income of people. In other words Knowledge\*income implies that higher income reduce effectiveness of knowledge on utilization of counseling and testing about HIV/AIDS of people But the negative(-ve) sign of the coefficient of combine form of income and knowledge, it reduces the number of utilization of counseling and testing of HIV/AIDS visit per year. If people have More knowledge and income less utilization of counseling and testing visit about HIV/AIDS per year. It is benefited to the consumers, so policy should be focused and implemented to rise the knowledge about HIV/AIDS to the target groups as well as general Population in the society.

**Education variables:** Coefficient of Education variable were insignificant at 95% of confidence interval because p values $>0.05$  that means utilization of counseling and testing about HIV/AIDS of people did not depends on general Educational in other

words general Educational implies that higher education unexpectedly reduce the effectiveness on utilization of counseling and testing about HIV/AIDS of people. The negative sign of coefficient of education is statistically insignificant and inapplicable to the target verses achievement and also negative impact on the program . In this model general education could not benefited to the consumers as well as service provider to achieve the target of the programs. So policy should focused to improve and modify the education system.

**Knowledge\*Education variables:** Coefficient of Knowledge\*Education variable were insignificant at 95% of confidence interval because  $p \text{ values} > 0.05$  that means utilization of counseling and testing about HIV/AIDS of people did not depends on Knowledge\*Educational in other words Knowledge\*Educational implies that higher education unexpectedly reduce the effectiveness of knowledge on utilization of counseling and testing about HIV/AIDS of people. The positive sign of coefficient of Knowledge\*education is statistically insignificant and inapplicable to the target verses achievement on the program . In this model Knowledge\*education could not benefited to the consumers as well as service provider to achieve the target of the programs. So policy should focused to improve and modify the education system.

**Gender variable:** Coefficient of Gender variable were insignificant at 95% of confidence interval because  $p \text{ values} > 0.05$  that means utilization of counseling and testing about HIV/AIDS of people did not depends on Gender in other words if  $\text{gender} = 1$  for male implies that focus on male to utilization of counseling and testing about HIV/AIDS of people. The positive sign of coefficient of Gender is statistically insignificant and inapplicable to the target verses achievement of VCT service on the program .But in this model gender may used as Female as the base, there was statistically difference between male and female in terms of utilization of counseling

and testing about HIV/AIDS. In this model male have more visit of utilization of counseling and testing about HIV/AIDS than female. Therefore priority should be given to female in the society. But insignificant and positive sign of the coefficient of gender statistically no benefited to the consumers as well as service provider to achieve the target of the programs, So policy should focused on female.

**Knowledge\*Gender variables:** Coefficient of Knowledge\*Gender variable were insignificant at 95% of confidence interval because p values  $>0.05$  that means utilization of counseling and testing about HIV/AIDS of people did not depends on Knowledge\*Gender in other words Knowledge\*gender if gender = 1 for male implies that higher male unexpectedly reduce the effectiveness of knowledge utilization of counseling and testing about HIV/AIDS of people. The negative sign of coefficient of Knowledge\*Gender is statistically insignificant and inapplicable to the target verses achievement on the program .But in this model gender may used as dummy variable one for male , zero for female. Female as the base, there was statistically difference between male and female in terms of utilization of counseling and testing about HIV/AIDS. In this model male have more visit of utilization of counseling and testing about HIV/AIDS than female. Therefore priority should be given to female in the society. But insignificant and negative sign of the coefficient of Knowledge\*gender statistically not benefited to the consumers as well as service provider to achieve the target of the programs. As a programmer service should be provided in the basis of equality. So policy should focused on female to rise the knowledge about HIV/AIDS on utilization of counseling and testing visit for VCT service.

**Age variable:** Coefficient of age variable were more significant at 95% of confidence interval because p values  $<0.05$  that means utilization of counseling and testing visit about HIV/AIDS of people depends on age in other word age implies that

healthy and younger people more effectiveness on utilization of counseling and testing visit about HIV/AIDS per year. The sign of the coefficient of age was positive, when people become adolescent and younger more uses of utilization of counseling and testing visit about HIV/AIDS per year and policy should focused on younger.

**Knowledge\*age variables:** Coefficient of Knowledge\*age variable were more significant at 95% of confidence interval because p values  $<0.05$  that means utilization of counseling and testing visit about HIV/AIDS per year of people depends on Knowledge\*age in other words Knowledge\*age implies that being age of younger affect the effectiveness of knowledge on utilization of counseling and testing visit about HIV/AIDS per year of people. But the negative(-ve) sign of the coefficient of combine form of knowledge and age, implies that being older age reduce the effectiveness of knowledge on utilization of counseling and testing of HIV/AIDS visit per year. If people have more knowledge and older age less utilization of counseling and testing service about HIV/AIDS visit per year. It is also benefited to stakeholders as well as nation .So policy should be focused and implemented to rise the knowledge as a target groups and general population as a whole nation.

**Place of living variable:** Coefficient of place of living variable was more significant at 95% of confidence interval because p values  $<0.05$  that means utilization of counseling and testing service about HIV/AIDS visit of people depends on place of living in other word place of living rural and urban could affect to utilization of counseling and testing service about HIV/AIDS of people. People use dummy variable as place of living in this model .In this model use one as urban and zero to rural , rural as the base, there was statistically difference between urban and rural in terms of utilization of counseling and testing about HIV/AIDS. In this model urban have more visit of utilization of counseling and testing about HIV/AIDS than rural. Therefore

priority should be given to rural as development in the society. But significant and positive sign of the coefficient of place of living statistically meaningful visit of utilization of counseling about HIV/AIDS in the society .It could be benefited to the consumers as well as service provider to achieve the target of the programs. So policy focuses that it may expansion everywhere as well as rural area of Kathmandu district of Nepal. Therefore there may available many facilities as people may uses more utilization of counseling and testing visit about HIV/AIDS per year.

