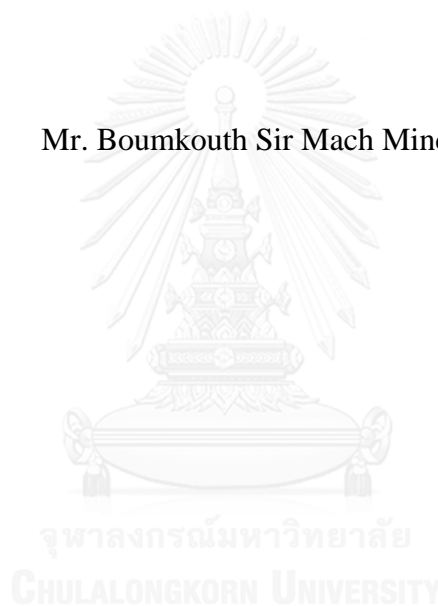


HIV/AIDS KNOWLEDGE, ATTITUDES AND PRACTICES AMONG WOMEN IN  
SOUTH SUDAN: SECONDARY DATA ANALYSIS - MULTIPLE INDICATOR  
CLUSTER SURVEY 2010.

Mr. Boumkouth Sir Mach Minchoul



บทคัดย่อและแฟ้มข้อมูลฉบับเต็มของวิทยานิพนธ์ตั้งแต่ปีการศึกษา 2554 ที่ให้บริการในคลังปัญญาจุฬาฯ (CUIR)  
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ความรู้ เจตคติ และการปฏิบัติเกี่ยวกับการติดเชื้อเอชไอวี/โรคเอดส์ในหมู่สตรีที่สาธารณสุขชุมชน  
ใต้: การวิเคราะห์ข้อมูลทฤษฎี – การสำรวจพหุดัชนีแบบกลุ่ม ปี พ.ศ.2553

นายบวมกวาท เซอร์ ม้ากชี้อ์ มินโซว



วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาสาธารณสุขศาสตรมหาบัณฑิต  
สาขาวิชาสาธารณสุขศาสตร์  
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ลิขสิทธิ์ของจุฬาลงกรณ์มหาวิทยาลัย



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บทคัดย่อ

คำสำคัญ การติดเชื้อเอชไอวี/โรคเอดส์ ความรู้ เจตคติ การปฏิบัติ ข้อมูล MICS หมู่สตรี สาธารณรัฐซูดานใต้  
ความรู้ เจตคติ และการปฏิบัติเกี่ยวกับการติดเชื้อเอชไอวี/โรคเอดส์เป็นพื้นฐานของการป้องกันและการควบคุมโรคเอดส์ทั้งในระดับปัจเจกชนและระดับกลุ่มประชากร การศึกษานี้มุ่งประเมินระดับความรู้ เจตคติ และการปฏิบัติเกี่ยวกับการติดเชื้อเอชไอวี/โรคเอดส์ และปัจจัยต่างๆที่มีความสัมพันธ์

การศึกษานี้เป็นการวิเคราะห์ข้อมูลทุติยภูมิจากฐานข้อมูล MICS (การสำรวจพหุดัชนีแบบกลุ่ม) ของยูนิเซฟในปี พ.ศ. 2553 ของสาธารณรัฐซูดานใต้ ข้อมูลที่ได้รับมาจากผู้มีส่วนร่วมการสำรวจจำนวน 9,069 ราย มีการใช้สถิติเชิงพรรณนาเพื่อบรรยายตัวเลข จำนวนร้อยละ ระดับความรู้ เจตคติ และการปฏิบัติ มีการใช้สถิติ Binary logistic regression เพื่อประเมินความสัมพันธ์ระหว่างตัวแปรอิสระและตัวแปรตาม

ผู้มีส่วนร่วมการสำรวจจำนวนร้อยละ 46.0 ไม่เคยได้ยินเกี่ยวกับโรคเอดส์ และยังมีแนวคิดที่ไม่ถูกต้องเกี่ยวกับวิธีการต่างๆ ในการถ่ายทอดเชื้อโรคดังกล่าว ระดับความรู้เกี่ยวกับการติดเชื้อเอชไอวี/โรคเอดส์อยู่ในระดับต่ำ (ร้อยละ 63.1) ร้อยละ 72.4 ของผู้มีส่วนร่วมการสำรวจแสดงออกถึงเจตคติเชิงลบต่อผู้ที่ติดเชื้อเอชไอวี/โรคเอดส์. ปัจจัยที่มีความสัมพันธ์กับการปฏิบัติอย่าง ปลอดภัย ได้แก่ เขตเมือง (OR = 1.6, 95% CI=(1.12-2.17) ระดับการศึกษา (OR = 1.9, 4.4, 5.3, 95% CI = (1.3-2.8), (2.8-7.0) และ (1.4 -19.4) สถานภาพการสมรส (การเคยแต่งงานมาก่อน) (OR = 1.33, 95% CI = (0.84 -2.1) ระดับต่างๆ ของดัชนีความมั่งคั่ง (OR = 1.2, 95% CI = (0.47 - 3.2) , 1.6, 95% CI=(0.61 -3.5), 1.7 , 95% CI = (0.77 - 4.0) และ 1.9, 95% CI (0.85 - 4.5) ตลอดจนเจตคติ (OR = 1.8 , 95% CI (1.3 -2.5). ด้วยค่า P-value <0.01. ปัจจัยต่างๆ ที่สัมพันธ์กับระดับความรู้ในระดับสูง/ปานกลาง คือ บริเวณที่พักอาศัย (OR = 1.3 95% CI (1.1 - 1.4) ระดับการศึกษา (OR = 1.6, 95% CI = (1.2 - 1.5), 2.6 95% CI = (1.1 - 6.9) ดัชนีความมั่งคั่ง ( OR = 1.2, 95% CI (0.94 - 1.6) , 1.3, 95% CI=(1.0 - 1.7), 1.4, 95% CI = (1.1 -1.8) , 1.5, 95% CI=(1.2 -2.0) และเจตคติ (OR = 1.5, 95% CI=( 1.3 - 1.96) ด้วยค่า P-value <0.01. เจตคติเชิงบวกมีความสัมพันธ์กับบริเวณที่พักอาศัย (OR = 1.5, 95% CI =(1.3 - 1.7) ระดับการศึกษา ( OR = 1.7, 95% CI (1.4 - 1.9), 3.1 95% CI (2.4 - 4.0) , 1.6, 95% CI (0.6 - 4.2) การเคยแต่งงานมาก่อน (OR = 1.4 , 95% CI (1.1 - 1.8) ดัชนีความมั่งคั่ง (OR = 1.4, 95% CI(1.0 - 2.0) , 2.0, 95% CI(1.5 - 2.7), 2.2, 95% CI(1.7 - 3.0), 2.5, 95% CI(1.9 - 3.4) การปฏิบัติ (OR = 1.8, 95% CI (1.3 - 2.5) และระดับความรู้ (OR = 1.5, 95% CI(1.3 - 1.7) ด้วยค่า P-value <0.01

ผู้มีส่วนร่วมการสำรวจส่วนใหญ่มีระดับความรู้ต่ำเกี่ยวกับการติดเชื้อเอชไอวี/โรคเอดส์ มีเจตคติเชิงลบ และมีการปฏิบัติที่เสี่ยง ดังนั้น นโยบายและการมุ่งเสริมด้านการให้การแทรกแซงจึงเป็นสิ่งจำเป็น

สาขาวิชา สาธารณสุขศาสตร์

ปีการศึกษา 2559

ลายมือชื่อนิสิต .....

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# # 5978827953 : MAJOR PUBLIC HEALTH

KEYWORDS: HIV/AIDS / KNOWLEDGE / ATTITUDE / PRACTICE / MICS / SOUTH SUDAN

BOUMKOUTH SIR MACH MINCHOUL: HIV/AIDS KNOWLEDGE, ATTITUDES AND PRACTICES AMONG WOMEN IN SOUTH SUDAN: SECONDARY DATA ANALYSIS - MULTIPLE INDICATOR CLUSTER SURVEY 2010.. ADVISOR: PROF. PRATHURNG HONGSRANAGON, Ph.D., CO-ADVISOR: PETER XENOS, Ph.D., 72 pp.

HIV/AIDS Knowledge, attitude and practice are basic foundation of prevention and control of AIDS disease at individual and general population level. This study was aimed to assess level of knowledge, attitudes and practices regarding HIV/AIDS and factors associated.

Study was secondary data analysis based on the UNICEF MICS (multiple indicator cluster survey) of 2010 for South Sudan. Data from 9069 participants were used. Descriptive statistic was used to describe number, percentage, and level of knowledge, attitudes and practices. Binary logistic regression was used to assess association between independent and dependent variables.

46.0% of respondents had never ever heard about AIDS disease, and misconception about transmission methods was observed. Knowledge level regarding HIV/AIDS was low among study group where 63.1% of them were having low knowledge. 72.4% of participants expressed negative attitudes toward people living with HIV/AIDS. Factors associated with safe practices were urban area (OR = 1.6, 95% CI = (1.12-2.17), education level (OR = 1.9, 4.4, 5.3, 95% CI = (1.3-2.8), (2.8-7.0) and (1.4 -19.4), marital status (former married) OR = 1.33, 95% CI = (0.84 -2.1), wealth index levels OR = 1.2, 95% CI = (0.47 – 3.2) , 1.6, 95% CI= (0.61 -3.5), 1.7 , 95% CI=(0.77 – 4.0) and 1.9, 95% CI (0.85 – 4.5), and attitude OR = 1.8 , 95% CI (1.3 – 2.5) and P-value = <0.01. Factors associated with high/moderate knowledge level were residence area (OR = 1.3 95% CI (1.1 -1.4), Education level (OR = 1.6, 95% CI = (1.2 – 1.5), 2.6 95% CI = (1.1 – 6.9), wealth index( OR = 1.2, 95% CI (0.94 – 1.6) , 1.3, 95% CI=(1.0 – 1.7), 1.4, 95% CI = (1.1 -1.8) , 1.5, 95% CI=(1.2 -2.0). and attitude( OR = 1.5, 95% CI =( 1.3 – 1.96) . P-value was < 0.01. Positive attitudes were associated with, residence area(OR = 1.5, 95% CI =(1.3 – 1.7), education level ( OR = 1.7, 95% CI (1.4 – 1.9), 3.1 95% CI (2.4 – 4.0) , 1.6, 95% CI (0.6 – 4.2), former married (OR = 1.4 , 95% CI (1.1 – 1.8), wealth index(OR = 1.4, 95% CI(1.0 – 2.0) , 2.0, 95% CI(1.5 – 2.7), 2.2, 95% CI(1.7 – 3.0), 2.5, 95% CI(1.9 – 3.4) , practices( OR = 1.8, 95% CI (1.3 – 2.5) and knowledge level(OR = 1.5, 95% CI(1.3 – 1.7) . P-value was < 0.01.

Majority of study group were having low knowledge of HIV/AIDS, and negative attitude and risky practices. Therefore, policy and intervention reinforcement is needed.

Field of Study: Public Health

Academic Year: 2016

Student's Signature .....

Advisor's Signature .....

Co-Advisor's Signature .....

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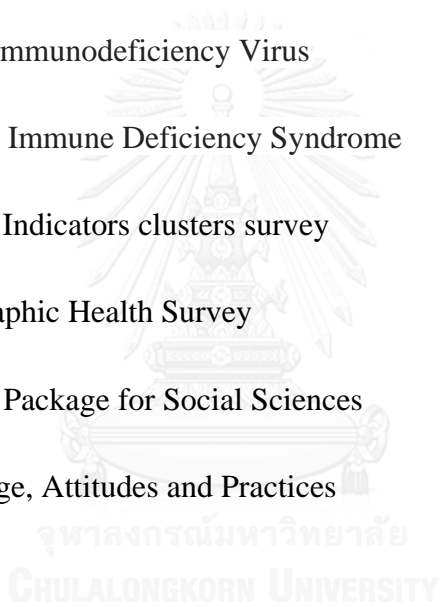
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## LIST OF ABBREVIATION

WHO:	World Health Organization
CDC:	Center for Diseases Control
UNAIDS:	The joint United Nations program on HIV/AIDS
UNICEF:	United Nations International Children's Emergency Fund
HIV:	Human Immunodeficiency Virus
AIDS:	Acquired Immune Deficiency Syndrome
MICS:	Multiple Indicators clusters survey
DHS:	Demographic Health Survey
SPSS:	Statistical Package for Social Sciences
KAP:	Knowledge, Attitudes and Practices
OR:	Odd ratio



# CHAPTER I

## Introduction

### 1.1 Background and Rationale

The first case of acquired immune deficiency syndrome (AIDS) was reported in United States of America 1981 by Center for diseases control (CDC), from that time AIDS cases continue to increase. In 1993 CDC had recorded 315,390 AIDS cases in United States of America, and the number of people who died was 194, 334. The first cases reported were from homosexual men or men who had sex with men (MSM)(Lam & Liu, 1994).

In Africa, acquired immune deficiency syndrome first cases was recognized in 1983 by Europeans clinicians among Africa patients. The number of AIDs cases were reported to world health organization were 263051 worldwide, among these cases 25% from 47 Africa Countries. The number of HIV/AIDS cases continue to increase from time to time in Africa, in 1989 the statistic of World Health organization shown 24686 or 16% of the cumulative total was from Africa (Sanders & Sambo, 1991).

The number of people living with HIV virus worldwide in 2015 was more than thirty-five million and 1.1-1.3 million had died, and new affected number was (1.8-2.4) million worldwide. ((WHO, 2016).

In 2010 the number of people living with HIV virus in Latin America and the Caribbean was 1.8-2.1 million and new HIV infections were (860,000 – 120,000) and who lost their lives were 60,000. In 2015 the number of people living with HIV it was 2.00 million and new infection in the same year was (190,000) and the number of death were (50,000).(UNAIDS, 2016).

In Western, Central Europe and North America the people who were living with HIV virus in 2010 were 2.3 million and HIV new infection was (97000), and the number

of people who lost their lives due HIV/AIDS was (29,000). In 2015 the number of people living with virus in these two regions were 2.7 million and new infection was (91,000), and the number of people who died were (22,000)(UNAIDS, 2016).

Eastern Europe and central Asia had recorded 1.1 million people living with HIV virus in 2010 and new infection was (130,000), people who died due to HIV/AIDS in the same year were 38,000. In 2015 the number of people who were living with HIV in these two regions was (1.7) million and new infection was 200,000, and people who lost their in the same year were 47000.(UNAIDS, 2016).

UNAIDS reported that the number of people living with HIV virus in Asia and pacific regions in 2010 was 5.5 million and new virus infection were 360,000, and (907,600) died. In 2015 the number of people who were living with HIV was 5.1 million and new infection was 300,000, the death were estimated between (150,000 – 220, 000) (UNAIDS, 2016).

In Eastern and South Africa the number of people who were living with HIV virus in 2010 were 17.2 million and new infection was 1.1 million and deaths were 408,7500. And in 2015 the number of people who were living with HIV in these two regions were 19.0 million and new infections were (960,000), and people who died were (102, 52400) .(UNAIDS, 2016).

Middle East and North Africa region had recoded 190,000 people living with HIV in 2010 and new HIV virus infection were 20,000, and people who died due to HIV/AIDS were 13,600. And in 20015 the number of people living with HIV in these region were 230,000 and new infection were 21, 000, and 12,000 people lost their lives.(UNAIDS, 2016).

In 2010 the number of people living with HIV virus in Western and Central Africa were 6.3 million, and new infections were (450,000) and people who died were (370,000). Also in 2015 the number of people living with HIV virus were 6.5 million and new infections were (410,000) and number who died was (330,000).(UNAIDS, 2016).

