Knowledge, attitude and practice on prevention of mother-to-child transmission of HIV among pregnant women attending antenatal care at Juba teaching hospital, South Sudan

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KNOWLEDGE, ATTITUDE AND PRACTICE ON PREVENTION OF MOTHER-TO-CHILD TRANSMISSION OF HIV AMONG PREGNANT WOMEN ATTENDING ANTENATAL CARE AT JUBA TEACHING HOSPITAL, SOUTH SUDAN

By

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A Dissertation Submitted in Partial Fulfilment of the Requirements for the Degree of Masters of Medicine in Obstetrics and Gynaecology of the Muhimbili University of Health and Allied Sciences

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CERTIFICATION

The undersigned certify that he has read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciencesa dissertation entitled **"Knowledge, attitude and Practice on Prevention of Mother- to-Child Transmission of HIV among pregnant women attending care at Juba Teaching Hospital, South Sudan"**, in (partial) fulfillment of the requirement for the degree of Masters of Medicine in (Obstetrics and Gynaecology) of the Muhimbili University of Health and Allied Sciences.

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_____

Date

DECLARATION AND COPY RIGHT

I**, Dr. Giel Thuok Yoach Thidor**, declare that this **dissertation**is my own original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

Signature..... **Date**.....

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DEDICATION

I dedicated this dissertation book to my wife Mrs. Bakhita Paul Liliy, my daughter Charkuoth and my son Gey.

ABSTRACT

Background

Mother-to-child transmission (MTCT) of HIV remains the main and leading source of HIV infection among infants and children. It accounts for 90% of infancy and childhood HIV infection; hence prevention in this context has a big impact in controlling the spread of the HIV within this group. MTCT of HIV can happen during pregnancy, labour, delivery and breastfeeding period. Women's knowledge on HIV/AIDS is an important component in PMTCT services coverage**.** Therefore knowledge and awareness on PMTCT of HIV has an impact on services uptake.

Objectives: To assess level of knowledge, attitude and practice of prevention on mother-to-child transmission (PMTCT) of HIV among pregnant women attending antenatal care at Juba Teaching Hospital.

Methodology: A hospital based cross sectional study was conducted at Juba Teaching Hospital, Maternal and Child Health Clinic within the period of November to December, 2015. Data were collected using a structured questionnaire given to pregnant mothers who were eligible and consented for the study participation. The information was then summarized into SPSS version 20, for windows and analyzed. Frequency distribution and two way tables were used to present and summarize the data. A p value of <0.05 was considered statistically significant.

Results

A total of two hundred and fifty one (251) pregnant women consented to participate in the study and were enrolled and interviewed at the MCHC in Juba Teaching Hospital. The mean age of the mothers was 25.67, with the standard deviation of ±5.52 years, with the youngest being 15 years and the oldest 41 years. Majority of them were married (88%), participants with no formal education were more than one-third (39.1%). More than a half (53.4%) of the participants were unemployed. One-third (30.7%) of the participants had sufficient knowledge on when to start PMTCT prophylaxis. Half of the pregnant women (51%) showed positive attitude toward PMTCT on HIV preventive measures.

Two hundred and thirty one participants (92%) had received counseling for HIV, with (78.4%) of them reported being tested for HIV.

Conclusion

The study identified that, participants 'knowledge on HIV/AIDS was moderate, specific knowledge on MTCT, MTCT risk factors during breastfeeding, and PMTCT prophylaxis was also found to be moderate. Half of the participants showed positive attitude towards PMTCT services utilization. Majority of participants reported had received counseling, but one third did not go for testing, condom use was low among positive clients.

Recommendations

Improvement of counseling sessions to pregnant women attending ANC at JTH is needed, as to increase their acceptance to services utilization. Doubling effort to achieve the goals of PMTCT among pregnant women is needed. Also there is a need of conducting a similar study at national level, as this study was conducted in JTH and it did not reflect or represent the other settings across the country.

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LIST OF ABBREVIATIONS

AIDS	Acquired immunodeficiency Syndrome
ANC	Antenatal Care
ART	Antiretroviral Therapy
ARV	Antiretroviral
AZT	Zidovudine
CD	Cluster of differentiation
CD4 T cell	Helper T lymphocyte
DRDC	Darfur Relief and Documentation Centre
EFV	Efavirenz
HAART	Highly active antiretroviral therapy
HIV	Human Immunodeficiency Virus
JTH	Juba Teaching Hospital
KAP	Knowledge, Attitude and Practice
LPV/r	Lopinavir/Ritonavir
MCHC	Maternal Child health Clinic
MOH	Ministry of Health
MTCT	Mother-To-Child Transmission
NGO	Non-Governmental Organizations
NVP	Nevirrapine
PLWHIV	People Living With HIV
PMTCT	Prevention of Mother-To-Child Transmission
RMF	Real Medicine Foundation
RSS	Republic of South Sudan

SSAC	South Sudan HIV/AIDS Commission
SSHHS	South Sudan Household Health Survey
SSGARR	South Sudan Global AIDS Response Report
3TC	Lamivudine
UNAIDS	United Nations AIDS
UNGASS	United Nation General Assembly Special Session
UNICEF	United Nations Children's Fund
VCT	Voluntary Counselling and Testing
WHO	World Health Organization

DEFINITION OF OPERATIONAL TERMS

Knowledge: This is defined as awareness about something. In this particular study, Knowledge will be defined as information about or the understanding of PMTCT of HIV services

Attitude: Attitude is tendency to evaluate particular objective with some degree of favour or disfavour. In this particular study, Attitude will be defined as an evaluation of feelings based on knowledge or experience that pregnant women have about PMTCT of HIV.