**Knowledge\*Place of living variables** : Coefficient of Knowledge\* place of living variable was more significant at 95% of confidence interval because p values <0.05 that means utilization of counseling and testing service about HIV/AIDS visit of people depends on Knowledge\* place of living in other words Knowledge\*place of living rural and urban could affect to utilization of counseling and testing service about HIV/AIDS of people. People use dummy variable as place of living in this model .In this model use one as urban and zero to rural , rural as the base, there was statistically difference between urban and rural in terms of utilization of counseling and testing about HIV/AIDS. In this model urban have more visit of utilization of counseling and testing about HIV/AIDS than rural. Therefore priority should be given to rural as development in the society. But significant and negative sign of the coefficient of Knowledge\*place of living implies that being higher urbanization place of living unexpectedly reduce the effectiveness of knowledge on utilization of counseling and testing about HIV/AIDS in the society . If people have more focused to urban and knowledge ,they use less utilization of counseling and testing about HIV/AIDS for VCT service .It could be benefited to the consumers as well as service provider to achieve the target of the programs. So policy focuses that it may expansion VCT service ,urbanization and knowledge everywhere as well as rural area of Kathmandu district of

Nepal. Therefore there may available many facilities as people may uses more utilization of counseling and testing visit about HIV/AIDS per year.

**Knowledge variable:** Coefficient of Knowledge variable was more significant at 95% of confidence interval because  $p \text{ value} < 0.05$  that means utilization of counseling and testing service about HIV/AIDS of people depends on Knowledge in other words Knowledge implies that being higher knowledge affect the effectiveness on utilization of counseling and testing service about HIV/AIDS of people visit per year. If people have more specific knowledge about HIV/AIDS then number of utilization of counseling and testing service about HIV/AIDS visit also increased per year. The sign of coefficient of knowledge was positive, it implies that utilization of counseling and testing service about HIV/AIDS visit also increased per year through knowledge about HIV/AIDS of people . In this case when knowledge increased one percent per year, utilization of counseling and testing service about HIV/AIDS visit also increased per year by 369.E-11 visit with the condition was other independent variables are holding constant. So policy should focused, made applicable and proper practicable as use of implication in the field of program.

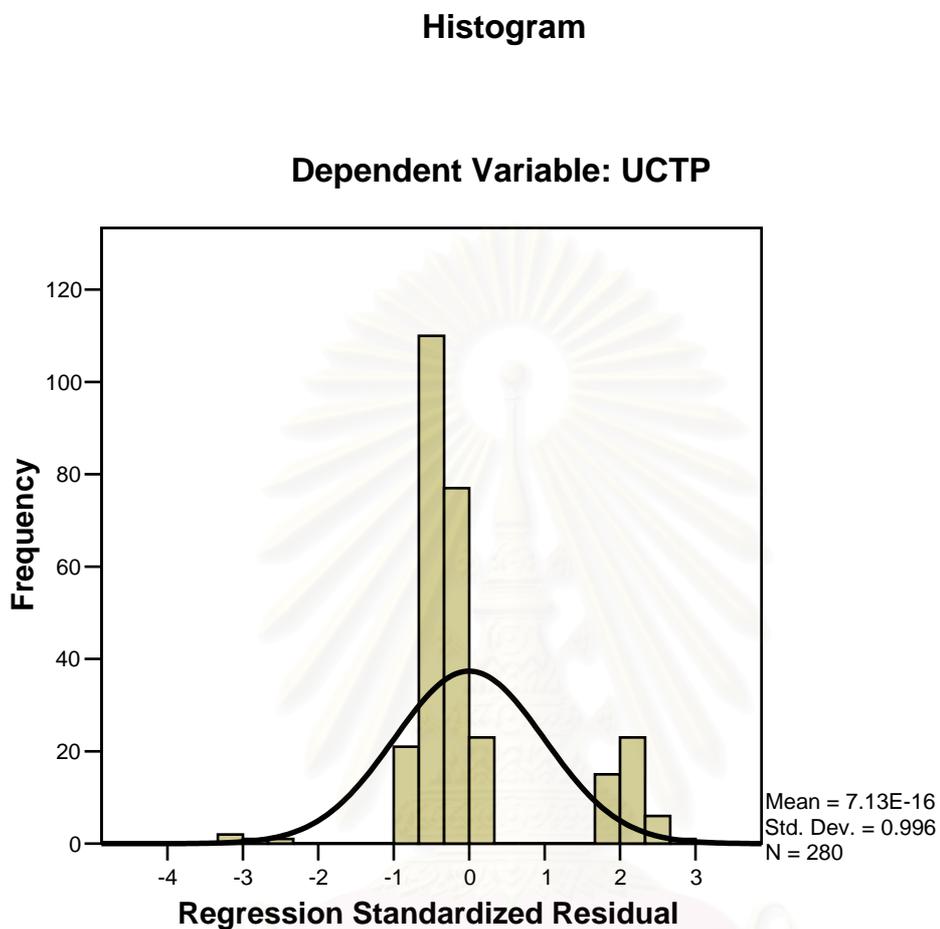
**Dependency variable:** Coefficient of Dependency of family size variable was insignificant at 95% of confidence interval because  $p \text{ values} > 0.05$  that means utilization of counseling and testing about HIV/AIDS of people did not depends on Dependency of family size in other words Dependency of family size implies that being larger number does not affect the effectiveness on utilization of counseling and testing about HIV/AIDS of people. The sign of coefficient of Dependency variable was positive But it implies that statistically insignificant variable in the model no body can get any benefit from that variable .so it may excluded from the model.

**Knowledge\*dependency variables:** Coefficient of Knowledge\*dependency of family size variable was insignificant at 95% of confidence interval because p values > 0.05 that means utilization of counseling and testing about HIV/AIDS of people did not depend on Knowledge\*dependency of family size in other words Knowledge\*dependency of family size implies that larger dependency of family size unexpectedly reduce the effectiveness of knowledge on utilization of counseling and testing about HIV/AIDS of people. The sign of coefficient of Dependency variable was negative But it implies that statistically insignificant variable in the model no body can get any benefit from that variable .so it may be excluded from the model.