### **Sub-Saharan Africa Problem**

Sub-Saharan Africa had high HIV infection prevalence comparison with other world regions and the most cases are among young people aged 15-49 years, 17% of female age 15-24 year living with HIV and 17% of male in the same age group living with HIV virus. The prevalence of female age 25 and above who living with HIV in 2015 was 33%, and male prevalence was 32%. HIV new infection prevalence among different age and sex group was 25% among female age 15-24 and 12% among male age 15-24 year old, and in age 25 plus was 31% among female and 31% in Male.(UNAIDS, 2016).

### **South Sudan Problem:**

The prevalence of HIV infection in South Sudan according to HIV/AIDS commission and ministry of health in 2015 estimated 1.6% to 3.4% among adult aged 15-49 years. Most affected States are Western Equatorial with prevalence rate 6.8%, Eastern Equatorial with rate of 3.4% and Central Equatorial had 2.6%. HIV prevalence in South Sudan had been estimated from Antenatal care activity. In 20007 the HIV prevalence was 3.7%, and in 2009 3.0% and in decrease in 2012 with rate of 2.7%(South Sudan HIV/AIDS comission 2015).

South Sudan HIV epidemic has been recorded as mixed, was generalized with pockets of concentration in some groups. In 2014 transmission model of HIV infections was either through heterosexual contact, mother-to child during pregnancy period, at birth and during breastfeeding time. In 2014, it was estimated that most new HIV virus infection cases were from sex workers (42.6%), Children who were born by HIV positive mothers (15.7%), Women and man involved in sexual activities (14.5%), female sex workers (11.2%) and couples in stable relationships (9%). Other transmissions modes contributing in new infections including man who have sex with man (3.9%), partners of affected people were (06%), and percentage of partners of those engaged in casual sex was (1.6%). Others methods of transmission such as Medical injections and blood transmission were estimated to contributed by 0.02 %(South Sudan HIV/AIDS comission 2015).

In low-income Countries particularly in Africa women who living in both rural and urban areas are faced with many challenges in life that include work schedule,

limited financial resources to support the families, and male domination that limits mobility, empowerment, and control over their sexuality. Those situations make women in Africa in general and South Sudan in particular vulnerable to sexual violence and expose their lives at risk of HIV infection. (Hahn & Inhorn, 2009).

Having knowledge or basic correct information about HIV/AIDS is a primary step and precursor to attitudes and practices change. Therefore assessing women knowledge, attitudes and practices towards HIV/AIDS is a corner stone for prevention intervention strategies among women in general population.(UNICEF, 2006).

There is no study conducted before to assess factors associated with Knowledge, attitudes and practices among women in South Sudan. The aim of this study was to assess HIV/AIDS knowledge, attitude and practices levels and factors associated, among women in South Sudan based on multiple indicator cluster survey data for 2010.

The finding of this study will help South Sudan national HIV/AIDS program to evaluate its prevention interventions and reinforce new strategies and activities among women as vulnerable group.



Table 1: Trends of HIV prevalence among pregnant women attended ANC in South, 2007 – 2012

<b>Year</b>	<b>No. of sites</b>	<b>No. tested</b>	<b>HIV prevalence (%)</b>
<b>2007</b>	10	4,710	3.7
<b>2009</b>	24	5,913	3.0
<b>2012</b>	33	11,134	2.6

*Source: South Sudan HIV/AIDS commission and Ministry Health, June, 2015*

Table 2: Prevalence of HIV among adult aged 15-49 years estimated by WHO region 2015

<b>WHO region</b>	<b>Prevalence of HIV (%)</b>
<b>Africa</b>	4.4%
<b>Americas</b>	0.5%
<b>South –east Asia</b>	0.3%
<b>Europe</b>	0.4%
<b>Eastern Mediterranean</b>	0.1%
<b>Western pacific</b>	0.1%
<b>Global</b>	0.8%

*Source: WHO, updated on 13.7.2016*

## 1.2 Research Questions

- 1- What is the level of HIV/AIDS knowledge among women aged 15-49 years in South Sudan?
- 2- What is the level of attitudes toward HIV/AIDS among women aged 15-49 years in South Sudan?
- 3- What are sexual practices among women aged 15-49 years in South Sudan?
- 4- Are there any associations between HIV/AIDS knowledge, attitudes and practices among women ages 15-49 year in South Sudan?

- 5- Are there any associations between practices and socio-demographic characteristics and knowledge, attitudes among women ages 15-49 in South Sudan?

### **1.3 Objectives**

#### **1.3.1 General objective:**

To assess HIV/AIDS knowledge, attitudes, practices and socio-demographic characteristics, and factors associated among women aged 15- 49 in South Sudan.

#### **1.3.2 Specific Objectives:**

- 1- To describe HIV/AIDS knowledge level among women age 15-49 years in South Sudan.
- 2- To describe attitudes toward HIV/AIDS among women age 15-49 years in South Sudan.
- 3- To describe sexual practices among women aged 15-49 years in South Sudan.
- 4- To assess any association between socio-demographic characteristics and practices among women aged 15-49 years in South Sudan.
- 5- To assess any association between HIV/AIDS knowledge, Attitudes and practices among women aged 15-49 years in South Sudan

### **1.4 Hypothesis:**

- 1- There is relationship between the level of HIV/AIDS knowledge and practices among women aged 15-49 years in South Sudan
- 2- There is association between attitudes toward HIV/AIDS and practices among women aged 15-49 in South Sudan.
- 3- There is association between socio-demographic characteristics and knowledge, attitudes and practices among women aged 15-49 years in South Sudan

## 1.5 Variables

A. independent Variables:

Socio-demographic characteristics:

- Residence
- Age
- Education
- Marital status
- Household wealth index

HIV/AIDS Knowledge and Attitudes

B. dependent:

Practices:

- Condom use
- Number of sex partners

## 1.6 Operational Definitions

### 1- Socio-demographic Characteristics

- **Residence:** is a location where a group of people live before and during survey and it has been classified by Rural and urban.
- **Age:** has been define as the number of counted years that person earned before survey started. Had been classified into seven groups(15-19, 20-24, 25-29, 30-34, 35-39, 40-44, and 45-49) in binary logistic regression were grouped into two groups under 30 year and  $\geq 30$
- **Marital Status:** had been classified into married, single, former married.
- **Education:** it refers to education level reached before the survey and it had classified into (None, primary, secondary and adult education.)
- **Household wealth index:** UNICEF has classified has poorest, second, middle, fourth and richest base on certain type of asset, and materials used for construction, availability of electricity in the house and access to drinking water including sanitation facilities. Wealth index will be measure

by ranking into 5 five, first wealth index for most poor, second, third, fourth and fifth for least poor.

## 2- HIV/AIDS Knowledge, Attitudes and Practices (KAP)

- **Knowledge:** “is familiarity, awareness or understanding of someone or something, such as fact, information, description, or skills which acquired through, experience or education by perceiving, discovering, or learning  
From above definition HIV/AIDS knowledge can be refer as awareness or understanding or having information about HIV virus transmission methods and aware of the prevention methods. Has been classified into three level low, maturate and high. Knowledge score of  $\geq 75\%$  for high level, 51% to 74% for Moderate and  $\leq 50$  for low level of knowledge.
- **Attitude:** there are two type of attitudes positives and negative, it has been referred to ideas, beliefs perception toward something or someone. In this study attitude will be measure by **positive attitude** and **negative attitude**. Scores equal or more than below mean has been considered as negative attitudes, and scores from mean and above has been considered as negative attitudes.
- **Practices:** “is rehearing a behavior over and over, or engaging in activity again and again, for the purpose of improving or mastering it, as in the phrase” practice makes perfect” in this study practice had been defined as activity that person do or perform to protect his/her self from getting HIV such as condom use during sexual intercourse or having one sexual partner that has no others partners.  
Practices has been classified into two level risk and safe. Risky for scores below median and safe for scores at median or above median.

## 1.7 Conceptual framework

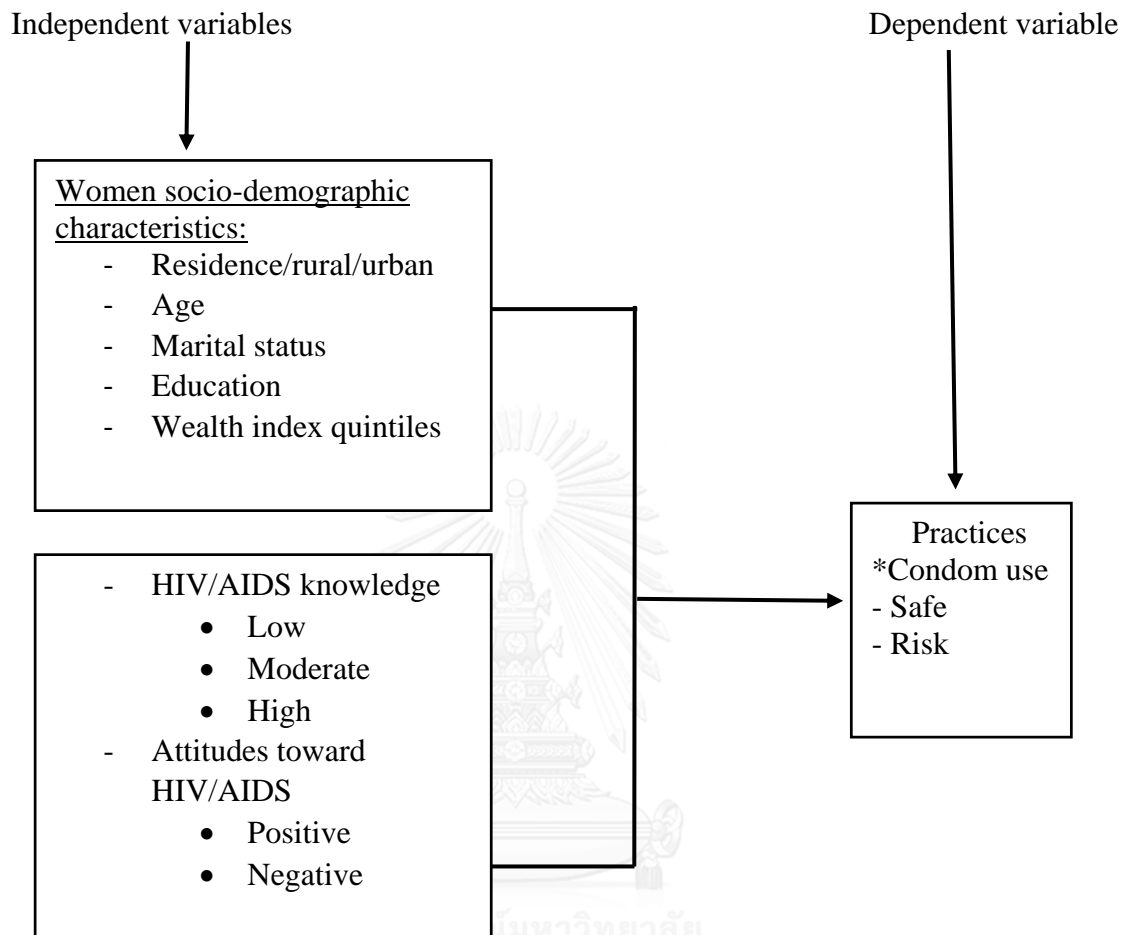


Figure 1: Conceptual framework

## CHAPTER II

### Literature review

#### 2.1 HIV/AIDS

What is HIV? Known as human immunodeficiency virus. Destroy the immune system, and can invade the central nervous system causing server neurological problems(HIV, 2012).

What is AIDS? Is acquired Immune deficiency syndrome and disease cause by HIV in which the immune system breaks down, individuals who have AIDS develop serious infections and cancers health(HIV, 2012).

HIV live in the cell body fluids and secretion of infected person and virus presence in infected human body and secretions have different degrees of transmission risk. HIV had been isolated easily in semen, vaginal secretions and blood, and breast milk, but is not easily to isolate it from tears, saliva, perspiration and urine. Therefore, HIV can be transmitted to others through blood, semen, vaginal secretion and breast milk. There three main routes for transmission of HIV from infected person to uninfected person. The first routes are sexual exposure; this route it is most commonly transmitted through sexual contact from female to male or from male to female and men seeking men. The second route is contact with contamination blood and blood products; HIV virus can be transmitted through infected blood, in some places people have become infected by blood transfusion, infected blood products including donated organs and sharing syringes and hypodermic needles, but in many places in the world donated blood now had been screened for antibodies to HIV virus, making this form of transmission rare. The third route is from mother to child during pregnancy and birth; this has been known as pre-natal transmission before birth it may transmitted across the placenta to the developing fetus, and during birth HIV virus may be transmitted via the mother blood or bodily secretion. Also some small number of cases of transmission through breast milk have been reported in some regions(Subramnian, 2016).

HIV transmission routes associated with individual behaviors, therefore is easy to prevent it if the behavior of individual is in line with prevention methods. Certain behaviors like sexual activities outside marital life, homosexuality, drug addiction and sex work might increase the spread of HIV to general population(Subramnian, 2016).

## **2.2 HIV routes of transmission**

Perhaps HIV routes of transmission are three. The first route is *sexual transmission* and it has methods of transmission; female- to- male transmission, male-to-female, male-to-male and fellatio transmission. The second route is *parenteral transmission* in this type of transmission there are three methods of transmissions; transfusion of infected blood to uninfected individual, needle sharing it happen usually among drug abuse users, and needles stick. The third transmission route is; transmission from mother to child this route can be in three ways; from mother to child during pregnancy, from mother to child during delivery and from mother to child during breastfeeding(Galvin & Cohen, 2004).

Moreover, the risk of getting HIV is dependent on the type of exposure or behavior, for example if individual share needle with infected person or having sex without using condom. This type of behavior expose people to high risk of getting HIV from infected person(CDC, 2015).

It had been documented that HIV cannot transmit through saliva, mosquito bites or any other insects. Also it had reported HIV can't be spread from eating food prepared by an HIV infected individual or eating with person living with HIV in the same dish (CDC, 2016).

Table 3: Estimated pre-act probability of acquiring HIV from an infected source, by exposure

<b>Type of Exposure</b>	<b>Risk per 10,000 Exposures</b>
<b>Parenteral</b>	
Blood Transfusion	9,250
Needle-Sharing During Injection Drug Use	63
Percutaneous (Needle-Stick)	23
<b>Sexual</b>	
Receptive Anal Intercourse	138
Insertive Anal Intercourse	11
Receptive Penile-Vaginal Intercourse	8
Insertive Penile-Vaginal Intercourse	4
Receptive Oral Intercourse	Low
Insertive Oral Intercourse	Low
<b>Other<sup>^</sup></b>	
Biting	Negligible
Spitting	Negligible
Throwing Body Fluids (Including Semen or Saliva)	Negligible
Sharing Sex Toys	Negligible

Source: CDC- Atlanta – December 4, 2015

### 2.3 HIV/AIDS prevention

For any prevention efforts against HIV/AIDS most vulnerable or high risk groups such as sex workers, people in prisons and other closed settings, men who have sex with men, people who inject drugs, and transgender people should be given priority because they can spread HIV virus into general people. These disproportionate risks reflect both behavior common among members of these populations and specific legal and social barriers that further increase their vulnerability. These are key populations influence epidemic dynamics and play a key role in determining the nature and effectiveness of the response to HIV. (WHO, 2014)

Also there are other vulnerable groups to HIV infection such as migrant workers, refugees, long-distance truck drivers, military personnel, miners, and, young women in low- income countries particularly in Africa continent (WHO, 2014).

World Health Organization (WHO) had recommended six points for HIV prevention. And these strategies as follows;



### **2.3.1 Comprehensive condom use:**

In this strategy the availability, accessibility, affordability and use of condoms both male and female and condom-compatible lubricants among people from key populations through targeted distribution programs is an essential component of the HIV response. Correct use of male condom reduces HIV infection and others sexual disease up to 94%. This method recommended for all general population including sex workers, people who inject drugs, adolescent, men who have sex with men and transgender(WHO, 2014).