Utilization: Referred to in this study, is the action of making use of the available VCT services and antiretroviral drugs in prevention of mother-to-child transmission of HIV, which is usually referred to as PMTCT services.

PMTCT: are interventions carried out to reduce the risk of HIV transmission from an infected mother to her baby during pregnancy, labour, delivery and breast-feeding.

Comprehensive PMTCT package: Refers to counselling and testing for HIV, knowing the status after test, provision of HAART to those tested positive, safe infant feeding and family planning utilization

1.0 INTRODUCTION

The Human Immune Deficiency Virus (HIV) disease presents a major public health challenge worldwide and in sub Saharan Africa in particular. The Global HIV/AIDS epidemic report of 2013 showed that, around 35.3 million people were living with HIV (PLWHIV) globally, where about 25 million people living with HIV were found in sub-Saharan Africa, almost constituting 70% of all cases worldwide, of which 58% were women. It was also estimated in 2012, that 3.3 million children under 15 years of age were living with HIV worldwide. Data obtained from the World Health Organization (WHO) fact sheet of 2013, showed that Mother-to-Child Transmission of HIV(MTCT) contributed up to 15% of the total HIV infections universally(1)(2).

Use of highly active antiretroviral therapy drugs (HAART) is more effective in prevention of early MTCT of HIV than single drug therapy like Nevirapine. With no intervention, the risk of MTCT is quiet high, up to 45% among exposed children. But with effective specific interventions, the risk of maternal HIV transmission can be reduced to less than 2% in children who are not breastfeeding and less than 5% in breastfeeding infants. Mother-to-child transmission (MTCT) remains the main and leading source of HIV infection in infants and children. It accounts for 90% of infancy and childhood HIV infection, hence prevention in this context has a huge impact in controlling the spread of the disease among children(3)(4).

The vertical transmission can occur during pregnancy, labour**,** delivery time or breastfeeding period, and among other risk factors, breast feeding accounts for almost one-half of HIV infection among children in Africa. Risk factors that increase vertical transmission include failure to disclose HIV status, mixed infant feeding, prolonged rupture of membranes (more than 4 hours), maternal high viral load and low CD4 count in combination with other co-infections like Tuberculosis (5)(6)(7).

The strategy towards global reduction of mother-to-child transmission of HIV can only be achieve by implementing WHO guidelines, which recommend that pregnant mothers diagnosed as HIV positive should begin a triple antiretroviral regimen therapy irrespective of their CD4 count and continue on the same regimen for life (Option B+). Infants born to

HIV positive mothers should receive NVP or AZT prophylaxis daily until the age of 4-6 weeks irrespective to their feeding methods(8).

South Sudan with the estimated population of 10.9 million and population growth rate at 3%. It is rated the highest country in the world with the lowest health outcomes and poor health system. Infant mortality ratio was 75 per 1,000 live births and only 6.3% of children below 2 years received immunization to childhood illnesses, births attended by skilled personnel was 19.4%, with maternal mortality ratio was 2,054 per, 100,000 live births. The HIV prevalence among adults aged 15 -49 years in the country is estimated at 2.3%,with around 153,000 people are living with HIV and about 18,000 of children below 15 years of age are living with HIV((9)(10).

Prevention of mother-to-child (PMTCT) services started in 2010 in Southern Sudan before independence from Sudan. There were thirty (30) antenatal care (ANC) facilities across the country where PMTCT services are delivered before the civil war broke out in December, 2013. Currently only twenty-two (22) out of 30 facilities actively offer services. The objectives of PMTCT program set by South Sudan HIV/AIDS Commission (SSAC) are in line with WHO comprehensive prongs strategies. These prongs are, primary prevention of HIV among women of child bearing age, prevention of unintended pregnancies among women living with HIV, prevention of transmission of HIV from women living with the disease to their babies, and provision of care and support to mothers living with HIV and their families(11).

South Sudan joined the International community in its call of getting to zero new HIV infections and discrimination by 2015. Thereafter a National Strategic Plan (NSP) on HIV for 2013- 2017 was formed under the responsibility of South Sudan HIV/AIDS Commission (SSAC). Sudan Household Health Survey (SHHS) conducted in 2006 showed that, only 8.6% of South Sudanese women aged 15-49 years were aware about HIV/AIDS transmission, where in the other hand behaviours that increase risk of HIV infection acquisition were high. Specific knowledge on PMTCT of HIV among pregnant women lacks documented and published data(12).