**Residual error(e):** Residual error(e) of this model are as Minimum Residual error(-2.422), Maximum Residual error( 2.025 ), Mean of Residual error (0.000) and Std. Deviation of Residual error(0.756 )

Standardized Residual error (e): Standardized Residual error (e) of this model are as Minimum(-1.963), Maximum(2.682), Mean(.000), Std. Deviation(.989), and N(280)

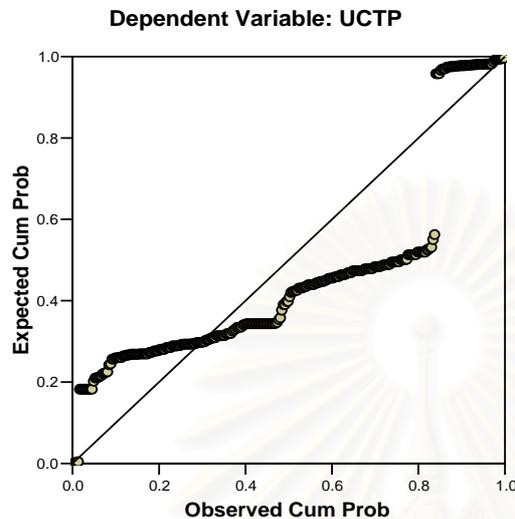
Diagram 4.4.1 Standardized Residual error (e)



From diagram 4.4.1 Standardized Residual error (e) of this model are as shown in the diagram the total number of respondents  $n(280)$ , Minimum(-3.191), Maximum(2.668), Mean(0.000), and Std. Deviation(0.996), the distribution of sample as normal and symmetrical

Diagram4.4.2

Normal P-P Plot of Regression Standardized Residual



From the diagram 4.4.2 shows and explain the regression model about knowledge and socio- economic characteristics of the people in society of Kathmandu district as strongly participated in the survey questionnaire about HIV/AIDS for interviewed. Here Utilization of Counseling (uctp) as a dependent variable and knowledge combine affect with socio-economic characteristics as independent variables. Normal P-P Plot of regression standardized residual diagram shows that X-axis as observed cumulative probability value and Y-axis as Expected cumulative probability value. The diagonal smooth straight line show that sample as normal probability distribution. But Observed cumulative probability value as not properly coincide on the diagonal smooth straight line. It is rise from(0.2) Y-axis as Expected cumulative probability value along with observed sample smoothly distributed and cross the diagonal smooth straight line and also rise to end at(1.0) of expected but observed cum. Prob. value break and HIV+ infected. It means that observed sample as not normally distributed but small value. So model may accepted and significant.

Table 4.5 summary of three model of regression coefficient

S.n.	variables	Model 1 <sup>st</sup> Table 4.2.1			Model 2 <sup>nd</sup> Table 4.2.3			Model 3 <sup>rd</sup> Table 4.2.6		
		Value of coeff.	t-Statistic	Prob	valueof coeff	t-Statistic	Prob	valueof coeff	t-Statistic	Prob
1	constant	-1.365591	-3.623276	0.0003	-0.464007	-0.106418	0.9153	0.693147	3.59E+11	0.0000
2	income	0.516808	5.302447	0.0000	0.437670	0.387610	0.6986	7.11E-12	14.23775	0.0000
3	Knowledge* income				-0.313866	-0.236410	0.8133	-8.54E-12	-14.54176	0.0000
4	Education	0.014454	2.454485	0.0147	-0.004310	-0.060275	0.9520	-1.01E-14	-0.317901	0.7508
5	Knowledge* education				-0.016439	-0.191143	0.8486	1.28E-14	0.336793	0.7365
6	Gender	-0.080251	-1.484447	0.1388	0.673669	0.945292	0.3454	2.23E-13	0.708708	0.4791
7	Knowledge* Gender				-0.359031	-0.434205	0.6645	-3.27E-13	-0.894568	0.3718
8	Age	0.006258	1.770961	0.0777	0.000808	0.016626	0.9867	7.91E-14	3.677681	0.0003
9	Knowledge* Age				0.009085	0.162707	0.8709	-9.04E-14	-3.659080	0.0003
10	Depfamily size	-0.002513	-0.186870	0.8519	0.360153	2.004637	0.0460	1.17E-13	1.473156	0.1419
11	Knowledge* Depfamily size				-0.451148	-2.148630	0.0326	-1.50E-13	-1.611389	0.1083
12	Place	-0.062061	-1.142272	0.2543	0.607565	0.836878	0.4034	8.28E-13	2.576938	0.0105
13	Knowledge* place				-0.834487	-0.988021	0.3240	-8.87E-13	-2.373555	0.0183
14	Knowledge				3.567667	0.693114	0.4888	3.69E-11	16.19404	0.0000

R-squared	0.154979	0.115776	1.000000
Adjusted R-squared	0.136407	0.072562	1.000000
S.E. of regression	0.441105	0.756113	3.35E-13
Sum squared resid	53.11867	152.0739	2.98E-23
F-statistic	8.344809	2.679139	2.11E+11
Prob(F-statistic)	0.000000	0.001485	0.000000

**Table 4.6 Compare Significant and Sign of Coefficient of the Variable between three Model**

s. n.	variables	Model 1 <sup>st</sup> Table 4.2.1			Model 2 <sup>nd</sup> Table 4.2.3			Model 3 <sup>rd</sup> Table 4.2.6		
		Sign of coeff	Signi fican t	Insigni ficant	Sign of coeff	Signi- ficant	Insigni ficant	Sign of coeff	Signi- ficant	Insigni ficant
1	constant	-ve	Sig.	-	-ve	-	Insig.	+ve	Sig.	-
2	income	+ve	Sig.	-	+	-	Insig.	+ve	Sig.	-
3	Knowledge*income				-ve	-	Insig.	-ve	Sig.	-
4	Education	+	Sig.	-	-ve	-	Insig.	-ve	-	Insig.
5	Knowledge*education				-ve	-	Insig.	+ve	-	Insig.
6	Gender	-ve	-	Insig.	+ve	-	Insig.	+ve	-	Insig.
7	Knowledge*Gender				-ve	-	Insig.	-ve	-	Insig.
8	Age	+ve	-	Insig.	+ve	-	Insig.	+ve	Sig.	-
9	Knowledge*Age				+	-	Insig.	-ve	Sig.	-
10	Depfamily size	-ve	-	Insig	+ve	Sig.	-	+ve	-	Insig.
11	Knowledge*Depfamily size				-ve	Sig.	-	-ve	-	Insig.
12	Place	-ve	-	Insig.	+ve	-	Insig.	+ve	Sig.	-
13	Knowledge*place				-ve	-	Insig.	-ve	Sig	-
14	Knowledge				+ve	-	Insig.	+ve	Sig.	-