### **2.3.2 Harm reduction for people who inject drugs**

Individuals who inject drugs are at risk of HIV and other blood borne diseases such as hepatitis B and C through the sharing of contaminated injecting equipment. In some settings drug use may be more prevalent among people from other key populations than in the general population. In this regard WHO, UNAIDS and UNOCD had recommended a comprehensive package to reduce infection through injections. The comprehensive harm reduction package include; needle and syringes programs, Opioid substitution therapy (OST) and other evidence-based drug dependence treatment, HIV testing and counselling, Antiretroviral therapy, Prevention and treatment of STIs, Condom program for people who inject drugs and their sexual partners, Targeted information, education and communication for people who inject drugs and their sexual partners, Prevention, vaccination, diagnosis and treatment for viral hepatitis and Prevention, diagnosis and treatment of TB(WHO, 2014).

### **2.3.2 Behavioral interventions**

This prevention method may address individuals or groups and helps them to support safer behaviors and sustain this positive change. To reduce their risk of acquiring STIs or HIV, people must understand their risk and have the knowledge, skills and believe in their self-efficacy to reduce that risk. “Behavioral interventions provide information, motivation, education and skills-building to help individuals reduce risky behaviors and sustain this positive change”. This behavior change stratify is useful for all group within population and range of behavior intervention can provides information and skill to support risk reduction(WHO, 2014).

### **2.3.3 Prevention of transmission in health-care settings**

In health care system context prevention of transmission is the essential element for preventing HIV transmission, and this prevention had two level primary prevention procedures that include; blood safety, prevention of unsafe injections, emergency and essential surgical care that limit the need for blood transfusion, standard precautions to minimize the spread of infection associated with health care and identifying, eliminating and controlling exposure to hazards in the workplace and preventing needle stick injuries. Secondary prevention that is, post-exposure prophylaxis (PEP) – is applicable in health-care settings when primary prevention has failed or when a health-care worker or patient has been exposed to the risk of HIV transmission, whether accidentally or through unsafe procedures(WHO, 2014).

### **2.3.4 ARV-related prevention**

There are three prevention methods in this strategy according to World Health Organization. The first method is pre-exposure prophylaxis (PrEP) was developed in 2015 by WHO, oral PrEP is the use of ARV drugs by HIV-uninfected people to block the acquisition of HIV before exposure to HIV. The second method post-exposure prophylaxis (PEP) is given to reduce the likelihood of acquiring HIV infection after possible exposure. Since the early 1990s antiretroviral medicines have been prescribed for PEP following occupational exposure to HIV, PEP is only way that help in reduction after infection. Third method is early initiation of ART/ART regardless of CD4 count; there is evidence supports early initiation of ART in individuals, irrespective of CD4 count, to prevent HIV transmission(WHO, 2014).

### **2.3.5 Voluntary medical male circumcision for HIV prevention**

Three randomized controlled trails study in Africa compelling evidence that medical male circumcision reduces the risk of female – to – male sexual transmission of HIV by 60% approximately. This had been recommended by WHO and UNAIDS as an additional intervention for prevention of heterosexually acquired HIV, particularly in settings with generalized HIV epidemics. Uganda recent data after 5 years from trail has shown a high effectiveness among men who circumcised, with a 73% protective against HIV infection(WHO, 2014).

## 2.4 Knowledge, attitudes and practices

In cross-sectional study in Iran revealed low of knowledge about HIV/AIDS among students and female student had high knowledge comparison with male student, but that difference was insignificant(Tavoosi, Zaferani, Enzevaei, Tajik, & Ahmadinezhad, 2004).

Study in general population in South Africa shown that female age 25-34 years old being married or cohabitating, more formal education, being employed, living in urban and aware of place where could be test for HIV had high scores of HIV knowledge(Peltzer, Matseke, Mzolo, & Majaja, 2009).

In Rwanda, study among health workers indicated that 74% of respondents did know that HIV caused by virus called HIV. And 89% reported that HIV can be transmitted by sexual intercourse, and 91% correctly said that HIV cannot be transmitted by hugging, and 90% said HIV can transmit tested from blood. 86% of respondents revealed that condom used is a only method for prevention and protection of HIV. And 85% of respondents reject the claim that HIV can be transmitted by shaking hands. Also 84% agreed that risk increase with number of sex partners. The mean score of knowledge on transmission mode was 5.7 for men and 5.3 for women. And for prevention was 3.61 (Rahlenbeck, 2004) .

In study among male students in Loa democratic republic had shown that all study group heard about HIV/AIDS and majority of them heard about people who died of AIDS. The knowledge about transmission routes of HIV was very high. Also the majority were aware that HIV can be transmitted through sexual activity and through sharing needles or syringes, from mother to child and through blood transmission. 61% of the participants answered correctly that shaking hands with people living with HIV does not spread HIV, but half of student did not know route of transmission, they answered that HIV can be transmitted by eating from the same plate, or drinking from the same glass, wearing the same clothes and sharing the same toilet with people living with HIV. In this study knowledge had been classified into three levels low, medium and high(Thanavanh, Harun-Or-Rashid, Kasuya, & Sakamoto, 2013).

Research in eastern Cameroon among Baka Pygmies reported that 67.3% of study group previously heard about HIV/AIDs. The group had cited the main transmission of HIV method is unprotected sex with percentage of (37.7%), followed by scarification (34.1%) and mother-to-child transmission (24.6%). Regarding HIV prevention methods, 34.6% of participants recommend the use of condoms, while 29.3% suggested fidelity and 21.9% recommend abstinence(Essomba et al., 2015).

In Pakistan, research indicated that knowledge mean score among respondents in study community was (14.17) (SD = 5:29). The majority of respondents never heard about HIV/AIDS with percentage of 61.6%. Also indicated that 38% of respondents believed that healthy looking person could transmits HIV and 50.5% aware that HIV could be transmitted through un-protected sexual intercourse and un-safe blood transfusion. The same study revealed that 44.4% of respondents know that HIV can be transmitted through needle stick injury and 24.6% said can be transmitted through placenta(Zafar et al., 2014).

Mean score of knowledge in cross-sectional study in Iran was 58.20. However, percentage of knowledge levels among respondents toward HIV/AIDS were; 16.6% poor, 46% moderate and 37.33% poor. Women in this study were having high score than men among who never married(Shamsipour et al., 2016).

In Hong Kong, cross-sectional study indicated that the mean score for nurse's knowledge sexual health was averaged with score of  $11.226 \pm 1.978$  of 20. Knowledge level was classified into low, moderate and high. More than half study group had responds correctly to sex health questions(Yip et al., 2015).

In quantitative study among university student in United Arabic Emirates indicated that the average total knowledge score for students was 4.3 out of 7(61%). 43% students attained the maximum score (7:100%). Female group had high score than male students but it was not significant (61% vs. 59%;  $p < 0.001$ ). All study group knew the main transmission modes of HIV, but transmission from mother to child during delivery or breastfeeding was the least with only 61% students answered correctly(Haroun et al., 2016).

The surveyed participants in study in eastern Cameroon, (14.3%) expressed their willingness to live with an individual living with HIV, and (22.5%) were willing to share a meal with a person living with HIV, and (18.2) would sleep with HIV infected person. In gender men were more able to adopt the positive attitudes comparing to women(Essomba et al., 2015).

Participants in cross-sectional study in Jordan shown negative attitudes toward people living with HIV, 97% of respondents on direct care were not willing to give care to HIV/AIDS patients, 78% expressed social stigma and half of study group with percentage of 58.8% had negative attitudes toward death outcome of the disease. The total percentage of negative attitudes of all subsections was 84.3%. in this regards the study conclude that the majority of respondents had high negative attitudes toward people living with HIV/AIDS(Hassan & Wahsheh, 2011).

Participants in study among young people in Iran shown (38.4%) declared tolerance for working or studying with individuals living with HIV. Poorest attitudes were seen towards sharing a table with people living with HIV and (46.3%) have displayed positive attitudes. Negative attitudes were (52.10%), Neutral (29.80%) and positive (18.10%)(Shokoohi et al., 2016).

In Sri Lanka, study among general population respondents had shown positive attitudes toward HIV/AIDS and people living with HIV/AIDS but in terms under shame and blame show negative attitudes. (58.2%) of respondents said they would like to give support to the people living with HIV/AIDS. In the same study male shown positive attitudes with three of the HIV/AIDS – related attitudes items. Positive attitudes were seen among those who had high score in HIV/AIDS related knowledge question. However, study indicated significant association between positive attitudes and socio-demographic factors (Navaratna et al., 2015).

Research among Africa- American and Caribbean college women revealed that study group (women) had reported high level of general sexual risk behavior (mean = 30.0, SD = 6.4) low level of condom use (mean =10.5, SD = 3.2), and fairly high degree of HIV/AIDS knowledge (mean=65.2, SD=5.2) and positive or liberal attitudes toward AIDS as disease, and toward people living with HIV(Braithwaite & Thomas, 2001).

Study in Sierra Leone among commercial sex worker and military forces showed that condom used increased from baseline to post-intervention. Among commercial sex workers increased 83% reported had used condom in last sexual intercourse at post-intervention and 60% at baseline group. High percentage of commercial sex workers reported that they had discussed condom use with their clients in last six months, 71% at post-intervention group and 49% at baseline group(Larsen et al., 2004).

In Nigeria researchers found that 58.2% of respondents reported had sex in their life time and male reported high number of having had ever sex with proportion of 63.7% and female with 50.3%5 proportion. And it reported that 62.0% male from study group claimed had sex with commercial sex workers in the last sexual intercourse. 61% of respondents reported that they use condoms always during their sexual intercourse. In the study male were more likely to use condom than female(Odu et al., 2008).

In Cameroon, study shown that (75.7%) of participants reported having sex never used a condom during sex intercourse. But among those who used condom by gender, male used condom three time more than female(Essomba et al., 2015).

Practices can be measure by two measurements such as sexual partners and condom use. Study found that sexual partners have an important influence on sexual behavior in general. The partners and the partnership is not only influencing the use of condom only but it influences sexual behavior in general. Some individuals might see sex as tool to strengthen the relationship, or as a way to please partner. In some communities' women cannot carry or buy a condom, therefore men in these communities cannot accept to live with such a girlfriend as it quotes by unmarried man from Mexico "if a woman offers me a condom, I won't take her seriously [marry her]. I don't think would be a good model for my kids" (Marston & King, 2006).

There is social pressure, women might not wish to mention sex or acknowledge sexual desire, practically in early in a relationship. This had lead young people not to speak openly about sex and use deliberate communication and ambiguity. In Africa woman cannot say yes directly to sexual activity in case she seems inappropriately willing. "When [Woman] say 'no' she means 'yes'. [A woman] can never come out

clearly and say let's do it. You need to read her facial expression... if she keeps on saying 'no' and closing her eyes, she wants it[sex]"(Marston & King, 2006).

Some communities influence behavior for instance some societies reward men who had more partners (wives) and not allow for a girls or women to have sex before marriage, if pregnancy happen before marriage it look as a shame for a girls, therefore these practices had impact on women sexual practices(Marston & King, 2006).

The rate of condom use during the sexual activity among study group in Nigeria was 65.9% and for consistent use of condom in the same cohort was 48.8%. And the majority of respondents had 2 to 5 life sexual partners, 48.6% and 30.9% had been in monogamous relationships. Also the study found some pattern influencing condom use, 19% had some difficulties to discuss condom use with their partners, the reason for this partners felt that condom use may affect their relationship and make it weak.(Ayoola et al., 2014).

Study among high school students in Goder, Northwest Ethiopia had indicated that 58.8% of students who practice sexual activity used condom. The study group majority of them reported unprotected sex. 84.1% of study community had responded that abstinence is only way to prevent HIV transmission, and 60.4% said faithfulness to one partner's can prevent HIV and 41.5% mentioned condom use as only way to prevent HIV transmission(Andargie et al., 2007).

60% of respondents in cross-sectional study in Zimbabwe revealed that they used a condom the last time they had sexual intercourse. And the average of sex partners for study group was one partner in the last month(Terry, Mhloyi, Masvaure, & Adlis, 2006).

Study in rural area in South Africa among general population in study place indicated that the majority of participants (80.9%) had had sexual intercourse in the past 12 months. And 56.5% male had one sexual partner, and 56% female also had one sex partner. 14% of males had 2-3 sex partner, and 3% of females had the same number of sex partners in past 12 months. The percentage of male and females who had four plus sexual was 6% and 7% in last past 12 months. In condom use 74.9% of respondents

didn't used a condom in the last sexual intercourse with their regular sex partners, and 23% used a condom in the last sexual intercourse(Peltzer, 2003).

In research among male high school students in Lao People's Democratic Republic demonstrate that (31.3%) of the study group had a history of sexual intercourse. Total of 56.4% of the students reported safe practices to prevent HIV, and (43.3%) were having risky practices, with less than median score. The practices had classified into level in safe and risky (Thanavanh et al., 2013).

In Pakistan, study revealed that 97% of respondents have more than one spouse as sexual partners, only 9.8% of respondents used condom in last one year before survey time. And 25.6% of respondents from study group having sexual other than spouse(Zafar et al., 2014).

South Africa study indicated that three quarter of respondents of study group who had sexual intercourse in the previous six months used condom with their sex partner. And the reason of using condom was for the protection against HIV and STDs but only 21.8% of study respondents stated that they used condom to prevent pregnancy, and 10.8% indicated that th (van der Ryst et al., 2001).

## **2.5 Factors associated with HIV/AIDS knowledge, attitudes and practices**

In Malawi the study on multiple indicators cluster survey data among women age 15-49 found that marital status, household wealth index, and region significantly associated with HIV/AIDS knowledge. And education was not significantly associated(Siziya, Muula, Rudatsikira, & Mataya, 2008).

Vietnam MICS data analysis for 2000 and 2011 found that living in urban area and highly economic status significantly associated with good basic knowledge of HIV/AIDS among women age 15-49 years. In MICS 2006 data shown that there was significance association between HIV/AIDS knowledge and living in rural, high education level and higher economic status among women in Vietnam. Also the study



found that there was association between marital status, education level, living areas, economic with positive attitudes toward HIV/AIDS among Vietnamese women age 15-49 years in 2000, 2006 and 2011 multiple indicators cluster survey data (Van Huy et al., 2016).

Study in Mazandaran province in Iran shown that knowledge was significantly associated with age group 25-34 years, and male responded correctly then female. And education was significant associated with knowledge among those who had high education level. Also there were significant demographic differences in practices responds except marital status (Majdi et al., 2011).

In secondary data analysis study based on indicators cluster survey in Iraq had found that urban residence, high wealth index, secondary education level having association with correct HIV/AIDS knowledge among Iraqis Women age 15-49 year (Siziya, Muula, & Rudatsikira, 2008).

Study in general population in Sucre, Bolvivia found that inadequate knowledge of prevention and transmission of HIV among women was associated with residence (rural vs urban), low educational level, and income. Factors associated with knowledge among men in this study was residence. Also prevalence of inadequate knowledge is higher in women than men. (Terán Calderón et al., 2015).

Demographic and Health Survey (DHS) data collected in 12 Countries in Africa in years 2003 to 2008 had shown that there is correlation between wealth, poverty and HIV virus infection. In those survey wealth quintile has associated strongly with HIV infection among woman than men. Poor persons in other way they had particular risk practices that lead them to HIV infection, for instance earlier sexual debut and wealthy people may engage in risky behaviors (Parkhurst & Kruk, 2010).

Secondary data analysis study in Vietnam had categorize the attitudes into two positive attitudes and negative attitudes and low scores are for negative attitudes and higher scores are for positive scores. Therefore the study found that household economic status and living area had positive association with attitude in 2000, 2006 and 2011 data. (Van Huy et al., 2016).

Cross – sectional study among urban women in United States of America found significant relationship education and income, women who had high education level and high income had positive attitudes toward condom and condom use than women who had low income(Pulerwitz, Amaro, Jong, Gortmaker, & Rudd, 2002).