Insufficient knowledge and lack of awareness about the availability and benefits of PMTCT services adversely affect PMTCT of HIV preventive measures; this is seen in most African countries. Therefore good knowledge on HIV/AIDS helps in elimination of HIV-related stigma, improve services uptake and adherence to PMTCT interventions (13).

2.0 LITERATURE REVIEW

The universal plan towards ending paediatric AIDS by 2020 may be a realistic goal when a new strategy was set at the 21st International AIDS Conference in Durban, South Africa in July, 2016. Whereas AIDS diagnosis in children have declined dramatically in Uganda, Swaziland and Burundi and other countries including Thailand have already virtually eliminated MTCT of HIV(14).

Sub Saharan Africa is a home to 25 million people living with HIV, of which women constitutes 58% of all cases in this region. Whereas some countries in this region managed to increase provision of effective ARVs to pregnant women living with HIV from 48% in 2010 to 57% in 2011(15).

The PMTCT of HIV package coverage remain low (18%) in many countries of Asia and Pacific region where the 60%of the world population is found. The largest unmet need of ARVs/ART regimens provision in this region is highly found in India. The 2011 PMTCT services coverage in sub-Saharan Africa reaches 59%. Of these, six countries achieved PMTCT coverage of more than 75 %. These countries are Botswana, Ghana, Namibia, South Africa, Swaziland and Zambia, where on the other hand seven countries in this region reported the coverage of less than 25%, these countries are Angola, Chad, DR. Congo, Eritrea, Ethiopia, Nigeria and South Sudan(16)(17).

Women's knowledge on HIV/AIDS is an important component in PMTCT services coverage. Results from a study conducted in Belgaum District, India, showed that almost all participants heard of HIV and AIDS. Findings from formative assessment on PMTCT of HIV knowledge conducted in Tanzania, demonstrated that three quarters of the participants had sufficient knowledge. Similar findings were found in study conducted in Mateete District of Uganda where almost all participants had good knowledge on HIV/AIDS and PMTCT specifically (18)(19)(20).

Level of education, socio-cultural factors, age and occupation were found to be the major factors influencing knowledge on MTCT of HIV. It was shown in studies conducted in Meket District, Northeast Ethiopia and in Khartoum, Sudan, where women who had university/college education and employed found to have sufficient knowledge and

positive attitude towards PMTCT of HIV measures than their counterpart who were unemployed and with primary education. Similar results were found from a study conducted in Kumasi, Ghana on assessing women knowledge on PMTCT of HIV, where 88% of the respondents were aware of vertical transmission during pregnancy and labour time. Education and employment were reported as the main reason for the knowledge differences among these groups(21)(22)(23)

Type of health facilities and services offered to clients, like counseling sessions to pregnant women at the ANC clinic improve their attitude and rate of coverage of PMTCT of HIV. This was shown in results obtained from study done in rural Nigeria ,where 77% of women attending ANC at Orthodox facilities received PMTCT coverage compare to 42.5% of pregnant women who were non- Orthodox facilities users(24).

Results obtained from study conducted in Hawasa Region, Ethiopia, on assessing pregnant women on MTCT and PMTCT, revealed that more than four-fifth of the respondents (82.3%) showed high level of knowledge and 97.4% of the participants were found to have positive attitude towards PMTCT. Service providers approach and time spend with the clients, appeared to be an effective factor influencing their knowledge and attitude (25).

Quality and availability of counselling services play essential role in clients' behaviour and attitude towards PMTCT package utilization. Studies from rural Uganda and Ethiopia showed that despite high level of knowledge on PMTCT of HIV, yet services were underutilized. Similar studies from Botswana and South Sudan showed that, though counselling services were delivered to women during their ANC attendance, yet only half of the participants reported to accept testing for HIV (26)(27)(28).

Persistent and effective adherence to the use of ARVs significantly reduces the risk of MTCT of HIV. This is seen in results from Mitra plus study conducted in Dar es Salaam, Tanzania, in which HAART given to HIV-infected mothers in late trimester of pregnancy and breastfeeding period result in a low postnatal transmission. Similar studies from Kenya, Botswana and Nigeria had the same findings. (29)(30)(31)(32).

3.0 PROBLEM STATEMENT

Despite improvement in PMTCT of HIV services delivery over years, yet MTCT of HIV is still high, contributing up to 15% of total HIV infection worldwide. In 2012 it was estimated that 3.3 million children less than 15 years of age were living with HIV globally, where sub Saharan Africa was mostly affected (33).

The only few surveys on HIV- related knowledge ,attitude and practice in general population conducted in South Sudan have demonstrated that levels of awareness and knowledge on HIV were very low , while risk factors increasing HIV transmission were seen to be common among this population of women of reproductive age. Sudan Household Health Survey (SHHS) conducted in2006 showed that only 8.6% of South Sudan women in the age range of 15-49 years knew about HIV/AIDS. Specific knowledge on MTCT and PMTCT of HIV among pregnant women lacks documented data(34).