**Table 4.7 Compare Significant of Coefficient of the Variable between three****Models**

S.n.	variables	Model 1 <sup>st</sup>			Model 2 <sup>nd</sup>			Model 3 <sup>rd</sup>		
		Table 4.2.1			Table 4.2.3			Table 4.2.6		
		Sign of coeff	Significant value of coeff.	res ult	Sign of coeff	Significant Value of coeff.	result	Sign of coeff	Significant Value of coeff.	result
1	constant	-ve	-1.365591	Sig	-ve			+ve	0.693147	Sig.
2	income	+ve	0.516808	Sig.	+			+ve	7.11E-12	Sig
3	Knowledge*in come				-ve			-ve	-8.54E-12	Sig.
4	Education	+ve	0.014454	Sig.	-ve			-ve		
5	Knowledge*ed ucation				-ve			+ve		
6	Genter	-ve			+ve			+ve		
7	Knowledge*G ender				-ve			-ve		
8	Age	+ve	0.006258	q.si g.	+ve			+ve	7.91E-14	Sig.
9	Knowledge*A ge				+			-ve	-9.04E-14	Sig.
10	Depfamily size	-ve			+ve	0.360153	Sig.	+ve		
11	Knowledge*D epfamily size				-ve	-0.451148	Sig.	-ve		
12	Place	-ve			+ve			+ve	8.28E-13	Sig.
13	Knowledge*pl ace				-ve			-ve	-8.87E-13	Sig
14	Knowledge				+ve			+ve	3.69E-11	Sig.

#### 4.5 Discussion:

Table 4.2.1 OLS estimated for knowledge about HIV/AIDS, 4.2.3 OLS estimated for Utilization of Counseling visit per year about HIV/AIDS and 4.2.6 OLS estimated for Utilization of Counseling and testing visit per year about HIV/AIDS and table 4.5,4.6,4.7 showed the results of regression analysis of first models indicated that age did affect to knowledge about HIV/AIDS, second models showed the results of regression coefficients analysis as indicated that age did not affect to utilization of counseling visit about HIV/AIDS, but in third model indicated that age did affect for utilization of counseling and testing for visit about HIV/AIDS for VCT of people. In the first model education did affect the knowledge but second and third model did not affect the utilization of counseling and testing visit for HIV/AIDS for VCT of people. The first result was the same with some previous researches implemented in Thaibinh city of Vietnam and other countries. Because HIV/AIDS is a global epidemic, every one can be infected regardless of age, gender, race, educational level etc.... It also proved that unlikely old people had higher knowledge about HIV/AIDS than young people inversely in particular cases young people had better knowledge and they may had better skill of HIV/AIDS prevention than old people. Similarly, Ut of VCT did depend on age of customers. The difference of age between customers did affect to ut for particular goods and service in this case was VCT services.

In the model illustrated the factors affecting knowledge about HIV/AIDS of individual indicated that educational level and income were very important factors and they had a positive strong relationship with knowledge. Clearly, people with high education should be good at knowledge in many fields including HIV issue. In this study, most people with high education were government officers. Basing on this information we found that education and communication about HIV/AIDS through official channel

might play an important role in improvement the knowledge about HIV/AIDS for officers .Obviously ,the self finding and self studying of people about HIV/AIDS could be the key for their knowledge but we could not disclaim the role of mass media in term of education and communication about HIV/AIDS especially in the office . Simultaneously, income affected strongly to not only knowledge about HIV/AIDS but also many other issues. When the income of people did not meet their essential need , people would ignore social issue because they had to focus on earning money to feed their families and themselves although that was global issue like HIV/AIDS, Inversely ,when income could meet their need they would care about related thing and had chance to improve their knowledge by joining education course, workshop and they were able to utilization of VCT more than female for the service that could improve their knowledge about HIV/AIDS like VCT service.

We could see the difference between male and female in terms of knowledge about HIV/AIDS and utilization for VCT. In this study , male had higher knowledge and were utilization more than female .These convinced that female may not have much chance to access mass media and service provided knowledge about HIV/AIDS because their time were occupied by talking care children, housewife and other things related to family. Concurrently , knowledge about HIV/AIDS could illustrate the un-equal of gender in society especially developing societies with the un-favor to female. There were many evidences showed the high risk with HIV in male and utilization for VCT would become a proxy to support the conclusion that the risk of male about HIV was higher than female nowadays basing on the statistics of utilization male was higher than female. The existing question is why the knowledge about HIV of male was higher than female but male infected more than female .The answer is right now in Nepal and also in

Kathmandu most of HIV infected persons are injecting drug user and most of drug user are male, that why the number of infected people in male is higher than in female.

We always agree that there are gaps between urban and rural areas in terms of living standard, wealthy and poverty, education, availability of good and service including the knowledge about HIV/AIDS and utilization for VCT. These proved that education and communication about HIV/AIDS did not reach to rural area or the way of information providing was not suitable in rural area. The ability of health personnel in rural area had many limitations especially the skill of providing prevention knowledge about HIV/AIDS to target groups .The allocation of budget also had an important role in making the gaps between rural and urban area. Some socio-economic factors listed above especially knowledge about HIV/AIDS were favored to urban area, but why the number of HIV infected people in urban was higher in , because most of social evils such as drug use , prostitute, homosexual relation were focused on urban rather than rural area. These social evils are accompanied with HIV in every society including Nepal.

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## CHAPTER V

### CONCLUSION AND RECOMMENDATION

#### 5.1 Conclusion:

The first case AIDS was detected in 1988, the HIV epidemic in Nepal has low prevalence to concentrated epidemic. As of 2007, national estimates indicate that approximately 70,000 adults and children are infected with HIV virus in Nepal, with an estimated prevalence of about 0.49% in the adult population. As of end of 2007 a total of 10546 cases of HIV+, 1610 AIDS cases and 455 AIDS deaths had been reported to the NCASC. The sex ratio among HIV positive cases is 2:1. Sentinel data indicates that the number of children aged 0-14 dying from HIV/AIDS has increased nearly four fold from 54 in 2005 to 199 in 2006

Kathmandu is facing a drastic decrease in HIV infections as FSW 2% in 2004 to 1.4% in 2006, MSW 4.8% in 2004 to 2.9% in 2007, IUDs 68% in 2001 to 51.6% in 2005 and 34% in 2007, MSM 3.9% in 2004 to 3.3% in 2007. A recent study showed as Estimates refer to 52% (New ERA/SACTS/FHI 2005a) people living with HIV/AIDS in Kathmandu District. This study conducted among 280 respondents in Kathmandu district with the aim to find out the relationship between knowledge about HIV/AIDS and socioeconomic characteristics of individual and also find out the relationship between utilization of counseling and testing visit for VCT and the above mentioned socioeconomic characteristics including knowledge about HIV/AIDS considered as an independent variable.