Researchers in Croatia found that factors associated with condom use were education, age and living area, those who came from traditional areas are less to use condom during sexual intercourse comparison to women who were living in modern areas(Štulhofer, Graham, Božičević, Kufrin, & Ajduković, 2007).

Cross- sectional study in Dominican Republic among women who worked as sex workers found that age associated with use of condom. Women with year less than 25 years were more likely to use condom than older(Kerrigan et al., 2003).

Study among Women and Men in four cities in Sub-Sahara Africa, namely Yaoude, Camron; Cotonon, Benin; Ndola, Zambia; and Kisumu, Kenya found that condom use among study group was associated with higher educational level. In Yaoude and Ndole higher education of male partner was associated with condom use but in Cotonou and Kisumu cities the level of higher educational in female partners associated with condom use. Therefore education was a key determinant of condom use in these four cities(Lagarde et al., 2001).

Study in South Africa among general population found that education level was not associated with HIV/AIDS knowledge among study group, but it indicated that age was strongly associated with HIV/AIDS in study objects(Peltzer, 2003).

## **2.6 Multiple indicator cluster survey (MICS)**

MICS as an approach for collecting data from general population was developed to measure progress towards an international agreed set of goals during world summit for children in 1990. The first survey was conducted in 1995 in 60 Countries, and second was conducted in 2000 in 65 Countries. The aim of MICS was information of some 20 of the 48 millennium development goals (MDGs). MICS focus on household, children and women health indicators.(M. UNICEF, 2005).

Worldwide UNICEF helps countries in collecting and analyzing data to fill their data gaps for monitoring the situation of children and women through household survey initiative the multiple indicator cluster survey (MICS). This approach enables countries to have statistical data and indicators in the health, education, child protection and water and sanitation and HIV/AIDS. Multiple indicator cluster survey outcomes are most important sources of information and used as a basis of policy making and programs interventions on the child and women. Usually, multiple indicators cluster surveys are carried out by Countries governments under support and technical assistant of UNICEF. The duration of MICS process can last for 12 months or more with UNICEF working closely with implementing agency(M. UNICEF, 2000).

## **2.7 HIV/AIDS situation in South Sudan**

In 2012 HIV/AIDS had been reported as the second cause of death in South Sudan after lower respiratory infection. The cases continue increasing in all ten states of South Sudan (WHO, 2012) The number of people living with HIV in 2015 in South Sudan was 180,000. Adults aged 15 and over living with HIV were (170,000) and women aged 15 and above living with human immune virus (HIV) were (97000). Children aged 0-14 living with HIV were (14,000). The number of death due to AIDS was (12,000). The number of orphans due to AIDS was 100,000. HIV/AIDS prevalence among adults aged 15-49 was 2.5% (UNAIDS, 2016).

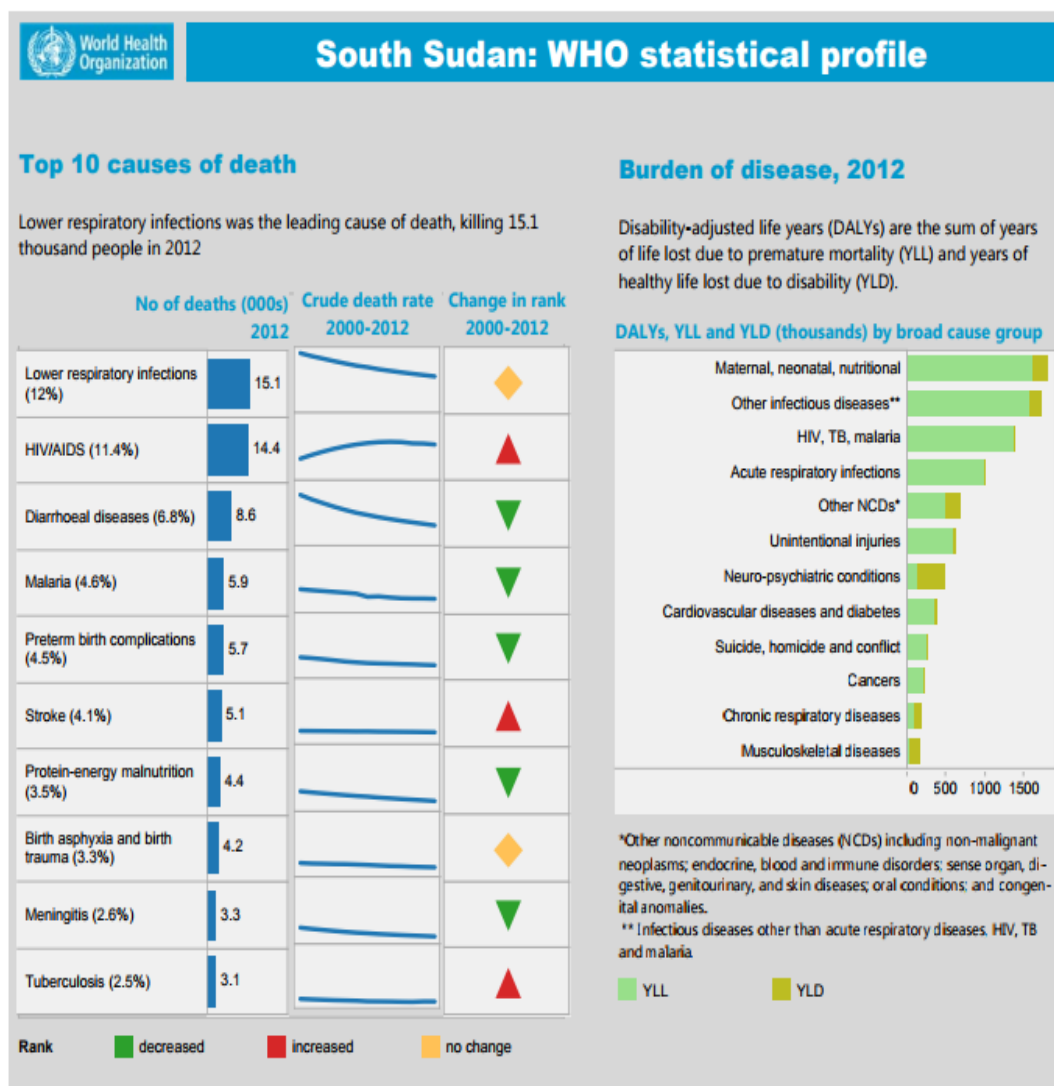


Figure 2: top ten causes of death in South Sudan

Source: WHO, 2015

Access date: June 2017

## 2.8 South Sudan

Sudan gained independent from British on January 1, 1956 by then Northern Sudan was more developed in term of services such as infrastructures, education and health more than Southern Sudan due to British policy. Sudan was divided along religion, in North Sudan majority are Muslim and in South Sudan the majority are Christian. Before Sudan independent, Southern Sudanese disagreed with Northern Sudanese on how Sudan should be govern after British administration leave, this led to formation of Arm resistance called Anya Nya in 1955 in Southern Sudan its objective was regional autonomy for Southern Sudan. The civil war continues from 1955 to 1972 when Government of South signed peace agreement with Anya Nya fighters in Addis Ababa in 1972. That agreement granted regional autonomy to Southern Sudanese. The two parties continue to implement the agreement till 1983 when Sudan President disowned the agreement (Zapata, 2011b).

After President, Ja'afar Nimeiri disowned 1972 Peace Agreement Southern Sudanese took arms against government in Khartoum in 1983 and they form resistance movement by name Sudan People's Liberation Movement (SPLM). SPLM continue to fight Khartoum Government for 21 years. Civil war between 1983 -2005 had killed two million and five hundred thousand South Sudanese. In January 9, 2005 Government of Sudan under leadership Omar Al-Bashir signed with Sudan People's Liberation Movement under leadership of Dr. John Garang. The agreement established six-year interim period, at the end of which, the people of Southern Sudan were given right to vote for Self-determination. In January 9, 2011 people of Southern Sudan conducted a peaceful referendum where they voted for separation of Southern Sudan from Sudan with a rate of 99.1%. In July, 9 2011 officially South Sudan independence was declared in Juba capital city of the Country where Sudan's flag was handed over to Sudan in a peaceful ceremony (Zapata, 2011a).



Figure 3: South Sudan map

Source: [www.mapsofworld.com](http://www.mapsofworld.com)

Access date: June 2017

## CHAPTER III

### Methodology

Data from South Sudan multiple indicator cluster survey (MICS) 2010 had been obtained from UNICEF MICS data base after MICS team approved the request in November 28, 2016. South Sudan MICS2 was conducted by National Bureau of Statistic and Ministry of Health under support of UNICEF.

#### 3.1 Study design:

Study design of primary study (multiple indicator cluster survey) was descriptive cross-sectional study. Therefore, this study design was cross-sectional study.

#### 3.2 Study Area:

The primary study was conducted in all ten States of South Sudan namely, Upper Nile, Jonglie, Unity and Central Equatoria, Western Equatoria, Eastern Equatoria, and Lakes, Warrap, Northern and Western Bhar Elgazal. This study used the data from these Ten States.

#### 3.3 Study population

This study has targeted women aged 15-49 years who had responded to multiple indicator cluster survey 2010 in Ten State of South Sudan.

#### 3.4 Sampling Technique

Sampling technique used in primary survey study was systematic PPS (probability proportional to size) sampling procedures was based on the estimated sizes of the enumeration areas from the 2008 population census. First, enumeration areas were selected from all 10 states by urban and rural. A new household listing was

conducted in all enumeration areas. Before the selection of household, the listing team visit all enumeration areas and registered all occupied households.

The listing team had numbered all household from 1-n (the total household in each enumeration area) in central statistical office where 25 households in each enumeration were selected by using random systematic selection procedures. 40 clusters were drawn from each states and each cluster contain 25 households. In Unity and Jongile States the cluster size was 39 per each. Therefore, the total number of clusters in all states was 398 (enumeration areas).

The cluster allocation in all states was as follows;

- Upper Nile state = 9 cluster for urban and 31 for rural
- Jonglie State = 3 clusters for urban and 36 for rural
- Unity state = 7 clusters was for urban and 32 for rural
- Warrap state = 3 cluster was for urban and 37 for rural
- Northern Bahr El Ghazal = 2 clusters was for urban and 38 for rural
- Western Bahr El Ghazal = 18 cluster for urban and 22 for rural
- Lakes state = 3 cluster for urban and 37 for rural
- Western Equatoria = 5 cluster for urban and 35 for rural
- Central Equatoria = 13 cluster for urban and 27 for rural
- Eastern Equatoria = 3 cluster for urban and 37 for rural

### **3.5 Sample size**

Data were collected from 9950 households during primary study (multiple indicator cluster survey). The number of women participated in primary study was estimated 11,568 but the number of those who responded during the study was 9069 female aged 15-49 year. Sample size of this study was 9069 participants.

### **3.6 Measurement tools**

UNICEF's MICS standard administrated questionnaire was used in primary study data collection. Questionnaire for women aged 15-49 years consisted of eight parts, socio-demographic characteristics, and child mortality, maternal and newborn, and contraception module, and unmet need section, female genital mutilation/ cutting



section, HIV/AIDS knowledge and attitudes, and Sexual behavior section. This secondary study used socio-demographic, HIV/AIDS knowledge attitudes and sexual behavior data sections.

### **3.7 Data collection**

Multiple indicator cluster survey data were collected in all ten states of South Sudan, the survey started on week of March 2010 and ended on June 2010. Data from this survey were obtained from UNICEF MICS data base after MICS team in New York approved on the 28<sup>th</sup> November 2016.

### **3.8 Inclusion and exclusion criteria**

In primary survey (MICS) all women aged 15-49 year were included in the Study. Exclusion criteria in primary survey were; women who refused to participate in survey, visitors during survey, and women weren't living in the household before three months from the survey.

In this study data from socio - demographic such as (residence area, age, marital status, education levels and wealth index) and HIV/AIDS knowledge, attitudes and sexual behavior sections were included. Cases with missing value were excluded from this study.

### **3.9 Data analysis**

#### ***Independent variables:***

The independent variables of this study are; socio-demographic characteristics (residence, age, marital status, education and wealth index quintile), Knowledge and attitudes. Knowledge had three level low, moderate and high. Attitudes had two level positive and negative. The independent variables were re-coded in SPSS as follows:

#### **A) Socio-demographic:**

- 1- Residence area has been classified into two urban and rural and coded as **0** for rural and **1** for urban. In binary logistic regression analysis rural was used as reference.

- 2- Age will be classified to groups. **15-19, 20-24, 25-29, 30-34, 35-39, 40-44** and **45-49** in SPSS will be coded as follows;  
0= 15-19, 1= 20-24, 2 = 25-29, 3 = 30-34, 4 = 35-39, 5 = 40-44 and 6 = 45-39, but in binary logistic regression age was grouped into group under 30 years and  $\geq 30$ . Age below 30 years was used as references in Binary logistic regression analysis.
- 3- Marital status has been defined as three levels; married, former married, and single. All variables were coded as **0** = married, **1** = former married and **2** = single. Married variable was used as reference in binary logistic regression analysis
- 4- **Education level**; has been classified into four groups none, primary, Secondary plus and adult education/religion education. All were coded as 0 = none, 1 = Primary, 2 = secondary + and 3 = adult education/ Religion. No school variable was used as reference in Binary logistic regression analysis.
- 5- Wealth index quintiles; has been defined as five levels; poorest, second, middle, fourth and richest.(Rutstein, 2008) and coded as 0 = poorest, 1 = second , 2 = middle, 3 = fourth and 4 = richest (Rutstein, 2008) poorest level was putted as reference in binary logistic regression analysis.
- B) **Knowledge**; According to previous studies knowledge has been classified into three. Low, moderate and high. In this study knowledge questions are 9 and outcome of each question was yes/no. correct answer was given score 1 and incorrect was given score 0. All answers were sum up using mean faction to highlighted cut-off point for knowledge scores from 75 above was considered as high knowledge, and scores from 51 to 74 was considered as moderate knowledge and scores 50 and below low knowledge. In coding 0 for low knowledge, 1 for medium knowledge and 2 for high level of knowledge. Scores ranged from 0-100 and total score for knowledge was 9 (Thanavanh et al., 2013; Van Huy et al., 2016)
- C) **Attitudes**; Previous studies classified attitudes into positive and negative attitudes. The outcome of attitudes questions had two level yes and no. Correct answer was given 1 and incorrect answer was given 0. Attitude questions were four, all answers were sum up to determine the cut-off point. Those who scored

below 50 were considered as negative attitudes and who scored 50 and above were considered as positive attitudes. Scores were ranged from 0 – 100. Total score for attitude was 4. Negative attitude was used as reference in binary logistic regression (Thanavanh et al., 2013; Van Huy et al., 2016) (Nubed & Akoachere, 2016)

**Dependent variables:**

Practices: Have been measured by condom used during sexual intercourse. The outcomes of questions are Yes/No. answers with yes were given 1 score and no were given 0 score. There were three question for condom use (1- did you use condom in first sexual intercourse? 2- did you use condom in last sexual intercourse? 3- did you use condom in last 12 months?) these three questions were sum up. Median was used to determine the cut-off point for practices. Median was .33, those score below median were considered as risky practices and those score median and above were considered as safe practices(Thanavanh et al., 2013; Van Huy et al., 2016) (Nubed & Akoachere, 2016) risky level was used as reference in binary logistic regression analysis.

Descriptive statistic will be used for socio-demographic characteristic variables (state, residence, age, marital status, education and wealth index quintile) to find frequency and percentage. Also descriptive statistic was used for HIV/AIDS knowledge and there were 9 questions to measure knowledge and the outcome was Yes/No. the same statistic was used for attitudes and practices to describe frequency and percentage in these two variables. Attitudes had four questions and the outcome is yes/no answers. Practices had three questions and outcome was yes/no.

To describe level of knowledge, mean and standard deviation was used, these score  $\leq 50$  were considered having low level of knowledge and those with 51- 74 scores having moderate knowledge, and those with 75 and above having high knowledge.