4.0 RATIONALE

Studying Knowledge ,Attitude and Practice of PMTCT of HIV among pregnant women attending antenatal clinic is an important tool of assessment in PMTCT guideline implementation .Such study of it is kind had not been conducted in Juba Teaching Hospital in particular and South Sudan in general since commencement of PMTCT. Results from this study will be useful to MOH in general and Juba Teaching Hospital in particular in improving PMTCT services. It also may helps build data foundation for any further study to be conducted in this field.

5.0 RESEARCH QUESTION

What is the knowledge level, attitude and services uptake of pregnant women on PMTCT program?

6.0 OBJECTIVES

6.1 Broad objectives

To assess level of knowledge, Attitude and Utilization of prevention of mother-to-child transmission of HIV among pregnant women attending antenatal clinic at Juba Teaching Hospital.

6.2 Specific Objectives

1. To assess pregnant women's knowledge level on HIV/AIDS.
2. To assess pregnant women's knowledge on when MTCT of HIV may occur.
3. To assess pregnant women's knowledge on prophylaxis for PMTCT of HIV.
4. To assess knowledge of pregnant women on risk factors that increases MTCT of HIV during breastfeeding.
5. To determine the attitude of pregnant women towards PMTCT of HIV.
6. To assess utilization of PMTCT services by pregnant women.

7.0 METHODOLOGY

7.1 Study design

This was a hospital based- cross-sectional study, whereby 251 pregnant women attending ANC at Juba Teaching Hospital were interviewed by investigators using structured questionnaire during the study period.

7.2 Study Area

Juba Teaching Hospital, Maternal and Child Health Clinic (MCHC).

7.3 Study Population

The study population was all pregnant women attending ANC at JTH during the study period.

7.4 Study Setting

The study was conducted at Juba Teaching Hospital, which is located in the heart of Juba city. Juba is the largest and capital city of Republic of South Sudan as from 9th July 2011 after independence. It is located at the west bank of White Nile River, with the population of six hundred thousand (600,000) people according to 2010 estimate. It is a referral hospital where all cases from different parts of the country are referred to. It serves as a teaching hospital for College of Medicine University of Juba. There are other two public hospitals in Juba beside JTH (police and Military Hospitals). JTH gets its supplies and funds from the MOH, and also it gets supports from Real Medicine Fund (RMF), United Nations (UN) agencies and other nongovernmental Organizations (NGOs). With the capacity of 400beds, 50 beds are in the department of Obstetrics and Gynaecology

Antenatal care is integrated in MCHU' which has three consultation rooms, one room for postnatal services, one room for ANC services and one room for PMTCT services. The ANC daily attendance is 15-20 clients, the clinic operates for 4 working days during the week, where nurses are running most of the services. Patients who may be in need of further medical attention are referred to the doctor on duty for more consultation. Prevention of Mother-To-Child Transmission of HIV services are being offered at this

clinic, routinely pregnant women are counselled by trained nurses or midwives encouraging them to uptake PMTCT services.

The program offers provider-initiated counseling and testing for HIV to pregnant mothers attending the ANC. Nurses in charge conduct a pre-test group health talk, educating attendees in which comprehensive and standard information about HIV infection and measures to reduce the risk of transmission are explained to clients. There after a confidential HIV testing is done is a private room where a post testing counseling is conducted by the provider according to the test result. Clients tested positive for HIV initially start ART (Triple ARVs) and continue throughout pregnancy and through childbirth if not breastfeeding or until one week after cessation of breastfeeding. Whereas mothers tested negative for HIV are encourage for partner testing, advice on safe sex practice and risk reduction. Client's information are summarized in ANC green card for follow purpose, these include physical examinations finding, gravidity, parity and laboratory results.

7.5 Study period

The study was conducted during the period of 3rd,November to 3rd, December, 2015

Inclusion criteria: All pregnant women attending ANC during the study period who consented were enrolled

Exclusion criteria: Pregnant woman at ANC, who was seriously ill, who needed quick intervention and services. Lactating mothers who came to MCHU for PMTCT services and the pregnant women who are unable to communicate (speech disabled mothers).

7.6 Sample Size and Sampling Technique

Sample size was calculated using the formula below(35).

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

Where;

n= required sample size

Z=reliability coefficient at 95% confidence interval (standard value of 1.96)

P=Proportional of targeted population which have knowledge of PMTCT. Taking the knowledge proportion of the previously study done in Hawasa region, Ethiopia whose proportion was found to be 82.3 %(25).

E= Margin of error at 5% (standard value 0.05)

Therefore from the formula above we substitute and calculate

$$n = \frac{1.96X1.96 \times 82.3\ (100 - 82.3)}{25}$$

n = 224

Considering 10% non responses, by using this below formula''= **(**nX100%)/100%-f%

Where, n' = adjusted minimum sample, and f% = non-respondents

Then the sample size was 250

Sampling: Convenient sampling method was used, whereby all eligible pregnant women attending ANC at Juba Teaching Hospital during data collection period were asked to participate in the study.

7.7 Procedures and Data Collection

Data were collected by using structured questionnaires to the participants. The questionnaire composed of six parts; each part was designated to assess a specific component of the research objectives (appendix 1).