1. The transmission of HIV in Kathmandu district increased quickly caused by many reasons in which the lack of knowledge about HIV/AIDS especially basic knowledge related to the ways of transmission and how to prevent in Kathmandu district

was the most important factor contributing to the spreading of HIV epidemic. The lack of knowledge of HIV/AIDS could be the consequences of ineffective campaigns of HIV/AIDS education and communication. The campaigns providing knowledge have not yet focused on remote area and rural area which were the living place of people who had lowest knowledge level, lowest education, limited living conditions. The content of message, education courses about HIV/AIDS may not be suitable for particular area, not relevant for each group especially target group including drug users, sex workers, Professional blood sellers. The resources allocated to improve knowledge about HIV were not enough in terms of human resource, budgeting and supported equipments.<sup>1</sup>

2. Educational level was the most important characteristics of individual affecting to knowledge about HIV/AIDS with high sensitivity. This could be illustrated very clearly by the difference of knowledge between rural and urban area in which education level of people in urban area were higher than rural area on average. This could prove that HIV education in school may have important role on enhancing the knowledge of pupils about HIV/AIDS.<sup>2</sup>

As I mentioned in the part of discussion to explain why in general, education level in urban area was higher in rural area but the number of HIV infected people in urban area is still higher in rural area. So we realize that general education may not have impact on HIV prevention, only specific education could affect HIV transmission. In order to answer this question, further study should be implemented to find out the suitable type of education that can help people prevent HIV pandemic.

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Footnote:

1&2 this result was the same with result conducted by Do Huy Giang et al. in 2000 in Thaibinh.

3. This conclusion was similar to research of Assessing the cost and willingness to pay for voluntary HIV counseling and Testing in Kenya done by Stephen Forsythe et al. 2002.

3. Individual income also had very important role for improvement the knowledge about HIV/AIDS of people . Income was an important factor to assess the living standard of people and it had strong relationship with knowledge about HIV/AIDS of people in Kathmandu district. From study found out that income could increase knowledge of HIV, However, it does not mean that increase in individual income alone can prevent HIV, income of individual should be invested in education to improve the correct knowledge of HIV in order to change the behavior needed for prevent HIV infection.<sup>3</sup>

4. There was an inequality between rural and urban area in terms of knowledge about HIV/AIDS and utilization of counseling and testing for VCT visit per year. Every service and activity such as health service, preventive health service ,education communication about HIV/AIDS seem to favor to urban area ,regardless HIV epidemic increase quickly in rural area.

5. Knowledge about HIV/AIDS affected so much to utilization of counseling and testing service for HIV/AIDS or in other word it could increase utilization of counseling and testing service. Utilization of counseling and testing and knowledge between male and female also had difference with higher proportion favored to male. These mean the risk about HIV in male was higher than female and knowledge may be an evidence to assess the utilization of counseling and testing visit for VCT service because people with high knowledge about HIV could realize clearly about the risk of HIV that they faced ,so that it was a dynamic to force or encourage people were utilization of counseling and testing visit more than people with low knowledge.<sup>4</sup>

6. utilization of counseling and testing visit for VCT service, obviously, high dependency family size member of people, utilization of counseling and testing visit was more than low dependency family size member people. In this study utilization of counseling and testing service for HIV was (36.01%) visit per year on average with the

difference between urban and rural area. Income, living of place, gender, education level knowledge were the important factor affecting to utilization of counseling and testing with the importance descended respectively.

## **5.2 Recommendation:**

As we mentioned previously, the lack of knowledge was the main cause for transmission of HIV pandemic. So improvement the knowledge for people in Kathmandu district was necessary to prevent the spreading of HIV. In order to enhance knowledge about HIV for people need to have co-operation of multi sectors including health sector and agencies outside the health sector (such as those with responsibilities in finance, justice, education, planning, Labour, agriculture, transport, tourism, corrective services, defiance, red cross association...) also have an important role to play in responding to HIV/AIDS. Generating such broad government participation in the fight against HIV/AIDS will be necessary if national efforts to combat the pandemic are to be optimized.

Simultaneously, identify those areas where health sector need to lead the response to HIV/AIDS, or where other areas of other sector need to take a leading role with support and technical advice from health sector. In terms of education and communication about HIV/AIDS, information should focus on providing a clear indication of the need for education and programs focused particularly on boys concerns about sexual

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Footnote:4. "willingness to pay for Health protection: Inadequate Sensitivity to probability" carried out by Hammitt J.K., Graham, J.D.(1999)had the same conclusion.

initiation, use of modern contraception, and how to protect themselves and their partners from HIV/AIDS and other STDs. Furthermore, Kathmandu Youth were also trapped in the conflict of modern times and changing traditional views, so that information provided need to be modified so as to be relevant for each group in terms of age, gender, economic condition, geography, culture and risk group. Counseling and testing service can be expanded in some area of Kathmandu district, this is strong tool to provide the knowledge about HIV/AIDS for the people in Kathmandu district and also provide necessary skill for HIV prevention.

On the basis of a data analysis with the reference other study such as study conducted by using in-depth interviews with male and female aged from 15-49 years old. The fundamental ideas consist of using the Entertainment-Education strategy and there by disseminate facts, initiate a dialogue about sexuality and raise awareness about HIV/AIDS in an entertaining and educational way. Through participatory training methods the target group will develop life skills. The opportunity to develop the necessary life skill to initiate and sustain safe behavior when they engage in sexual activity.