To describe attitude level, mean was used, those scored below 50 were considered having negative attitude and those score 50 and above and above were considered as positive attitudes.

To describe level of practices median was used those who scored below median have been considered having risky practices and those score median and above were considered having safe practices.

Inferential statistic was used for assessing association between control factors (independent variable) and outcome factors (dependent variable).

Chi-square was used to assess association between socio-demographic characteristics and practices.

Binary logistic regression was used to find association between practices and independent variables.

Binary logistic regression was used to assess relationship between knowledge, and practices, attitudes and socio-demographic characteristic

Binary logistic regression was used to assess association between attitudes, and knowledge, practices and socio-demographic characteristics.

Data was analyzed Statistical Package for the Social Sciences (SPSS) Version 17.0 licensed for Chulalongkorn University. Confident interval was at 95% and alpha level was at 0.05

### **3.10 Study period**

This study was conducted in period of May to July 2017 after approved by research ethics committee from Chulalongkorn University, Bangkok, Thailand.

### **3.11 Ethical Consideration**

Ethical approval was obtained from research ethics committee involving human research subject group of Chulalongkorn University on 8<sup>th</sup> May 2017.

### **3.12 Reliability and validity:**

Pre-test was conducted in Juba payam before MICS survey started for reliability test. MICS survey questionnaire is standard used in all countries over the world by UNICEF and National ministries of health. In South Sudan MICS expert from Ministry of health and UNICEF reviewed all questionnaire contains based on Country health guidelines. National HIV/AIDS control guidelines were reviewed by MICS team from both Ministry of health and UNICEF.

All survey variables during South Sudan MICS were drawn from form ministry of health guidelines for program proposes.

### **3.13 Limitations:**

The primary study survey was a cross-sectional study in whole population and response rate was low with rate of 71%, therefore the result cannot be generalized. Also the response rate for men aged 15-49 was very low with approximate rate of 20% it was dropout from analysis process. Therefore, in this secondary study there will be limited for women aged 15-49 only and the result cannot be generalized to whole population and differences between women and men in the same age group will not be compared. Translation of questions from English to local language by interviewers to interviewees might affected the level of understanding of the question. Fourths limitation can cultural and beliefs of some communities that not allow women to talk or answers question related to sexual activity. All practice questions were not use due to lower response from participants. Participant's source of information was not assessed because there was no question was asked regarding this item during primary survey.



## CHAPTER IV

### Result

The first set of tables describes the social and economic characteristics of the sample that serve as possible explanatory on independent variables. The second set of tables examines certain outcome variables in model in which include various combinations of the independent. The tables as follows:

- Socio- demographic characteristic
- Participants correct answers on HIV/AIDS knowledge related question
- Participants correct answers on attitudes toward people living with HIV/AIDS
- Condom use
- Number of sex partners of participants in last 12 months before survey
- Distribution of knowledge levels
- Distribution of attitudes levels
- Chi-square association
- Binary logistic regression of factors associated with practices
- Binary logistic regression of factors associated with knowledge
- Binary logistic regression of factors associated with attitudes

The mean age of study group was 34 years ( $SD\pm 1.712$ ), and about one-third were below age year. The majority of participants were living in rural areas (73.1%), and 80.9% of them were married, and majority never attended school.

Table 4: Number and percentage of socio-demographic characteristics 9069 respondents

		N	%
<b>Residential Area</b>	Rural	6,631	73.1
	Urban	2,438	26.9
<b>Age</b>	15-19	1,360	15.0
	20-24	1,612	17.8
	25-29	2,097	23.1
	30-34	1,468	16.2
	35-39	1,370	15.1
	40-44	620	6.8
	45-49	542	6.0
<b>Marital Status</b>	Married	7,340	80.9
	Formerly married	711	7.8
	Never married	1,018	11.2
<b>Education level</b>	No School	7,153	78.9
	Primary	1,559	17.2
	Secondary +	331	3.6
	Adult education	26	0.3
<b>Wealth Index quintiles</b>	Poorest	1,613	17.8
	Second	1,726	19.0
	Middle	1,818	20.0
	Fourth	1,920	21.2
	Richest	1,992	22.0

9069 Participants were interviewed on MICS women questionnaire, but from that number 46% had never ever heard about AIDS. Therefore, those who never ever heard about AIDS were excluded from questions about HIV/AIDS knowledge, attitudes and practices.

Table 5 contained the number and percentage of correct answers of those respondents who had heard about AIDS. These questions represent some HIV/AIDS prevention methods and transmission routes. Regarding to their incorrect answers, 31.9% said that people cannot reduce their chance human of getting immunodeficiency virus (HIV) even if they have one faithful uninfected partner, and 22.6% reported that people can get AIDS virus through witchcraft or other supernatural means, and 59.0% said condom cannot protect people from getting HIV, and 44.7% answered that individual can get AIDS virus from mosquito bites. 33% of respondents reported that people can get HIV by sharing food with person with AIDS disease. In their response on HIV transmission from mother to child, 57.8% reported that HIV cannot be transmitted from mother to her child during pregnancy, and 38.7% said cannot transmitted during delivery, and 41.3 % revealed that AIDS virus cannot transmitted during breastfeeding.



Table 5: Number and percentage of correct answer of 4882 respondents on HIV/AIDS knowledge

	Correct answers	
	N	%
(Can people reduce their chance of getting the AIDS virus by having one uninfected sex partner who has no other sex partners)?(Yes)	3,375	69.1
(Can people get the AIDS virus because of witchcraft or other supernatural means)?(No)	3,777	77.4
(Can people reduce their chance of getting the AIDS virus by using a condom correctly every time they have sex)?(Yes)	2,001	41.0
(Can people get the AIDS virus from Mosquito bites)?(No)	2,650	54.3
(Can people get the AIDS virus by sharing food with a person who has AIDS)?(No)	3,273	67.0
(Is it possible for a healthy-looking person to have the AIDS virus)?(Yes)	2,413	49.4
(Can the virus that cause AIDS be transmitted from mother to her baby during pregnancy)?(Yes)	2,060	42.2
(Can the virus that cause AIDS be transmitted from mother to her baby during delivery)?(Yes)	2,993	61.3
(Can the virus that cause AIDS be transmitted from mother to her baby by breastfeeding)?(Yes)	2,865	58.7

Table 6 is showing participants correct answers on attitudes toward people living with HIV/AIDS. Regarding their incorrect answers 64.1% of them rejected female teacher to teach or to continue teaching at school, and 65% were not willing to buy fresh vegetable from shopkeeper or bender if they knew he or she had HIV/AIDS. Sixty-six point four said they would make it secret if one of their family member became sick with AIDS or they will not share such information with any one. In other hand the number of people who were not willing to take care for person who had AIDS disease had decline into 33.3%, more than half were willing to take care of their relative who had AIDS.

Table 6: Number and percentage of correct answers of 4882 respondents on attitudes toward people living with HIV/AIDS

	Correct Answers	
	N	%
(In your opinion, if a female teacher has the AIDS virus but is not sick, should be allowed to continue teaching in school)?(Yes)	1,706	34.9
(Would you buy fresh vegetables from shopkeeper or vendor if you knew that this person had the AIDS virus)?(Yes)	1,708	35.0
(If a member of your family got infected with the AIDS virus, would you want it to remain a secret)? (Yes)	1,593	32.6
(If a member of your family became sick with AIDS, would you be willing to care for her or him in your own household)?(Yes)	3,256	66.7

Table 7: Number and percentage of 4882 respondents on condom use

	N		%	
	Yes	No	Yes	No
Did you used condom during first sexual intercourse?	98	4,784	2.0	98.0
Did you used condom at last sexual intercourse?	102	4,780	2.1	97.9
Did you used condom in last 12 months all partners?	25	4,857	0.5	99.5

Table 8 is describing distribution of knowledge level among respondents. Majority of respondents were having Low level of knowledge toward HIV/AIDS according to their response on knowledge questions.

Table 8: Number and percentage of knowledge levels of 4882 respondents toward HIV/AIDS

		N	%
Knowledge levels	Low ( $\leq 50$ )	3,082	63.1
	Moderate (51-74)	1,553	31.8
	High (75-100)	247	05.1

Table 10 is describing distribution attitudes level among respondents. Majority of participants were having negative attitudes toward people living with HIV/AIDS

Table 9: Number and percentage of attitude level of 4882 respondents toward people living with HIV/AIDS

		N	%
Attitudes levels	Negative < 50	3,534	72.4
	Positive $\geq 50$	1,348	27.6

Table 10: Chi-square association between independent variable and practices for 4882 respondents

		Total	Practices				P-value
			Risky		Safe		
			N	%	N	%	
Total		4882	4702	96.3	180	3.7	
Residential Area							<0.01
	Rural	3160	3083	97.6	77	2.4	
	Urban	1722	1619	94.0	103	6.0	
Age							0.001
	15-19	820	795	97.0	25	3.1	
	20-24	918	864	94.1	54	6.3	
	25-29	1121	1074	95.8	47	4.4	
	30-34	740	715	96.6	25	3.5	
	35-39	704	688	97.7	16	2.3	
	40-44	321	315	98.1	6	1.9	
	45-49	258	251	97.3	7	2.8	
Marital Status							0.047
	Married	3842	3704	96.4	138	3.6	
	Former married	442	417	94.3	25	5.7	
	Single	598	581	97.2	17	2.8	
Education Level							<0.01
	No School	3217	3150	97.9	67	2.1	
	Primary	1329	1261	94.9	68	5.1	
	Secondary+	317	275	86.8	42	13.2	
	Adult Education	19	16	84.2	3	15.8	
Wealth index levels							<0.01
	Poorest	551	544	98.7	7	1.3	
	Second	629	618	98.3	11	1.7	
	Third	854	833	97.5	21	2.5	
	Fourth	1213	1170	96.5	43	3.5	
	Richest	1635	1537	94.0	98	6.0	
Knowledge levels							0.014
	Low	3082	2986	96.9	96	3.1	
	Medium	1553	1478	95.2	75	4.8	
	High	247	238	96.4	9	3.6	
Attitudes levels							<0.01
	Negative	3534	3445	97.5	89	2.5	
	Positive	1348	1257	93.2	91	6.8	

Table 11 describing association between independent variables and practices. In model one variables were enter to model without control variables and, in model two all variables were entered to model as controlled.

In model one participants who live in urban residence area were 2.5 time (95% CI = (1.9 – 3.4) likely to practice safe practices more than participants in rural residence area. Nevertheless, in model two when the other variables were included as controls the odds ratio of safe practices among participants who live in urban residence were 1.6 time ( 95% CI = (1.12 – 2.17). meaning that urban residence area has significantly associated with practices in both model with few differences in odds ratio. OR = 2.5, 95% CI = (1.9 - 3.4), OR = 1.6, 95% CI (1.12 - 2.17) respectively.

The age coefficients are statistically significant. The ORs show that older respondents have lower practices score than younger respondent. OR = 0.60, 95% CI = (0.43 – 0.82) and OR = 0.64, 95% CI = (0.45 – 0.89) respectively.

All two models have shown education effect on practices of respondents. In model one participants who attended primary education were 2.5 time likely to practices safe practices than those who never attended school, but in model two has changed from 2.5 to 1.9. Participants in model one who reached secondary school were 7.2 time likely to have safe practice more than who never went to school, but this odd ratio has changed in model two from 7.2 to 4.4. Both models shown that participants who attended adult education were 8.8 and 5.3 time likely to practice safe practices more than those who never attended education respectively.

Marital status also has shown impact on participant's practices. Former married or women who were separated from their husbands were 1.6 time likely to use condom during their sexual intercourse more than married women. In model two they were 1.33 time likely to use condom more than married. Two models shown that single women were 20% and 57% lower chance to use condom during their sexual intercourse. In model two lower chance is high than model because in model two variable was controlled by other variables. OR = 1.6, 95% CI = (1.03 - 3.6), OR = 1.33, 95% CI = (0.84 - 2.1) respectively.

Wealth index quintile shown effect on practices of participants. In model one respondents who were at second wealth index quintile were 1.4 time likely to have safe practice than people who at poorest wealth index level, in model two has decreased from 1.4 to 1.2. Respondents who their wealth index was middle were 2.0 time in model one and 1.6 time in model two likely to practice safe practices more than who were in poorest level. Individuals with fourth and richest wealth index were 2.9 and 5.0 time likely to practice safe practices more than who in poorest wealth index, but in model two it has changed to 1.7 and 1.9 respectively.

Moderate knowledge levels have shown effect on practices in model one but model two shows no effect on knowledge. In model one participants with moderate knowledge were 1.5 time likely to have safe practices more than those with low level of knowledge toward HIV/AIDS, but model two shows no effect on safe practices. Odd ratios = 1.5, 95% CI (2.13 – 2.10), 1.1, 95% CI = (0.85 – 4.50) respectively.

Both models have shown association between positive attitudes and practices. In model one individual who had positive attitudes were 2.8 time likely to practice safe practices more than who express negative attitude toward HIV/AIDS and people living with HIV. In model two when all variables were control the odd ratio changed from 2.8 to 1.6, meaning participants with positive attitudes were 1.6 time likely to practice safe practices more than who expressed negative attitudes. OR = 2.8, 95% CI = (2.1 -3.8), OR = 1.8, 95% CI = (1.3 – 2.5) respectively.

Table 11: Binary logistic regression of factors associated with practices toward HIV/AIDS among 4882 respondents

	Model 1- Single IV in one equation		Model 2- all IV in one equation	
	OR	95% CI	OR	95% CI
<b>Residential area</b>				
Ural	Ref	1	1	1
Urban Area	2.5	(1.9 - 3.4)	1.6	(1.12 - 2.17)
Model1 area ( $X^2 = 37.3$ , $df = 1$ , $P < 0.01$ )				
<b>Age</b>				
< 30	Ref	1	1	1
≥ 30	0.6	(0.43 - 0.82)	0.64	(0.45 - 0.89)
Model1 age ( $X^2 = 10.44$ , $df = 1$ , $P < 0.01$ )				
<b>Education</b>				
No school	Ref	1	1	1
Primary	2.5	(1.03 - 2.5)	1.9	(1.3 - 2.8)
Secondary	7.2	(4.8 - 10.7)	4.4	(2.8 - 7.0)
Adult Education	8.8	(2.5 - 31.0)	5.3	(1.4 - 19.4)
Model1 education ( $X^2 = 88.8$ , $df = 3$ , $P < 0.01$ )				
<b>Marital Status</b>				
Married	Ref	1	1	1
Former Married	1.6	(1.03 - 3.6)	1.33	(0.84 - 2.1)
Single	0.8	(0.47 - 31.0)	0.43	(0.25 - 0.73)
Model1 marital ( $X^2 = 5.56$ , $df = 2$ , $P = 0.062$ )				
<b>Wealth index</b>				
Poorest	Ref	1	1	1
Second	1.4	(0.53 - 3.6)	1.2	(0.47 - 3.2)
Middle	2.0	(0.82 - 4.6)	1.6	(0.61 - 3.5)
Fourth	2.9	(1.3 - 6.3)	1.7	(0.77 - 4.0)
Richest	5.0	(2.3 - 10.7)	1.9	(0.85 - 4.3)
Model1 wealth ( $X^2 = 45.1$ , $df = 4$ , $P < 0.01$ )				
<b>Knowledge level</b>				
Low	Ref	1	1	1
High/Moderate	1.5	(2.13 - 2.1)	1.1	(0.85 - 4.5)
Model 1 knowledge ( $X^2 = 7.5$ , $df = 1$ , $P < 0.01$ )				
<b>Attitudes level</b>				
Negative	Ref	1	1	1
Positive	2.8	(2.1 - 3.8)	1.8	(1.3 - 2.5)
Model 1 attitudes ( $X^2 = 44.1.3$ , $df = 1$ , $P < 0.01$ )			Model 2 ( $X^2 = 143.9$ , $df = 13$ , $p < 0.01$ )	

\*IV = Independent Variables, DV = Dependent variables

Table 12 is exploring factors associated with knowledge toward HIV/AIDS among study group. Two binary logistic regression models were performed, variables in model one were enter into model without control variables, and in model all variables were enter at once into model.