Part one

This part constituted the socio -demographic characteristics (age, client's marital status, level of education, occupation)

Part two

This part was designated to assess the participant's knowledge on HIV/AIDS (modes of transmission, risk factors and preventive interventions). It was given five questions and each question possessed 14 points. A correct response was given a score of 1 and wrong response was given a score of 0. A modified Bloom's cut off point was adopted(36). A score of 75-100%=good knowledge, 50-74%=moderate knowledge, <50%= poor knowledge

Part three

This part contained questions used for assessing PMTCT of HIV, which include specific knowledge of pregnant mothers about the transmission time (pregnancy, labour and during lactation) and use of ARVs to reduce transmission risk. A total of seven questions were used in this part.

Part four

This part dealt with safe infant feeding knowledge for, and factors that increase of transmission during this period. It composed of three questions. A Bloom's cut off points was used in these two parts of three and four.

The scores were as follows:

i) 20 – 26 points = good knowledge
ii) 15 - 19 points = moderate knowledge
iii) 0 – 14 points = poor knowledge

Part five

Attitude

Attitude was assessed by 8 questions. These were put on a liker's scale and respondents were provided with statements that asked to indicate the extent to which they agree with those statements on whether they strongly agree, agree, have no opinion, disagree or strongly disagree with what they were asked. The scoring system that was used with respects to respondents' responses was as follows: strongly agree scored 5, agree score 4, no opinion score 3, disagree score 2, strongly disagree score 1.

Part six

Practice/Utilization

PMTCT intervention services were assessed by using participants' correct responses. The eleven questions were categorized into three components as follow: HIV testing and counselling (3 points- Counselling for HIV, testing for HIV, result of HIV test), ARV/ART intervention (2 points- ARV/ART provision, ARV/ART regimen) and partner involvement

Data Collection

The two research assistants were the trained nurses working in PMTCT clinic in Juba Teaching Hospital. They were trained by the principal investigator, on how to conduct and collect the data prior to the commencement of data collection, bearing in mind the sensitivity of the subject, privacy and ethical issues were well address during the training. Investigators approached the clients individually after they have already received antenatal services from the health providers. The principal investigator and research assistants were located in two rooms where interviews were conducted. Arabic and English languages were used for communication depending on the client's preference; the investigators approached the pregnant women and explained to her the purpose of the study, after that consent information for participation was offered to client and was read to them by research assistants to fully understood what is to be done. Those who consented were enrolled in the study. Chances for point of clarification, questions and any concern raised by the client were available and clients were told to be free to enquiry about anything. A maximum time of 20 minutes was dedicated for interviewing each client.

Data analysis

Data were entered into computer software of Statistical Package for Social Sciences (SPSS) version 20and analyzed. Univariate and bivariate analysis were done, univariate analysis for frequency computation while bivariate analysis in computing associations between variables. The study results were present in form of table and charts, the Chi-square test was used to measure the strengths of associations between variables and a P value of<0.05 was considered to be statistically significant.

7.8 Ethical Consideration

The participants were given extensive and detailed explanation about the study, including the purpose and what the study involved. They were free and autonomous on taking decision to participate or not. Participants who agreed after explanation were given a written consent form and signed. Information obtained from the respondents was treated with confidentiality and high level of privacy. No name of any participant were tagged or written on questionnaire sheet. Local culture and norms were highly respected by investigators throughout the time of data collection.

Participants found to have insufficient knowledge on the topic, were offered a session to strength their knowledge after the interview. Throughout this study, we did not encounter any physical or psychological harm to the participants.

7.9 Ethical Clearance

The ethical clearance approval was obtained from Muhimbili University of Health and Allied Sciences (MUHAS) Review and Ethical Committee as well as from the Ethical Board, Ministry of Health Republic of South Sudan. Introduction letter for conducting the study in Juba Teaching Hospital was obtained from the office of Director General for Training and Professional Development, MOH, RSS.

8.0 RESULTS

During the study period a total of two hundred and fifty one (251) pregnant mothers who met the criteria and consented for the study participation were interview at maternal and child health clinic (MCHC) in Juba Teaching Hospital. The mean age of the participants were 25.67 years (standard deviation of ±5.52) with the youngest being 15 years and the oldest 41 years. More than one-third (35.1%) of the participants were in the age range of 26-30 years.

Table 1: Socio-demographic characteristics of the study population (N=251)

Variable	Frequency(n)	Percentage (%)
Age group (years)		
≤20	53	21.1
21-25	71	28.3
26-30	88	35.1
31 and above	39	15.5
Marital status		
Single	5	2
Married	221	88
Divorced	18	7.2
Widow	7	2.8
Education level		
Non formal	99	39.5
Primary school	68	27.1
Secondary school	45	17.9
College/university	39	15.5
Occupation		
Housewife	134	53.4
Employed	58	23.1
Business	59	23.5