Education level was the important factor affecting to knowledge about HIV/AIDS of people ,So that compulsory education should be implemented especially in rural area to make sure that every one in the society can read and write. HIV education should be taken to community and grass-root level with the aim is to improve the knowledge of people prioritizing in remote areas. Whether HIV education should be compulsory or voluntary or not is another question by itself. Similarly, HIV education should be taken into formal or informal education system is also another question needed further study. The trainers who teach HIV/AIDS education should be specialized in HIV issue with suitable content for each group of population and must be suitable for each

culture context in each area. Especially, sexual education should be considered as a main subject in the activity of Information-Education-communication (IEC). In order to improve income for people in Kathmandu district, the poor need to be given a chance to get a job, to access health service and other services including VCT utilization of counseling and testing service. Encourage the maintenance and development traditional job villages through provision the budget and technical support by local authority. The development of an effective funding plan will be supported by a sound process of priority-setting for health promotion. Prevention, treatment and care interventions, effective systems and processes for estimating the costs of these interventions.

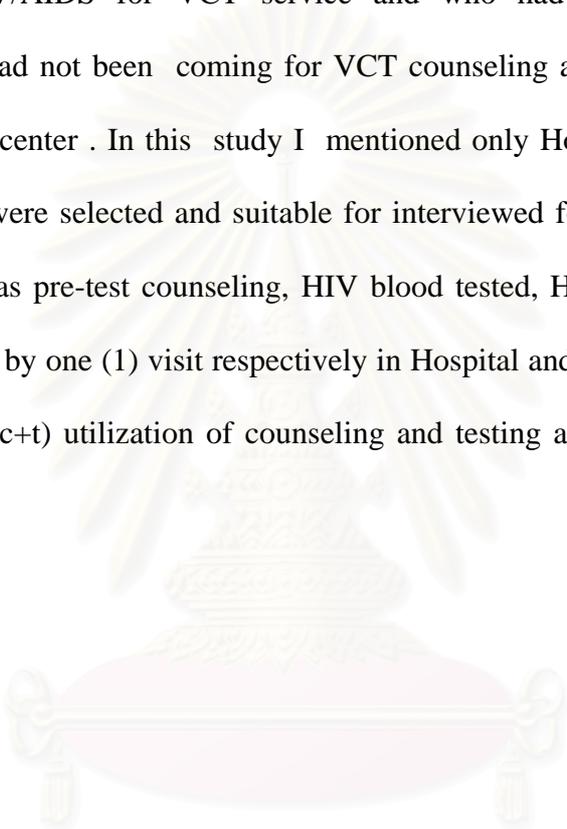
As I mentioned, VCT(voluntary counseling and testing) was an important to provide knowledge about HIV prevention. So the advertisement of HIV counseling-testing service should intensify through mass media, leaflets, posters and health personnel. The advertisement content must state the importance and significance of VCT service in terms of providing knowledge and skills for HIV prevention. So customers come to HIV/AIDS counseling and testing service, Provider should provided continue utilization of counseling- testing service .

Lastly HIV/AIDS prevention camping can be done successfully in condition of collaboration of whole society. The activities of HIV education, poverty reduction, inequality correction, VCT etc. must be carried out in collaboration otherwise the effectiveness of HIV prevention campaign can not gain as expectation.

### **5.3 Limitation of the study:**

This study attempted to describe the relationship between utilization of counseling-testing visit for VCT and socioeconomic characteristics of people in Kathmandu district by using mathematic model applying to real condition. In this condition of limitation in time, budget and some other condition. I did not have chance to organize depth-

interviews, focus group discussion. Even though there are many other factors affecting utilization of counseling and testing visit about HIV/AIDS for VCT service as the risk of people about HIV, the exposure for HIV, the availability of the service. This study apply only Hospital and VCT center's patients and not apply for General Population. Hospital patients had lacked of knowledge , So they had come to Hospital for counseling and testing about HIV/AIDS for VCT service and who had good knowledge about HIV/AIDS, they had not been coming for VCT counseling and testing service in the hospital and VCT center . In this study I mentioned only Hospital and VCT center's respondents who were selected and suitable for interviewed for this research who had taken all service as pre-test counseling, HIV blood tested, HIV + tested and post test counseling one (1) by one (1) visit respectively in Hospital and VCT centers. These four visit use as in U(c+t) utilization of counseling and testing about HIV/AIDS for VCT services..



สถาบันวิทยบริการ  
จุฬาลงกรณ์มหาวิทยาลัย

## References

- Barton-Knott S., Magne-Watts, B. UNAIDS, Geneva
- Chandrapanya, K., WHO, Geneva, WHO North American HIV/AIDS Media Line,  
www.unaids.org
- Corbett E.L, Dauya E, Matambo R, Cheung Y.B, Makamure B, et al. (2006) Uptake of Workplace HIV Counselling and Testing: A Cluster-Randomised Trial in Zimbabwe. PLoS Med 3(7)
- Corbett, E. L., Dauya, E., Matambo, R., Cheung, Y. B., Makamure, et.al. ( )  
Uptake of Workplace HIV Counselling and Testing: A Cluster-Randomised Trial in Zimbabwe
- Cartoux M.; Sombie I.; Perre P.V.D.; Meda N.; Tiendrebeogo S.; Dabis F.,  
(1999). Evaluation of 2 techniques of HIV pre-test counselling for pregnant women in West Africa. International Journal of STD & AIDS, Volume 10, Number 3, pp. 199-201(3). Royal Society of Medicine Press
- Department of Health Services. (2003/20064). Annual Report , Nepal.
- Department of Health Services. (2004/2005). Annual Report, Nepal.
- Department of Health Services .(2005/2006). Annual Report, Nepal.
- Department of Health Services .(2006/2007). Annual Report, Nepal.
- De Santis, D. (2006). Fact sheet, Asia online UNAIDS Geneva .  
[www.unaids.org](http://www.unaids.org)
- Fransen, L., and Whiteside, A., (eds.)(1996). HIV/AIDS and Development Assistance, Workshop Proceedings, Brussels.
- Forsythe, S. et. al.(2002) Research paper of Assessing the cost and willingness to pay for voluntary HIV counseling and testing in Kenya
- Giang, D. H. et. Al( 2000), Assessing the cost and willingness to pay for voluntary

HIV counseling and testing in Thaibinh, Vietnam

Iliyasu, Z., Abubakar, I. S, Mohammed K., Muktar H A.(2006). Knowledge of HIV/AIDS and attitude towards voluntary counseling and testing among adults.

Journal of the National Medical Association. vol 98 (issue 12) : pp 1917 -22

Jerene, D., Endale A. and Lindtjørn, B. Centre for International Health, University of Bergen, Norway Arba Minch Hospital, Ethiopia, Acceptability of HIV counselling and testing among tuberculosis patients in south Ethiopia.