Model one shown that participants who were living in urban areas were 1.5 time likely to have knowledge toward HIV/AIDS than individual in rural areas, but in model two revealed that urban participants were 1.3 likely to gain knowledge toward AIDS disease than individual in rural. OR = 1.5, 95% C.I = (1.3 – 1.7), OR = 1.3, 95% C.I (1.1 – 1.4) respectively.

Age of participants has shown no association with knowledge in both models. In model one respondents at age 30 and above were 20% lower to have knowledge toward HIV/AIDS than participants below age 30 year that percentage has changed in model two to 14%. OR = 0.8, 95% C.I = (0.71 – 0.91), OR = 0.86, 95% C.I (0.76 – 0.86) respectively.

Education variable associated with knowledge toward HIV/AIDS. Participants who attended primary education in model one were 1.6 time likely to have knowledge toward HIV/AIDS more than those who never attend school. The odd ration has changed in model two when all variable putted as control in which respondents were 1.3 time likely to have knowledge more than who never went to school. Participants who reached secondary school in model one were 1.7 time likely to have knowledge on HIV/AIDS more than uneducated individual, but it has changed in model two from 1.7 to 1.1 meaning that education has no effect on knowledge when all variables were controlled. Individual who went to adult education were 3.5 and 2.6 time likely to have knowledge toward HIV/AIDS in two models more than others who never attended school. Odd ratios in model two were (OR = 1.3, 95% CI = 1.2 – 1.5, OR = 1.1 95% CI (0.89 – 1.5), OR = 2.6, 95% CI = (1.1 – 6.9) respectively.

Marital status of respondents has shown no association with knowledge in two model. Former married participants were 12% and 4% lower to have knowledge than who were married respectively. Single individual was 1% and 4% lower to have moderate knowledge toward HIV/AIDS than married one. OR = 0.88, 95% CI = (0.74



– 1.1), OR = 0.99, 95% CI (0.80 – 1.22), OR = 0.96, 95%, CI = (0.74 – 1.2), OR = 0.90, 95% CI = (0.74 -1.1).

Wealth index has associated with moderate knowledge toward HIV/AIDS in all two models. Participants at second level of wealth index were 1.3 in model one and 1.2 in model two likely to have moderate knowledge about HIV/AIDS more than individuals at poorest level of wealth index. Respondents at level of middle wealth index were 1.5 and 1.3 likely to gain information about HIV/AIDS than poorest level. Participants at fourth level of wealth index were 1.7 and 1.4 more likely to have knowledge than those with poorest wealth index. Individuals at richest wealth index were 2.2 in model one and 1.5 were in model two likely to have moderate knowledge toward HIV/AIDS.

Practices has shown effect in model one but in model no effect on moderate knowledge toward HIV/AIDS. Model one revealed that participants who having safe practice were 1.5 time likely to have information about HIV/AIDS but in model show they were 1.1 meaning there is no association between safe practices and knowledge. OR = 1.5 95% CI = (1.1 – 2.0), 1.1 (0.83 – 1.6) respectively.

Positive attitudes have associated with moderate knowledge in two model. Participants with positive attitudes in model were 1.7 time likely to have knowledge about HIV/AIDS than participants with negative attitudes, and in model two were 1.5 time likely to have moderate knowledge toward HIV/AIDS than those who had negative attitudes toward people living with HIV/AIDS. OR = 1.7 95% CI = (1.5 – 1.96), OR = 1.5, 95% CI (1.3 – 1.7) respectively.

Table 12: Binary logistic regression of factors associated with knowledge toward HIV/AIDS among 4882 respondents

	Model 1- Single IV in one equation		Model 2- all IV in one equation	
	OR	95% CI	OR	95% CI
<b>Residential Area</b>				
Rural	1		1	1
Urban	1.5	(1.3 - 1.7)	1.3	(1.1 - 1.4)
Model1 area( $X^2 = 48.0$ , $df = 1$ , $P < 0.01$ )				
<b>Age</b>				
< 30	1	1	1	1
≥ 30	0.8	(0.71 - 0.91)	0.86	(0.76 - 0.96)
Model 1 age( $X^2 = 13.0$ , $df = 1$ , $P < 0.01$ )				
<b>Education</b>				
No school	1	1	1	1
Primary	1.6	(1.4 - 1.9)	1.3	(1.2 - 1.5)
Secondary	1.7	(1.3 - 2.1)	1.1	(0.89 - 1.5)
Adult education	3.5	(1.4 - 8.9)	2.6	(1.1 - 6.9)
Model1 education( $X^2 = 69.2$ , $df = 3$ , $P < 0.01$ )				
<b>Marital Status</b>				
Married	1	1	1	1
Former married	0.88	(0.74 - 1.1)	0.99	(0.80 - 1.22)
Single	0.96	(0.74 - 1.2)	0.9	(0.74 - 1.1)
Model1 Marital( $X^2 = 2.32$ , $df = 2$ , $P < 0.01$ )				
<b>Wealth Index</b>				
Poorest	1	1	1	1
Second	1.3	(0.98 - 1.6)	1.2	(0.94 - 1.6)
Middle	1.5	(1.2 - 1.9)	1.3	(1.0 - 1.7)
Fourth	1.7	(1.4 - 2.11)	1.4	(1.1 - 1.8)
Richest	2.2	(1.8 - 2.7)	1.5	(1.2 - 2.0)
Model1 Wealth ( $X^2 = 74.3$ , $df = 4$ , $P < 0.01$ )				
<b>Practices</b>				
Risky	1	1	1	1
Safe	1.5	(1.1 - 2.0)	1.1	(0.83 - 1.6)
Model1 Practices( $X^2 = 7.5$ , $df = 1$ , $P < 0.01$ )				
<b>Attitudes</b>				
Negative	1	1	1	1
Positive	1.7	(1.5 - 1.96)	1.5	(1.3 - 1.7)
Model 1 attitudes ( $X^2 = 69.9$ , $df = 1$ , $P < 0.01$ )			$(X^2 = 162.2$ , $df = 13$ , $P < 0.01$ )	

\*IV = independent Variable, DV = Dependent Variable

Table 13 is describing association between attitudes and socio-demographic, practices, and knowledge. Two models were performed to explore the association between these variables.

Urban residence has associated with attitudes in both model. Participants living in urban area were 2.1 time likely to have positive attitudes than participants living in rural area. Model two shown that participants in urban area also were 1.5 time likely to positive attitudes more than individual living in rural. OR = 2.1, 95% CI = (1.8 -2.4), OR = 1.5, 95% CI = (1.3 -1.7) respectively.

There is no association between age and attitudes in both model. In model one, participants with age 30 and above years were 11% lower to have positive than those below 30 years but in model two participants were 1.1 having no effect on positive attitudes toward people living with HIV/AIDS. OR = 0.89, 95% CI = (0.79 - 1.02), OR = 1.1, 95% CI = (0.9 - 1.2)

Education has associated with positive attitudes in both models. Model one has shown that participants with primary education were 2.2 time likely to have positive attitudes toward people living with HIV/AIDS more than participants who never attend school this odd ratio has changed in model two where who attended primary education were 1.7 likely to have positive attitudes than who never attend any education. OR = 2.2, 95% CI (1.9 – 2.5), OR = 1.7, 95% CI (1.4 – 1.9) respectively. Individuals who having secondary education and plus in model one were 4.8 time likely to have positive attitudes better than who never attend school but in model two that odd ratio has changed from 4.8 to 3.1 time. OR = 4.8, 95% CI = (3.7 – 6.0), OR = 3.1 (2.4 – 4.0) respectively. Study respondents who went to adult education in both models were 2.7 and 1.6 time likely to have positive attitude toward HIV/AIDS and people living with HIV/AIDS. OR = 2.7, 95% CI = (1.1 – 6.8), 1.6 (0.6 -4.2) respectively.

There is association between marital status and attitudes in both models. Model one shown that former married women were 1.6 time likely to have positive attitudes toward people living with HIV/AIDS more than married women, but in model two has changed to 1.4. OR = 1.6, 95% IC = (1.3 -2.0), OR = 1.4, 95 %, CI = (1.1 -1.8). Single women in model one were 1.4 time likely have positive attitudes but model two shows

no any effect on attitudes. OR = 1.4, 95% CI = (1.1-1.0) and 1.0, 95% CI = (0.8 – 1.2) respectively.

All levels of wealth index quintile in both models have associated with attitudes. Participants at second level of wealth index in model one were 1.5 time likely to have positive attitudes more than individual at poorest level but these figure changed after all variable were controlled in model two where participants at second level were 1.4 time likely to accept people living with HIV/AIDS. OR = 1.5, 95% CI = (1.1- 2.1), OR = 1.4, 95 % CI = (1.0 – 2.0) respectively. Study group at middle level of health index were 2.4 time in model likely to have positive attitudes toward HIV/AIDS, but in model two it had charged to 2.0 after all variables were controlled. OR = 2.4, 95% CI (1.8 – 3.2), OR = 2.0 95% CI (1.5 – 2.7). Respondents at wealth index fourth level were 2.9 in model one likely to have positive attitudes toward HIV/AIDS more than those who were at poorest level, but in model two it has charged to 2.2 after variables controlled. OR = 2.9, 95% CI (2.2 – 3.9), OR = 2.2, 95% CI (1.2 – 3.0) respectively. Participants at richest level were 4.5 time in model one likely to have positive attitudes toward person living with HIV/AIDS than those at poorest level but it has changed in model two when all variable were controlled. OR = 4.5, 95% CI (3.4 – 5.9), OR = 2.5, 95% CI (1.9 – 3.4) respectively.

Participant's practices have associated with positive attitudes toward persons living with HIV/AIDS in both models. Study group with safe practices were 2.8 time in model one likely to have positive attitudes more than participants with risky practices. When variables were controlled in model two the odd ratio had changed to 1.8. OR = 2.8, 95 % CI (2.1 – 3.8), OR = 1.8, 95% CI (1.3 – 2.5).

Knowledge toward HIV/AIDS had associated with positive attitudes. Analysis shown that study group with moderate knowledge toward HIV/AIDS were 1.7 time in model one likely to reveal positive attitudes toward people living with HIV/AIDS more than participants with low level of knowledge. Model two after variables were controlled revealed that individual with moderate knowledge toward HIV/AIDS were 1.5 time likely to have positive attitudes than people who having low knowledge toward HIV/AIDS. OR = 1.7, 95% CI (1.5 – 2.0), OR = 1.5, 95% CI (1.5 – 1.3) respectively.

Table 13: Binary logistic regression of factors associated with attitudes toward people living with HIV/AIDS among 4882 respondents.

	Model 1- Single IV in one equation		Model 2- all IV in one equation	
	OR	95% C.I	OR	95% C.I
<b>Residential area</b>				
Rural	1	1	1	1
Urban	2.1	(1.8 -2.4)	1.5	(1.3 -1.7)
Model1 area ( $X^2 =124.6$ , df =1, $P=< 0.01$ )				
<b>Age</b>				
< 30	1	1	1	1
$\geq 30$	0.89	(0.79 - 1.02)	1.1	(0.9 - 1.2)
Model1 age ( $X^2 =2.99$ , df =1, $P=< 0.01$ )				
<b>Education</b>				
No school	1	1	1	1
Primary	2.2	(1.9 - 2.5)	1.7	(1.4 - 1.9)
Secondary	4.8	(3.7 - 6.0)	3.1	(2.4 - 4.0)
Adult education	2.7	(1.1 - 6.8)	1.6	(0.6 - 4.2)
Model1 education( $X^2 =238.1.44$ , df =3, $P=< 0.01$ )				
<b>Marital Status</b>				
Married	1	1	1	1
Former Married	1.6	(1.3 -2.0)	1.4	(1.1 - 1.8)
Single	1.4	(1.1 - 1.0)	1,0	(0.8 - 1.2)
Model1 marital( $X^2 =27.5$ , df =1, $P=< 0.01$ )				
<b>Wealth Index</b>				
Poorest	1	1	1	1
Second	1.5	(1.1 - 2.1)	1.4	(1.0 - 2.0)
Middle	2.4	(1.8 - 3.2)	2,0	(1.5 - 2.7)
Fourth	2.9	(2.2 - 3.9)	2.2	(1.7 - 3.0)
Richest	4.5	(3.4 - 5.9)	2.5	(1.9 - 3.4)
Model1 wealth ( $X^2 =204.3$ , df =4, $P=< 0.01$ )				
<b>Practices</b>				
Risky	1	1	1	1
Safe	2.8	(2.1 - 3.8)	1.8	(1.3 - 2.5)
Model1 practices( $X^2 =44.1$ , df =1, $P=< 0.01$ )				
<b>Knowledge level</b>				
Low	1	1	1	1
High/Medium	1.7	(1.5-2.0)	1.5	(1.3 - 1.7)
Model 1 knowledge( $X^2 =69.9$ , df =1, $P=< 0.01$ )			Model2 ( $X^2 =421.3$ , df =13, $P=< 0.01$ )	

\*IV= independent variables, DV= dependent variable

## CHAPTER V

### Discussion

This study aimed to describe knowledge, attitudes and practices levels toward HIV/AIDS and to assess factors associated with KAP among South Sudanese women based the UNICEF MICS (multiple indicator cluster survey) of 2010 for South Sudan.

The study revealed that 46% of respondents never heard about AIDS disease. This finding is lower than outcome of study by Thanavnh on KAP among male secondary school student in Loa Democratic Republic, in which all study group heard about AIDS disease (Thanavanh et al., 2013).

Another study on KAP among secondary student in Cameroon by Essomba, reported that all respondents were aware of HIV/AIDS (Essomba et al., 2015). This outcome shows the effect of long civil war that affected South Sudan for more than three decades, on health system and other social services.

This research reported that 63.1% of respondents had a low level of knowledge regarding HIV/AIDS, and 31.8% had moderate and 5.1% had high regarding HIV/AIDS. Comparing these findings with study in Cameroon by Essombo among student at secondary school reported that 62.1% of participants had a high level of knowledge and 3.4 % had a low level of knowledge of HIV/AIDS. Knowledge levels outcome of this study very below from what Essombo found in his study in Cameroon. This indicate inadequate health promotion services in rural areas and some parts of urban areas, and luck of community base intervention programs(Essomba et al., 2015).

Transmission and prevention methods were investigated in this study where 77.4% participants knew that people cannot get HIV from witchcraft or through supernatural means, and 54.3% said people cannot get IDS virus from mosquito bites, and 69.1 % reported that people can reduce their chance of getting HIV by having one faithful and uninfected partners, and 41.0% said that condom use can help people to

avoid AIDS virus, meanwhile 67.0% reported that sharing food with person who had AIDS cannot transmit the virus. These findings less than the result reported by Van Huy on the study among women in Vietnam which indicated that 89.6% of participants said having one uninfected sex partner who has no other sex partners can reduce chance of getting HIV, and 92.6% report people cannot get HIV because of witchcraft or supernatural means, and 90% of them revealed that condom use can reduce chances of getting HIV, meanwhile 69.5% said people cannot HIV from mosquito bite (Van Huy et al., 2016). However, respondents in this study had misconception on transmission routes and prevention methods, this might put general population at risk of HIV infection especially women because they are vulnerable group due to many challenges they face at daily basis particularly in Africa where women face limited financial resources to support their families and male domination. Therefore, reinforcing health promotion program will help to equip women with information about HIV/AIDS prevention and transmission routes that will enable them to protect their lives and those around them. These findings might have relationship with residence area because 73.1% of participants from survey were from rural where there were inadequate health promotion services. People in rural areas have rare chance to get information through media and sometime in not common to speak about HIV/AIDS in those residences areas. Also women who are married they have no chances to search for information about HIV/AIDS due to their busy schedule with their families. Moreover, social context in some communities might not allow women to discuss information about sensitive issue such as sexual related topic. Perhaps low level of knowledge can be attributed to education level because in this study 72% of participants never attend school in their lives. This may relate with South Sudan civil war that took more than three decades which destroyed social services infrastructures. The same assumption was showed in study on knowledge, attitude and practices toward HIV/AIDS in general population in South Africa by in 2009 where they found female with formal education, employed, and living in urban had high level scores of HIV/AIDS knowledge (Peltzer et al., 2009).