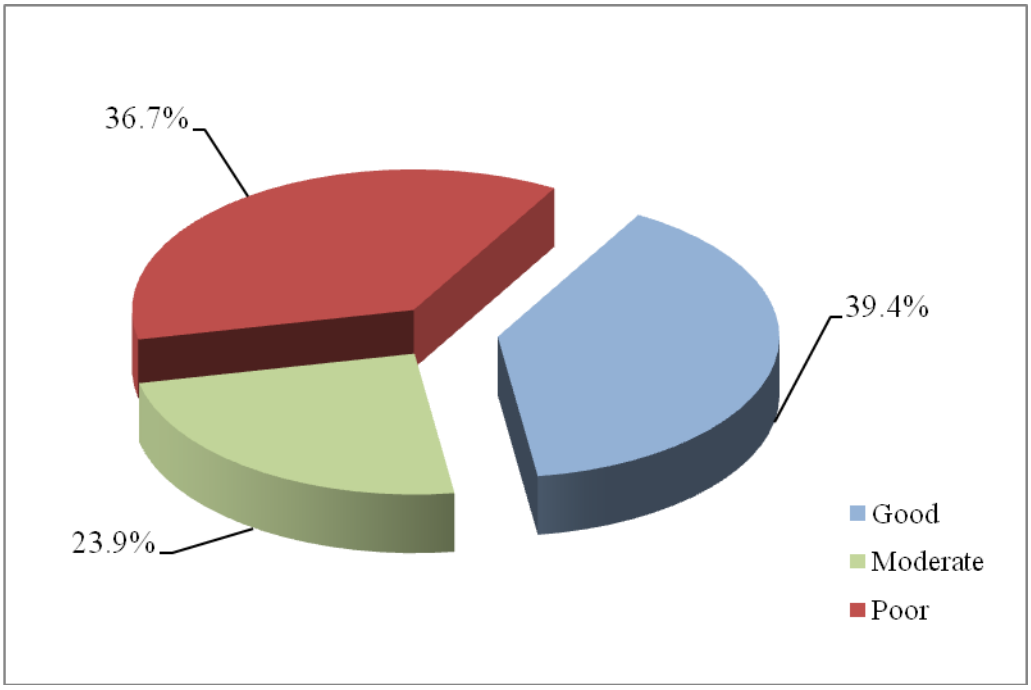

Figure 1: Knowledge on HIV/AIDS among pregnant women

Table 2: Association of sociodemographic characteristics and knowledge level on HIV/AIDS

Variable	Knowledge level on HIV/AIDS			Total	p-value
	Poor (n, %)	Moderate (n, %)	Good (n, %)		
	92 (36.7)	60 (23.9)	99 (39.4)	251	
Age group (years)					
≤20	28 (52.8)	8 (15.1)	17 (32.1)	53	
21-25	29 (40.8)	15 (21.1)	27 (38)	71	0.067
26-30	24 (27.3)	25 (28.4)	39 (44.3)	88	
31 and above	11 (28.2)	12 (30.8)	16 (41)	39	
Marital status					
Single	2 (40)	2 (40)	1 (20)	5	
Married	86 (38.9)	51 (23.1)	84 (38)	221	0.036
Divorced	1 (5.6)	4 (22.2)	13 (72.2)	18	
Widow	3 (42.9)	3 (42.9)	1 (14.3)	7	
Education level					
Non formal	64 (64.6)	12 (12.1)	23 (23.2)	99	
Primary school	18 (26.5)	25 (36.8)	25 (36.8)	68	
Secondary school	6 (13.3)	17 (37.8)	22 (48.9)	45	<0.001
College/University	4 (10.3)	6 (15.4)	29 (74.4)	39	
Occupation					
Housewife	64 (47.8)	28 (20.9)	42 (31.3)	134	
Employed	6 (10.3)	20 (34.5)	32 (55.2)	58	
Business	22 (37.3)	12 (20.3)	25 (42.4)	59	<0.001

Table 2 above showed education and occupation of the participants influenced their knowledge on HIV/AIDS, which is statistically significant (P<0.001 and P <0.001)

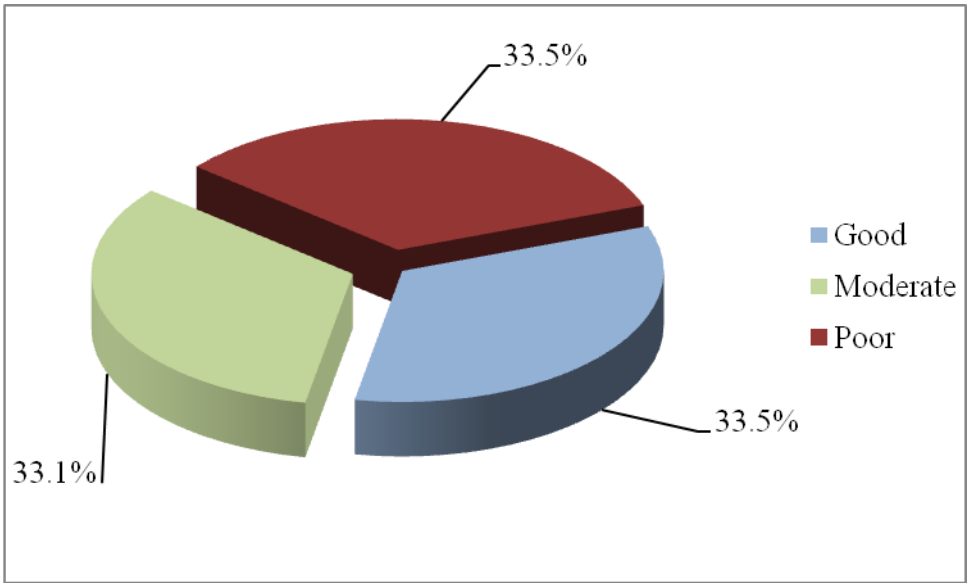

Figure 2: Knowledge level on when MTCT of HIV may occur

Table 3: Association of sociodemographic characteristics and knowledge level on MTCT HIV