BMC International Health and Human Rights 2007, 7:4doi:10.1186/1472-698X-7-4

[www.biomedcentral.com/1472-698X/7/4](http://www.biomedcentral.com/1472-698X/7/4)

John E. A., , Ebrahim S. H., and Sansom S., Women's Knowledge About Treatment to Prevent Mother-to-Child Human Immunodeficiency Virus Transmission From the Division of HIV/AIDS Prevention, Centers for Disease Control and Prevention, Atlanta, Georgia. Address reprint requests to: John E. Anderson, PhD, Division of HIV/AIDS Prevention, CDC/MS E-46, Atlanta GA 30333;

Marum, E.,; Taegtmeier, M., BMBCh, DTM&H; Chebet ,K., MBChB, MPH .(2006). Scale-up of Voluntary HIV Counseling and Testing in Kenya *JAMA.* ;296:859-862., Vol. 296 No. 7 Vol. 296 No. 7, Au

Ministry of Health and Population ,Nepal, New ERA, Macro International Inc.(2007). Nepal Demographic and Health Survey 2006.

National Centre for AIDS and STD official documented of HIV/AIDS and VCT

Data .( 2007). National HIV/AIDS Action Plan (2005-2006).

<http://www.ncasc.gov.np/>

[www.cdc.gov/hiv/pubs/](http://www.cdc.gov/hiv/pubs/)

[www.nepali.net/undp/](http://www.nepali.net/undp/)

[www.worldbank.org.np/](http://www.worldbank.org.np/)

[www.nepalhmg.gov.np/](http://www.nepalhmg.gov.np/)

Nieburg, P. et al.(2005). Expanded HIV Testing: Critical Gateway to HIV Treatment and Prevention Requires Major Resources, Effective Protections. Washington, DC: Center for Strategic and International Studies.  
[. http://www.csis.org/hivaids/expandedhivtesting.pdf](http://www.csis.org/hivaids/expandedhivtesting.pdf)

Russell, T. V, Do., A.N., Setik, E., Sullivan, P. S., . Rayle, V. D., Fridlund ,C.A., Quan, V., Voetsch, A. C., Fleming, P. L., Sexual Risk Behaviors for HIV/AIDS in Chuuk State, Micronesia: The Case for HIV Prevention in Vulnerable Remote Populations

Rich, J. UNAIDS, New York,

De Santis, D., UNAIDS, Paris,

Thai p. N. (2004) , A Thesis , Socio- Economic Characteristics People's Willingness To Pay for HIV/AIDS Conuseling-Testing Service in Thaibinh City, Vietnam,

The World Bank.(00000).Considering HIV/AIDS in Development Assistance: A Toolkit

<http://www.worldbank.org/aidsecon/toolkit/intro.htm>

The UNAIDS/WHO.( 2005). report is being launched in 19 cities worldwide.

The main launch is being held in New Delhi, India.

UNAIDS/WHO (2004) .Policy Statement on HIV Testing. Geneva: WHO,  
<http://www.who.int/hiv/pub/vct/en/hivtestingpolicy04.pdf>

Way, P. O., and Stanecki, K. A, (1994).The Impact of HIV/AIDS on World Population, US Bureau of the Census, Washington DC.

Wiktor S.Z. ; Abouya L ; Angoran H.; McFarland J.; Sassan-Morokro

M.; Tossou ,O.; Coulibaly D.; Coulibaly I-M.; Greenberg A.E. (2004).Effect

of an HIV counseling and testing program on AIDS-related knowledge and practices in tuberculosis clinics in Abidjan, Côte d'Ivoire The International Journal of Tuberculosis and Lung Disease, Volume 8, , pp. 445-450(6): International Union Against Tuberculosis and Lung Disease

World Bank.( 1996). AIDS Prevention and Mitigation in Sub-Saharan Africa, An Updated World Bank Strategy, Report No. 15569-AFR, Human Resources and Poverty Division, Technical Department, Africa Region, Washington DC

WORLD AIDS DAY - 1 DECEMBER 2007, HIV Testing and counseling

[www.who.int/entity/hiv/media](http://www.who.int/entity/hiv/media) center.

World Health Organization.(2003). The Right to Know: New Approaches to HIV Testing and Counseling Geneva

[http://www.who.int/hiv/pub/vct/en/Right\\_know](http://www.who.int/hiv/pub/vct/en/Right_know)

World Health Organization.( 2004). Rapid HIV Tests: Guidelines for Use in HIV Testing and Counseling Services in Resource-Constrained Settings. Geneva:

WHO. <http://www.who.int/hiv/pub/vct/en/rapidhivtests/en.pdf>

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## Appendix

### Questionnaire

Questionnaire for study of socioeconomic characteristics affecting Utilization for VCT and knowledge about HIV/AIDS in Kathmandu district of Nepal.

Hello, I am “.....”, I am affiliated with Department of Health Services in Kathmandu, Teku. As you may know we have arranged to do some interviews. We realize this may take some time so we want to make this as convenient for you as possible. We would like to know your attitudes on some issues about knowledge of HIV/AIDS and your Utilization for HIV/AIDS counseling-testing service. We ensure that all information will be kept secretly and will not be revealed to other people.

Responded information:

1. Age .....
2. Gender : 1. Male  2. Female
3. Educational level :
  1. Illiterate  2. literat 3 . Primary scol 4. Secondary schl
  5. Higher secondary school  6. Higher studies  7. Years of schooling:.....years
4. Place of living : 1. Rural  2 . Urban
5. Dependency of family size:
  1. Size of family members  2. Spouse  3 . Father  4. Mother  5
  - Children  6. Students

## 6. Sources of income:

1. Salary                       2. Trading   
 3. Supplement benefit    4. Outside support   
 5. Income from agriculture    6. Other