Participants in This study have expressed a high level of (72.2%) negative attitudes toward people living with HIV/AIDS, where 64.1% of them rejected to accept female

teacher who has AIDS, and 65% were not willing to buy vegetables from shopkeeper who had AIDS, and 64.4% said they will not tell anybody if one of their family got HIV/AIDS fearing stigma from their surroundings, 66.7% expressed their willingness to take care for individuals living with HIV/AIDS. Similar findings were reported in study by Hassan & Ahsheh in their study in Jordan, 2008 where 97% of respondents refused to take care for HIV/AIDS patients, and total score of negative attitudes or percentage toward people living with HIV/AIDS were 84.3% (Hassan & Wahsheh, 2011). Another study in Iraq by Shokoohi reported negative attitudes toward people living with HIV/AIDS with percentage of 52% (Shokoohi et al., 2016). Negative attitudes of participants in this study were less particularly item related to patients care than what was reported by Hassan in Jordan, these differences can be attributed to social bond of South Sudanese where families take care for their family members regardless of disease type. In other hand attitudes findings of this study lower than outcome of study by Navaratna in general population in Sri Lanka, 2015 where majority of study group reported positive attitudes towards individuals living with HIV/AIDS (Navaratna et al., 2015). These reports on Attitudes from this study could mean that people living with AIDS virus in South Sudan are stigmatized, this may lead those people (people living with HIV) not to seek health services such as screening tests or treatments for fearing their status might be disclosed to others. Therefore, promoting some HIV/AIDS community base intervention and health promotion activities would help to change those negative attitudes to positive, and it will protect general population from HIV risks and will encourage individuals to know their HIV status, if people knew their status will lead to strengthen prevention strategies such as ARV-related and behavioral intervention (WHO, 2014).

98% did not use condom in first sexual intercourse, and 97.9% did not use condom in their last sexual activity. Meanwhile 5% of them use condom in last 12 months. Comparing these results with previous studies it has been reported by Odu in his study in Nigeria among general population 62% said they always use condom during sexual intercourse with others partners, proportion was higher among male (Odu et al., 2008). Another study in Nigeria by Ayoola reported 65.9% use condom during sexual activity with their partners (Ayoola et al., 2014). In addition, study in Ethiopia among high



school student indicated that 58.8% of participants practice sexual activity by using condom and they believe that condom use is only way to prevent HIV infection. (Andargie et al., 2007) another study in Zimbabwe by Terry reported that 60% of study group used condom in last 6 months and majority of respondents had one sex partner in last six months. (Terry et al., 2006).

Peltzer found in his study among general population in South Africa that 74.9% of participants didn't use condom during sexual intercourse with their regular sex partners. In another comparison researcher Zafar found in his study in Pakistan that 9.8% reported had used condom in last 12 months before survey started (Zafar et al., 2014).

In other hand the use of condom was low among respondents in this study than previous studies. It can be suggested that reason was because married woman cannot use condom with their spouses or it can be related to lack of awareness toward sexual transmitted diseases either due to man domination toward women or social beliefs that prevent women from discussing sex related issues. (Marston & King, 2006)

Significant associations were drawn from this study between independent and dependents variables. First association has been seen between practices and urban residence, education level, and former married women, wealth index level, and attitudes positive level. These variables were statistically significant in both models expect age was not significant. This show that women who live in urban, area, and having education level either primary or secondary with wealth level from second to richest, and having positive attitudes were more likely to practice safe practices. Similar result was reported by Stulhofer and Graham in their study in Croatia on knowledge, attitudes and practices toward HIV/AIDS among y women in general population where education, living area (urban) and age associated with condom use in which they said women with education, and age below 30 years, and living in urban were using condom during sexual intercourse more than who with no education and living in rural area. (Štulhofer et al., 2007) Other study by Kerrigan in Dominican Republic among sex workers revealed that age significantly associated with condom use where he found that those age 25 and below were more likely to use condom in all sexual intercourse with their clients more than older women. (Kerrigan et al., 2003) In addition study by

Lagarde in four cities in Africa among general population reported that education was significantly associated with education in which female with high level of education were using condom during sex activity with their partners. From this study result it can be suggested that health promotion, education and media commination means are more located in urban more than rural area especially in low-income countries. Therefore, it will be good if local authorities, stakeholders and government to expand services in rural areas particularly health promotion means. Also government can reinforce community health volunteers and health promotion at government health facilities with clear implementation strategies.

Second significant associations were reported between knowledge and wealth index, practices, Residential areas, Education level, wealth index levels, and attitudes level toward HIV/AIDS. Similar report it had been reported by Siziya in their study on MICS data in Malawi where they revealed that wealth index and residential area were statistically significant associated with knowledge among women age 15-49 years. (Siziya, Muula, & Rudatsikira, 2008) Other research on MICS in Vietnam also reported association between knowledge education, wealth index, and living areas (Van Huy et al., 2016) also study in Bolivia by Teran among women found that education, residential area associated with knowledge where they reported that those never attend school and live in rural, and low income were have low knowledge level toward HIV/AIDS (Terán Calderón et al., 2015). Educated women can get a better job with good income, and their education status lead them to access information about HIV/AIDS, also can raise level of their knowledge toward other sexual transmitted diseases. Education can encourage women to care for their health as future investment. Other reason lead women residing in rural with less knowledge level may be the HIV/AIDS counseling services were inadequate in those areas or implementing process facing some difficulties. Therefore, this might put women in rural areas at high risk of HIV infection.

Another highlighted association was between attitudes and residential area, educational level, wealth index level, practices, and knowledge level, in which study revealed that women living in rural areas, never attend school, having poorest wealth index, and low level of knowledge toward HIV/AIDS were likely to have negative

attitudes toward people living with HIV/AIDS than those who live in urban, attended school, and having high or moderate level of knowledge toward HIV/AIDS. Previous studies reported the same result, for example study in United States by Pulerwitz and his colleagues found that women with high education, income and living in urban were having positive attitudes toward HIV/ADS and condom use than those who live in rural with low income and low education (Pulerwitz et al., 2002). Other study by Van Huy in Vietnam on women age 15-49 year found that wealth index of respondents and their living area plus education level were significantly associated with attitudes toward HIV/AIDs and individuals living the disease. People positive attitudes toward AIDS might play a great role in prevention and control of the disease in general population by reducing stigma toward people living with HIV/AIDS which will allow them to report to HIV voluntary testing centers for screening and to receive treatment services, also will encourage people in general to know their HIV status and help health authorities to plan well for prevention services. Attitudes change cannot happen without intervention from stakeholders such as communities, local NGOs, health authorities and international partners. Therefore, government has a great role to influence all national and international partners to contribute in HIV/AIDS prevention and control process.

To my knowledge, this study is the first study to assess level of HIV/AIDS knowledge, attitudes and practices and factors associated among women aged 15-49 in general population in South Sudan. However, the study had some limitations, first response rate of participants during multiple indicator cluster survey was 71% percent and participants were not willing to answer question with sensitive topic such as sexual and use of condom, and they were not likely to reveal number of sexual partners. Secondly, the study was based on MICS data 2010 which might not represent the current situation. Questionnaire not contained questions regarding frequency of condom use and the reasons for using it. Third limitation, there was no data from men 15-49 year, therefore finding cannot be generalized to whole population. Fourth limitation was cultural and social beliefs barriers that not allow women to discuss sexual related topics with others. This might lead participants not expressed their true sexual practices.

This study drawn some implications, for instance the result can be seen as a beginning point for research in South Sudan in area of HIV/AIDS Knowledge, attitude and practices, also it gives basic image on what this vulnerable group (women) know about HIV/AIDS. National HIV/AIDS control program and its partners can use these finding as a baseline for any intervention program at community and antenatal care services at health facility level to raise the level of knowledge, attitudes and practices. Also can encourage government to expand health promotion in areas with inadequate services.

### **5.1 Recommendations:**

The findings of this study will contribute to the understanding the nature of HIV/AIDS knowledge, attitudes and practices among South Sudanese women. It is expressing the important of reinforcing and expanding HIV/AIDS policies, to include all group is population especially women in child bearing age in South Sudan. This result also will inform national, regional and international partners to act now to prevent HIV/AIDS spread in sub-Sahara Africa in general and South Sudan in particular.

Further study in general population for both man and women need to describe KAP variances between male and female.

### **5.2 Conclusion:**

This study shows that the level of knowledge regarding HIV/AIDS among study group was low and misconception about transmission route and prevention methods was reported. Majority of participants were having negative attitudes toward people living with HIV/AIDSs.

Another notable finding was association between independent variables, residence area, education level, marital status, wealth index, knowledge and attitudes with practices. Also associations were seen between independent variables with knowledge and practices.

National HIV/AIDS program with national and international partners should reinforce health promotion activities at community and health facility levels during antenatal care services



## REFERENCES

- Andargie, G., Kassu, A., Moges, F., Kebede, Y., Gedefaw, M., Wale, F., . . . Adungna, S. (2007). Brief communication: low prevalence of HIV infection, and knowledge, attitude and practice on HIV/AIDS among high school students in Gondar, Northwest Ethiopia. *Ethiopian Journal of Health Development, 21*(2), 179-182.
- Ayoola, O. D., Victoria, G.-O. C., Bamidele, O., Olufela, K. O., Oluwatosin, S. E., Mbaneifo, E. P., . . . Harry, O. (2014). Pattern, challenges and correlates of condom use among Nigerians living with HIV infection. *Asian Pacific journal of tropical biomedicine, 4*, S198-S203.
- Braithwaite, K., & Thomas, V. G. (2001). HIV/AIDS knowledge, attitudes, and risk-behaviors among African-American and Caribbean college women. *International Journal for the Advancement of Counselling, 23*(2), 115-129.
- CDC. (2015, December 4, 2015). HIV Risk Behaviors Retrieved from <https://www.cdc.gov/hiv/risk/estimates/riskbehaviors.html>
- CDC. (2016, December 21, 2016). HIV Basics Retrieved from <https://www.cdc.gov/hiv/basics/transmission.html>
- Essomba, N. E., Adiogo, D., Koum, D. K., Ndonnang, C., Ngwe, M. I. N., Ayuck, L. N., . . . Coppieters, Y. (2015). Seroprevalence, attitudes and practices of the Baka Pygmies of eastern Cameroon towards HIV and AIDS. *The Journal of Infection in Developing Countries, 9*(08), 849-856.
- Galvin, S. R., & Cohen, M. S. (2004). The role of sexually transmitted diseases in HIV transmission. *Nature Reviews Microbiology, 2*(1), 33-42.
- Hahn, R. A., & Inhorn, M. C. (2009). *Anthropology and public health: bridging differences in culture and society*: Oxford University Press, USA.
- Haroun, D., El Saleh, O., Wood, L., Mechli, R., Al Marzouqi, N., & Anouti, S. (2016). Assessing Knowledge of, and Attitudes to, HIV/AIDS among University Students in the United Arab Emirates. *PloS one, 11*(2), e0149920.
- Hassan, Z. M., & Wahsheh, M. A. (2011). Knowledge and attitudes of Jordanian nurses towards patients with HIV/AIDS: findings from a nationwide survey. *Issues in mental health nursing, 32*(12), 774-784.

- HIV, C. (2012). *Aids. Medical Care*, 916, 874-7720.
- Kerrigan, D., Ellen, J. M., Moreno, L., Rosario, S., Katz, J., Celentano, D. D., & Sweat, M. (2003). Environmental-structural factors significantly associated with consistent condom use among female sex workers in the Dominican Republic. *Aids*, 17(3), 415-423.
- Lagarde, E., Auvert, B., Chege, J., Sukwa, T., Glynn, J. R., Weiss, H. A., . . . Buve, A. (2001). Condom use and its association with HIV/sexually transmitted diseases in four urban communities of sub-Saharan Africa. *Aids*, 15, S71-S78.
- Lam, N. S.-N., & Liu, K.-b. (1994). Spread of AIDS in rural America, 1982-1990: LWW.
- Larsen, M. M., Casey, S. E., Sartie, M. T., Tommy, J., Musa, T., & Saldinger, M. (2004). Changes in HIV/AIDS/STI knowledge, attitudes and practices among commercial sex workers and military forces in Port Loko, Sierra Leone. *Disasters*, 28(3), 239-254.
- Majdi, M., Khani, H., Azadmarzabadi, E., Montazeri, A., Hallajian, E., Babamahmodi, F., & Kariminasab, M. (2011). Knowledge, attitudes and practices towards HIV/AIDS among Iranian prisoners in Mazandaran province in the south-coast area of the Caspian Sea. *Eastern Mediterranean Health Journal*, 17(12), 904.
- Marston, C., & King, E. (2006). Factors that shape young people's sexual behaviour: a systematic review. *The Lancet*, 368(9547), 1581-1586.
- Navaratna, S., Kanda, K., Dharmaratne, S. D., Tennakoon, S., Jayasinghe, A., Jayasekara, N., . . . Tamashiro, H. (2015). Awareness and attitudes towards HIV/AIDS among residents of Kandy, Sri Lanka. *AIDS care*, 27(3), 387-391.
- Nubed, C. K., & Akoachere, J.-F. T. K. (2016). Knowledge, attitudes and practices regarding HIV/AIDS among senior secondary school students in Fako Division, South West Region, Cameroon. *BMC public health*, 16(1), 847.
- Odu, O., Asekun-Olarinmoye, E., Bamidele, J., Egbewale, B., Amusan, O., & Olowu, A. (2008). Knowledge, attitudes to HIV/AIDS and sexual behaviour of students in a tertiary institution in south-western Nigeria. *The European journal of contraception & reproductive health care*, 13(1), 90-96.

- Parkhurst, J. O., & Kruk, M. E. (2010). In this month's Bulletin. *Bull World Health Organ*, 88, 481.
- Peltzer, K. (2003). HIV/AIDS/STD knowledge, attitudes, beliefs and behaviours in a rural South African adult population. *South African Journal of Psychology*, 33(4), 250-260.
- Peltzer, K., Matseke, G., Mzolo, T., & Majaja, M. (2009). Determinants of knowledge of HIV status in South Africa: results from a population-based HIV survey. *BMC public health*, 9(1), 174.
- Pulerwitz, J., Amaro, H., Jong, W. D., Gortmaker, S. L., & Rudd, R. (2002). Relationship power, condom use and HIV risk among women in the USA. *AIDS care*, 14(6), 789-800.
- Rahlenbeck, S. I. (2004). Knowledge, attitude, and practice about AIDS and condom utilization among health workers in Rwanda. *Journal of the Association of Nurses in AIDS Care*, 15(3), 56-61.
- Rutstein, S. O. (2008). The DHS Wealth Index: Approaches for rural and urban areas.
- Sanders, D., & Sambo, A. (1991). AIDS in Africa: the implications of economic recession and structural adjustment. *Health Policy and Planning*, 6(2), 157-165.
- Shamsipour, M., Khajehkazemi, R., Haghdoost, A. A., Setayesh, H., KarimanMajd, S., & Mostafavi, E. (2016). Knowledge, Attitude, and Practice of Clerical Students with Respect to HIV/AIDS in Iran, 2011. *Journal of religion and health*, 55(1), 26-37.
- Shokoohi, M., Karamouzian, M., Mirzazadeh, A., Haghdoost, A., Rafierad, A.-A., Sedaghat, A., & Sharifi, H. (2016). HIV Knowledge, Attitudes, and Practices of Young People in Iran: Findings of a National Population-Based Survey in 2013. *PloS one*, 11(9), e0161849.
- Siziya, S., Muula, A. S., & Rudatsikira, E. (2008). HIV and AIDS-related knowledge among women in Iraq. *BMC research notes*, 1(1), 123.
- Siziya, S., Muula, A. S., Rudatsikira, E., & Mataya, R. H. (2008). Correlates of HIV testing among women in Malawi: results from the 2006 Multiple Indicator Cluster Survey. *Tropical Medicine & International Health*, 13(11), 1351-1356.