Variable	MTCT Knowledge Level			Total	p-value
	Poor (n, %)	Moderate (n, %)	Good (n, %)		
	84 (33.5)	83 (31.5)	84 (33.5)	251	
Age group (years)					
≤20	22 (41.5)	12 (22.6)	19 (35.8)	53	
21-25	27 (38)	25 (35.2)	19 (26.8)	71	0.265
26-30	27 (30.7)	31 (35.2)	30 (34.1)	88	
31 and above	8 (20.5)	15 (38.5)	16 (41)	39	
Marital status					
Single	1 (20)	2 (40)	2 (40)	5	
Married	78 (35.3)	67 (30.3)	76 (34.4)	221	0.089
Divorced	2 (11.1)	12 (66.7)	4 (22.2)	18	
Widow	3 (42.9)	2 (28.6)	2 (28.6)	7	
Education level					
Non formal	56 (56.6)	21 (21.2)	22 (22.2)	99	
Primary school	16 (23.5)	32 (47.1)	20 (29.4)	68	<0.001
Secondary school	8 (17.8)	21 (46.7)	16 (35.6)	45	
College/University	4 (10.3)	9 (23.1)	26 (66.7)	39	
Occupation					
Housewife	58 (43.3)	42 (31.3)	34 (25.4)	134	
Employed	8 (13.8)	23 (39.6)	27 (46.6)	58	<0.001
Business	18 (30.5)	18 (30.5)	23 (39)	59	

Table 3 shows the occupation and education were significantly associated with knowledge level on MTCT, which is statistically significant of the P value (P<0.001, P0.001 respectively)

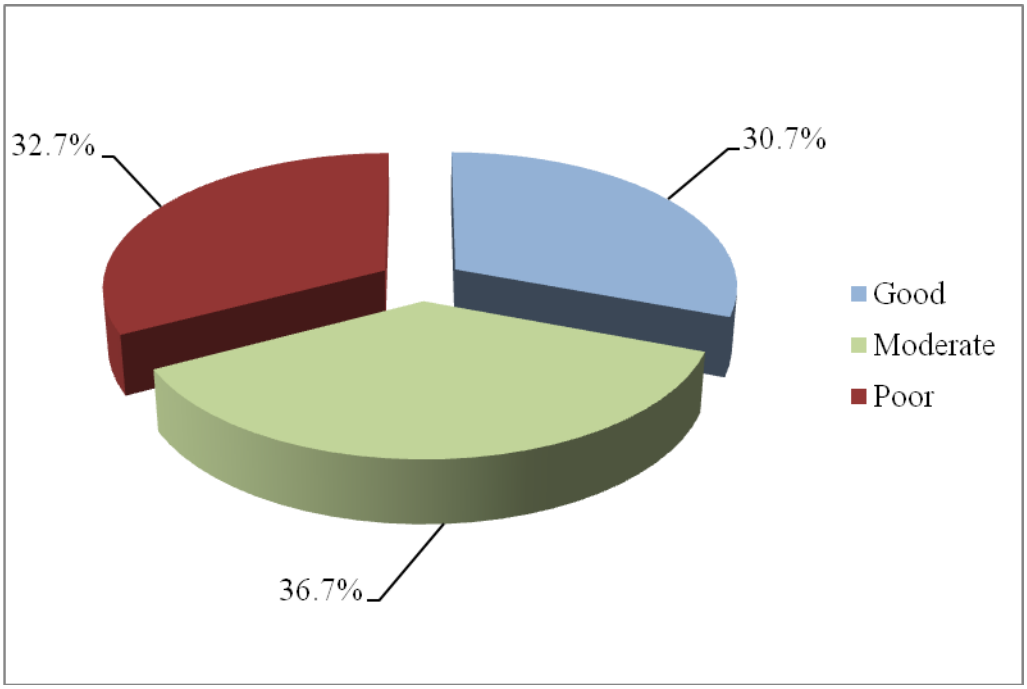

Figure 3: Knowledge on when to commence prophylaxis for MTCT of HIV.