7. Average Household income per month.....NRs (thousand NRS)

8. Ethnicity: .....

## Survey the knowledge about HIV/AIDS

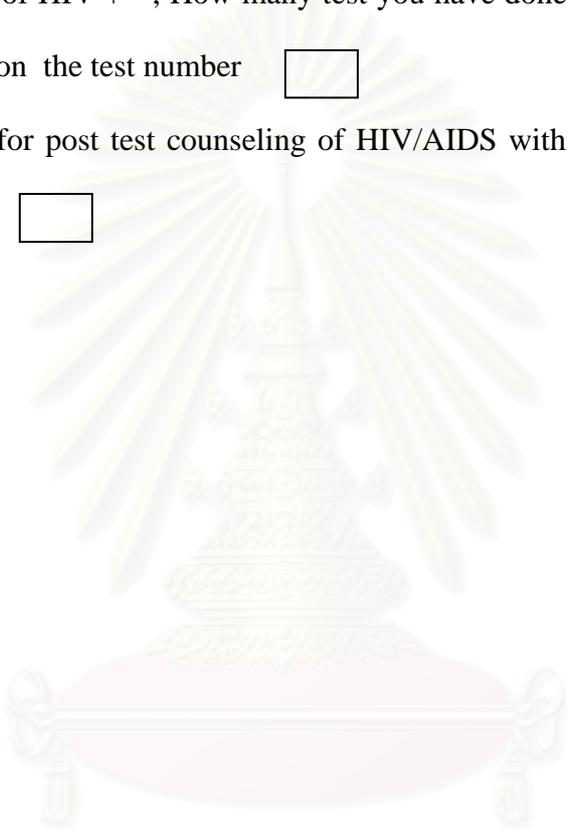
Serial Number	Questions	Yes	No
1	Can you tell unsafe sex is the most common one of getting HIV worldwide?		
2	Are you sure AIDS caused by virus?		
3	Are you thinking that HIV can be preventable?		
4	Are you think that there is an effective treatment available for HIV/AIDS in a special Hospital?		
5	Can you tell by looking at some one if they have HIV infection?		
6	Do you know condoms gives protection against HIV when having sex?		
7	Can you get HIV by kissing HIV infected persons?		
8	Can you get HIV by mosquito bite?		
9	Do you know the same condoms be used safely more than once if it is washed?		
10	Do you think that there are many different sizes of condoms have in the market?		

Serial Number	Questions	Yes	No
11	Are you sure that unwanted pregnancy and HIV at nearly 100% effective at preventing by condoms if used consistently and correctly?		
12	Are you believed that in heterosexual sex(between a man and a woman) woman is more likely to become infected with HIV from on HIV- positive partner?		
13	Do you believe that the female condoms are also controlled method of HIV prevention during sex?		
14	Are you think that a strong and healthy person cannot get HIV because of his/her strong immunity system?		
15	Do you think that HIV infected persons should not study in the Universities(further studies)?		
16	Do you working with together in the same office who has HIV/AIDS?		
17	Do you eating together at the same table who has HIV/AIDS?		
18	Do you believe that a good person have never accepted using condoms in sexual relationship with multi-partner?		
19	Do you agree with the company should conduct compulsory HIV-testing for all employees?		
20	DO you know that, not using condoms with CSW in sexual relationship is a safe behavior? According to Survey the knowledge about HIV/AIDS?		
21	Have you heard about HIV/AIDS for counseling and testing service affects the knowledge?		
22	Have you heard about HIV/AIDS for counseling and testing service more spread out message delivered from Television?		

Serial Number	Questions	Yes	No
23	Have you heard about HIV/AIDS for counseling and testing service more effective broad-casting media from local Radio		
24	Have you heard about HIV/AIDS for counseling and testing service more effective communication between local people from Newspaper?		
25	Have you heard about HIV/AIDS for counseling and testing service direct from Health personnel?		
26	Have you heard about HIV/AIDS for counseling and testing service from your Friends?		
27	Are you believe that utilization of HIV/AIDS for counseling – testing service depends on knowledge of the people?		
28	Did you think about knowledge of people should have more essential to control and prevent of HIV/AIDS in the Society?		
29	Are you sure that People's knowledge affects by Socio-economic characteristics of individuals in the society?		
30	Socio-economic characteristics of individuals are Age, Gender, Income, Educational level and Place of living.		

**Questionnaire about utilization of counseling and testing of HIV**

- 1 . Have you visit for pre- test counseling of HIV/AIDS within a year (2007)? Mention the visit number
2. Have you HIV tested within a year (2007)? Mention the test number
3. If the test result of HIV +<sup>ve</sup> , How many test you have done for confirmation within a year(2007)? Mention the test number
4. Have you visit for post test counseling of HIV/AIDS within a year(2007)? Mention the visit number



สถาบันวิทยบริการ  
จุฬาลงกรณ์มหาวิทยาลัย

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 Tribhuvan University Kathmandu (1993)OFFICE

**EXPERIENCE** : Medical Record Officer (MRO), Duration:1 March 1989  
 to Till date

**Research Work Experience:**

- i). Data collection and analysis of HRM on Information for MOH Staff working on FWDR Nepal as a researcher, organized by NEPAL Government and ERPHCP (04-04-1995 to 14-04-1995).
- ii). Team member in Public Review, Assessment and Recommendations from a Focused Study in the Central Region of Nepal as a researcher, funded by NHRC (October 1 to Nov. 30,2003).
- iii). Estimating the cost-effectiveness of supplementary immunization activities against measles in Nepal study, worked as a researcher. (This research project was under the project of Vaccine Assessment and Monitoring, Department of Immunization, World Health Organization (WHO) Geneva, Switzerland. funded by WHO/HQ. Duration September to November 2004.)

**Medal and Certificates:**

"**Educational Service Medal** " in 2044 B.S. on the auspicious "**Educational Day**" decorated by National Education Board, Ministry of Education, His Majesty's Government of Nepal.

**Teaching Experiences:**

LalitEducationNightCampus,Pulchok,Lalitpur,	Teaching for 10 years, Bachelor Degree Level	21Feb.1994to24June2003
Pragya Higher Secondary School, Anam Nagar, (Morning Class) Kathmandu,	Teaching for 6 years, as a lecturer of Mathematical Economics teacher cum Vice Principal	29 June 1998 to 28 March 2004

**Books:**

- 1.Manual for Data Management Training 2063 B.S.(2006).
- 2.District Hospital Profile 2063 B.S. (2006).
3. Zonal, Sub Regional, Regional Level Hospital Profile 2063 B.S. (2006).
4. Monthly Hospital Record Monitoring Sheet 2063 B.S.(2006).