- South Sudan HIV/AIDS commission (2015). *Progress report* Retrieved from Juba, South Sudan
- Štulhofer, A., Graham, C., Božičević, I., Kufrin, K., & Ajduković, D. (2007). HIV/AIDS-related knowledge, attitudes and sexual behaviors as predictors of condom use among young adults in Croatia. *International Family Planning Perspectives*, 58-65.
- Subramnian, C. (2016). Knowledge and Attitude Towards Hiv/Aids Among College Students. *International Journal of Scientific Research*, 5(1).
- Tavoosi, A., Zaferani, A., Enzevaei, A., Tajik, P., & Ahmadinezhad, Z. (2004). Knowledge and attitude towards HIV/AIDS among Iranian students. *BMC public health*, 4(1), 17.
- Terán Calderón, C., Gorená Urizar, D., González Blázquez, C., Alejos Ferreras, B., Rubio, O. R., Bolumar Montrull, F., . . . del Amo Valero, J. (2015). Knowledge, attitudes and practices on HIV/AIDS and prevalence of HIV in the general population of Sucre, Bolivia. *Brazilian Journal of Infectious Diseases*, 19(4), 369-375.
- Terry, P. E., Mhloyi, M., Masvaure, T., & Adlis, S. (2006). An examination of knowledge, attitudes and practices related to HIV/AIDS prevention in Zimbabwean university students: comparing intervention program participants and non-participants. *International Journal of Infectious Diseases*, 10(1), 38-46.
- Thanavanh, B., Harun-Or-Rashid, M., Kasuya, H., & Sakamoto, J. (2013). Knowledge, attitudes and practices regarding HIV/AIDS among male high school students in Lao People's Democratic Republic. *Journal of the International AIDS society*, 16(1).
- UNAIDS. (2016). *Global AIDS Update* Retrieved from Geneva 27 Switzerland: [www.unaids.org](http://www.unaids.org)
- UNICEF. (2006). *HIV and AIDS knowledge, Attitudes, practices and Behaviour(KAPB) in Namibia* Retrieved from Windhoek, Namibia:
- UNICEF, M. (2000). Multiple indicator cluster survey (MICS).
- UNICEF, M. (2005). *Multiple indicator cluster surveys* Retrieved from New York

- van der Ryst, E., Joubert, G., Steyn, F., Heunis, C., le Roux, J., & Williamson, C. (2001). HIV/AIDS-related knowledge, attitudes and practices among South African military recruits. *South African Medical Journal*, 91(7), 587-591.
- Van Huy, N., Lee, H.-Y., Nam, Y.-S., Van Tien, N., Huong, T. T. G., & Hoat, L. N. (2016). Secular trends in HIV knowledge and attitudes among Vietnamese women based on the Multiple Indicator Cluster Surveys, 2000, 2006, and 2011: what do we know and what should we do to protect them? *Global health action*, 9.
- WHO. (2012, January 2015). South Sudan: WHO Statistic Profile 2012. Retrieved from [www.who.int/gho/en/](http://www.who.int/gho/en/)
- WHO. (2014). Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations. *Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations*.
- WHO. (2016). HIV/AIDS updates Retrieved from [www.who.int/hiv/en/](http://www.who.int/hiv/en/)
- Yip, B. H. K., Sheng, X. T., Chan, V. W. Y., Wong, L. H. L., Lee, S. W. Y., & Abraham, A. A. (2015). 'Let's talk about sex'—A Knowledge, Attitudes and Practice study among Paediatric Nurses about Teen Sexual Health in Hong Kong. *Journal of clinical nursing*, 24(17-18), 2591-2600.
- Zafar, M., Nisar, N., Kadir, M., Fatmi, Z., Ahmed, Z., & Shafique, K. (2014). Knowledge, attitude and practices regarding HIV/AIDS among adult fishermen in coastal areas of Karachi. *BMC public health*, 14(1), 437.
- Zapata, M. (2011a, December 20, 2011). Sudan: Comprehensive Peace Agreement and South Sudan Independence. Retrieved from <http://www.enoughproject.org/blogs/sudan-comprehensive-peace-agreement-and-south-sudan-independence>
- Zapata, M. (2011b, December 13, 2011). Sudan: Independence through Civil Wars, 1956-2005. Retrieved from <http://www.enoughproject.org/blogs/sudan-brief-history-1956>

**APPENDIX**



จุฬาลงกรณ์มหาวิทยาลัย  
CHULALONGKORN UNIVERSITY

## APPENDIX A

## MICS Questionnaire

SOUTH SUDAN HOUSEHOLD HEALTH SURVEY 2		
QUESTIONNAIRE FOR INDIVIDUAL WOMEN		
WOMAN'S INFORMATION PANEL		WM
<p><i>This questionnaire is to be administered to all women age 15 through 49 (see column HL7 of HH listing). Fill in one form for each eligible woman. Fill in the segment and household number, and the name and household line number of the woman in the space below. Fill in your name, number, and the date.</i></p>		
State Cluster No. WM1. CODES..... <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	WM2. HOUSEHOLD NUMBER: <input type="text"/> <input type="text"/>	
WM3. Woman's Name : Name : _____	WM4. Woman's Household Line Number: <input type="text"/> <input type="text"/>	
WM5. Interviewer Name and Number: _____ <input type="text"/> <input type="text"/>		
WM6. Day/Month/Year of interview: <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		
<p>Repeat greeting IF NOT ALREADY READ to this woman:</p> <p>We are from the Sudan Household Health Survey 2<sup>nd</sup> round which is concerned with family health and socioeconomic indicators. I would like to talk to you about this. The interview will take about 40 minutes. All the information we obtain will remain strictly confidential and your answers will never be identified.</p> <p>May I start now?</p> <p><input type="checkbox"/> YES, PERMISSION IS GIVEN ⇨ GO TO WM10 TO RECORD THE TIME AND THEN BEGIN THE INTERVIEW.</p> <p><input type="checkbox"/> No, permission is not given ⇨ Complete WM7. Discuss this result with your supervisor FOR A FUTURE REVISIT</p>		
<b>WM7. Result of women's interview:</b> Circle the appropriate code <b>First visit</b> Completed.....1 Not at home.....2 Refused .....3 Partly completed.....4 Incapacitated .....5 Other(SPECIFY).....6	<b>WM7a. Result of women's interview:</b> Circle the appropriate code <b>Second visit</b> Completed.....1 Not at home.....2 Refused .....3 Partly completed.....4 Incapacitated .....5 Other(SPECIFY).....6	<b>WM7b. Result of women's interview:</b> Circle the appropriate code <b>Third visit</b> Completed.....1 Not at home.....2 Refused .....3 Partly completed.....4 Incapacitated .....5 Other(SPECIFY).....6
WM8. Field edited by (Name and number): Name _____	WM9. Data entry clerk (Name and number): Name _____	



HIV/AIDS		HA																
HA1. Now I would like to talk with you about something else.  Have you ever heard of an illness called AIDS?	Yes ..... 1 No ..... 2	2⇒STI																
HA2. Can people reduce their chance of getting the AIDS virus by having just one uninfected sex partner who has no other sex partners?	Yes ..... 1 No ..... 2 DK ..... 8																	
HA3. Can people get the AIDS virus because of witchcraft or other supernatural means?	Yes ..... 1 No ..... 2 DK ..... 8																	
HA4. Can people reduce their chance of getting the AIDS virus by using a condom every time they have sex?	Yes ..... 1 No ..... 2 DK ..... 8																	
HA5. Can people get the AIDS virus from mosquito bites?	Yes ..... 1 No ..... 2 DK ..... 8																	
HA6. Can people get the AIDS virus by sharing food with a person who has AIDS?	Yes ..... 1 No ..... 2 DK ..... 8																	
HA7. Is it possible for a healthy-looking person to have the AIDS virus?	Yes ..... 1 No ..... 2 DK ..... 8																	
HA8. Can the virus that causes AIDS be transmitted from a mother to her baby:  [A] During pregnancy? [B] During delivery? [C] By breastfeeding?	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">Yes</th> <th style="text-align: center;">No</th> <th style="text-align: center;">DK</th> </tr> </thead> <tbody> <tr> <td>During pregnancy .....</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">8</td> </tr> <tr> <td>During delivery .....</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">8</td> </tr> <tr> <td>By breastfeeding .....</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">8</td> </tr> </tbody> </table>		Yes	No	DK	During pregnancy .....	1	2	8	During delivery .....	1	2	8	By breastfeeding .....	1	2	8	
	Yes	No	DK															
During pregnancy .....	1	2	8															
During delivery .....	1	2	8															
By breastfeeding .....	1	2	8															
HA9. In your opinion, if a female teacher has the AIDS virus but is not sick, should she be allowed to continue teaching in school?	Yes ..... 1 No ..... 2 DK / Not sure / Depends ..... 8																	
HA10. Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had the AIDS virus?	Yes ..... 1 No ..... 2 DK / Not sure / Depends ..... 8																	
HA11. If a member of your family got infected with the AIDS virus, would you want it to remain a secret?	Yes ..... 1 No ..... 2 DK / Not sure / Depends ..... 8																	
HA12. If a member of your family became sick with AIDS, would you be willing to care for her or him in your own household?	Yes ..... 1 No ..... 2 DK / Not sure / Depends ..... 8																	

SEXUAL BEHAVIOUR (SOUTH SPECIFIC)		SB
<b>CHECK FOR THE PRESENCE OF OTHERS. BEFORE CONTINUING, ENSURE PRIVACY.</b>		
SB1. NOW I WOULD LIKE TO ASK YOU SOME QUESTIONS ABOUT SEXUAL ACTIVITY IN ORDER TO GAIN A BETTER UNDERSTANDING OF SOME IMPORTANT LIFE ISSUES.  THE INFORMATION YOU SUPPLY WILL REMAIN STRICTLY CONFIDENTIAL.  HOW OLD WERE YOU WHEN YOU HAD SEXUAL INTERCOURSE FOR THE VERY FIRST TIME?	Never had intercourse.....00 Age in years.....__ __ First time when started living with (first) husband/partner.....95 DK / Don't remember .....98	00⇒WM 11
SB2. THE FIRST TIME YOU HAD SEXUAL INTERCOURSE, WAS A CONDOM USED?	Yes.....1 No .....2 DK / Don't remember .....8	
SB3. WHEN WAS THE LAST TIME YOU HAD SEXUAL INTERCOURSE?  <i>Record 'years ago' only if last intercourse was one or more years ago. If 12 months or more the answer must be recorded in years.</i>	Days ago .....1__ __ Weeks ago.....2__ __ Months ago.....3__ __ Years ago .....4__ __	4⇒SB11
SB4. THE LAST TIME YOU HAD SEXUAL INTERCOURSE, WAS A CONDOM USED?	Yes.....1 No .....2	
SB5. WHAT WAS YOUR RELATIONSHIP TO THIS PERSON WITH WHOM YOU LAST HAD SEXUAL INTERCOURSE?  <i>If person is 'boyfriend' or 'fiancée', ask: WERE YOU LIVING TOGETHER AS IF MARRIED? If 'yes', circle '01'. If 'no', circle '02'.</i>	Current spouse .....01 Current cohabiting partner.....02 Ex-spouse .....03 Ex-cohabiting partner.....04 Boyfriend / Fiancée .....05 Casual acquaintance .....06 Sex worker.....07 Other ( <i>specify</i> ) .....96	01⇒SB7 02⇒SB7
SB6. HOW OLD IS THIS PERSON?  <i>If response is DK, probe: ABOUT HOW OLD IS THIS PERSON?</i>	Age of sexual partner.....__ __ DK .....98	
SB7. HAVE YOU HAD SEXUAL INTERCOURSE WITH ANY OTHER PERSON IN THE LAST 12 MONTHS?	Yes.....1 No .....2	2⇒SB11
SB8. IN TOTAL, WITH HOW MANY DIFFERENT PEOPLE HAVE YOU HAD SEXUAL INTERCOURSE IN THE LAST 12 MONTHS?	Number of partners.....__ __	
SB9. FOR WOMEN: THINK ABOUT THE MALE SEXUAL PARTNERS YOU'VE HAD IN THE LAST 12 MONTHS.  HOW MANY WERE: #YOUR SPOUSE(S) OR LIVE-IN SEXUAL PARTNERS ("REGULAR" PARTNERS)	NUMBER OF SPOUSE(S) OR LIVE-IN SEXUAL PARTNERS ("REGULAR" PARTNERS) ... _ _ _   NUMBER OF NOT MARRIED TO AND HAVE NEVER LIVED WITH AND DID NOT PAY PARTNERS ("NON-REGULAR" PARTNERS) ..... _ _ _	

## APPENDIX B

## Time Schedule

Time frame(month)								
Activity	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17
Literature review								
writing thesis proposal								
submission for proposal exam								
proposal exam								
proposal revision								
Proposal submission to Ethic committee								
Data analysis								
Thesis and article writing								
final thesis exam								
submission of article for publication								
submission of thesis								



## APPENDIX C

## Budget

Item	Quantity	Unit cost	Amount in Thai Bhat
Stationery			6000
communication			1000
Binding Thesis from graduate school	1copies	240	240
3 copies of thesis for personal reference	3	240	720
Article publication	6 pages	500	3000
Transports to UNICEF office- Bangkok			1200
<b>Total</b>			<b>12,160</b>

*Only twelve thousand one hundred sixty THB*

## APPENDIX D

**Access to MICS datasets Approval**


Gmail 393 of 3,514

←
Delete forever
🔍
📁
📧
More ▾


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**COMPOSE**      Access to MICS datasets approved      Bin x      📄 🖨️ 📧

Inbox  
 Starred  
 Sent Mail  
**Drafts (2)**  
 Spam  
 ▸ Circles  
 Less ▲

 Bumkuth ▾ +

---

 **no-reply@unicef.org**      28/11/2016      📧 ▾

to me ▾

Dear Boumkouth ,

Thank you for requesting to use the MICS datasets. You have been granted access.

Please log into the MICS website using the email and password you provided during registration and download the dataset(s) on [survey page](#).

We would appreciate if you would share your research findings with us – please email us at [mics@unicef.org](mailto:mics@unicef.org).

Thank you and best regards,

UNICEF MICS Team



## VITA

### Biographical Background:

Name: Boumkouth Sir Mach

Sex: Male

Place and date of birth: 9/07/ 1979

Nationality: South Sudanese

Marital status: Married

Languages: English and Arabic both written and spoken.

### Educational background:

- Upper Nile University College of Medicine and Health sciences /school of public health-2000 – 2004 Malakal

### Secondary level:

- Remedial Secondary School 1997-2000 Khartoum

### Primary level:

- Thoura Elbender Primary School 1989-1997 Malakal

### Qualifications: -

- Bachelor of Science in Public Health, Upper Nile University, Malakal- South Sudan 2000-2004

### Experiences:

- Monitoring and Evaluation officer – Malaria Project – IMA, Juba office – March 2016 –August 2016;
- Monitoring and evaluation officer- NMCP/GF July 2015- December 2015
- Consultant/ Community health officer – UNICEF – April - June 2015 - Bentiu
- Health coordinator (RRHP) – IMA world health – Renk County – Jan 2013- August 2014
- M&E officer (MTDF) - IMA/world health/ Upper Nile/Malakal – July 2011- 2012
- State surveillance office – Ministry of Health, Upper Nile State – Malakal 2005-2010