Table 4: Association of socio demographic characteristics and knowledge on when to commence prophylaxis for PMTCT of HIV

Variable	Prophylaxis Knowledge Level			Total	p-value
	Poor (n, %)	Moderate (n, %)	Good (n, %)		
	82 (32.7)	92 (36.7)	77 (30.7)	251	
Age group (years)					
≤20	27 (50.9)	14 (26.4)	12 (22.6)	53	
21-25	26 (36.6)	31 (43.7)	14 (19.7)	71	0.003
26-30	19 (21.6)	34 (38.6)	35 (39.8)	88	
31 and above	10 (25.6)	13 (33.3)	16 (41)	39	
Marital status					
Single	1 (20)	4 (80)	0 (0)	5	
Married	75 (33.9)	77 (34.8)	69 (31.2)	221	0.308
Divorced	4 (22.2)	7 (38.9)	7 (38.9)	18	
Widow	2 (28.6)	4 (57.1)	1 (14.3)	7	
Education level					
Non formal	49 (49.5)	29 (29.3)	21 (21.2)	99	
Primary school	19 (27.9)	28 (41.2)	21 (30.9)	68	<0.001
Secondary school	9 (20)	21 (46.7)	15 (33.3)	45	
College/University	5 (12.8)	14 (35.9)	20 (51.3)	39	
Occupation					
Housewife	53 (39.6)	48 (35.8)	33 (24.6)	134	
Employed	11 (19)	23 (39.7)	24 (41.4)	58	
Business	18 (30.5)	21 (35.6)	20 (33.9)	59	0.050

Table 4 above showed that participants' age and educational level appeared to increase the women's knowledge on when to start PMTCT of HIV, statistically significant (p<0.00 3 and P<0.001).

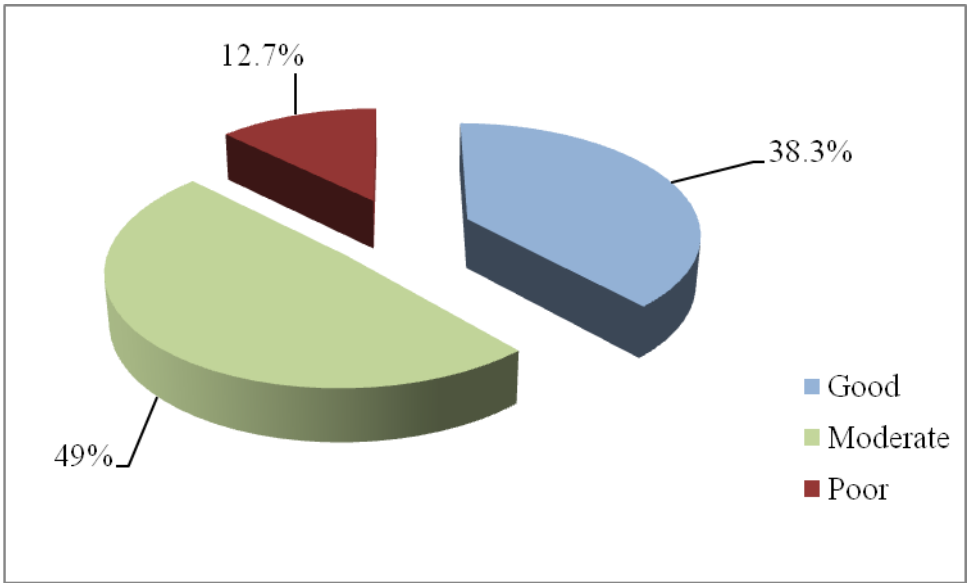

Figure 4: Knowledge level on risk factors for MTCT

Table 5: Association of socio demographic characteristics and knowledge level on MTCT of HIV risk factors during breastfeeding

Variable	Knowledge level on MTCT Risks			Total	p-value
	Poor (n, %)	Moderate (n, %)	Good (n, %)		
	32 (12.7)	123 (49)	96 (38.3)	251	
Age group (years)					
≤20	6 (11.3)	32 (60.4)	15 (28.3)	53	
21-25	11 (15.5)	36 (50.7)	24 (33.8)	71	0.019
26-30	11 (12.5)	45 (51.1)	32 (36.4)	88	
31 and above	4 (10.3)	10 (25.6)	25 (64.1)	39	
Marital status					
Single	2 (40)	3 (60)	0 (0)	5	
Married	26 (11.8)	110 (49.8)	85 (38.5)	221	0.116
Divorced	3 (16.7)	5 (27.8)	10 (55.6)	18	
Widow	1 (14.3)	5 (71.4)	1 (14.3)	7	
Education level					
Non formal	13 (13.1)	56 (56.6)	30 (30.3)	99	
Primary school	8 (11.8)	37 (54.4)	23 (33.8)	68	0.055
Secondary school	6 (13.3)	19 (42.2)	20 (44.4)	45	
College/University	5 (12.8)	11 (28.2)	23 (59)	39	
Occupation					
Housewife	16 (11.9)	78 (58.2)	40 (29.9)	134	
Employed	11 (19)	15 (25.9)	32 (55.2)	58	0.001
Business	5 (8.5)	30 (50.8)	24 (40.7)	59	

Table 5 above showed the age and occupation were significantly associated with knowledge level ($P<0.019$ and $P<0.001$ respectively). Women older than 20 years and employed women were more knowledgeable than their counter parts.

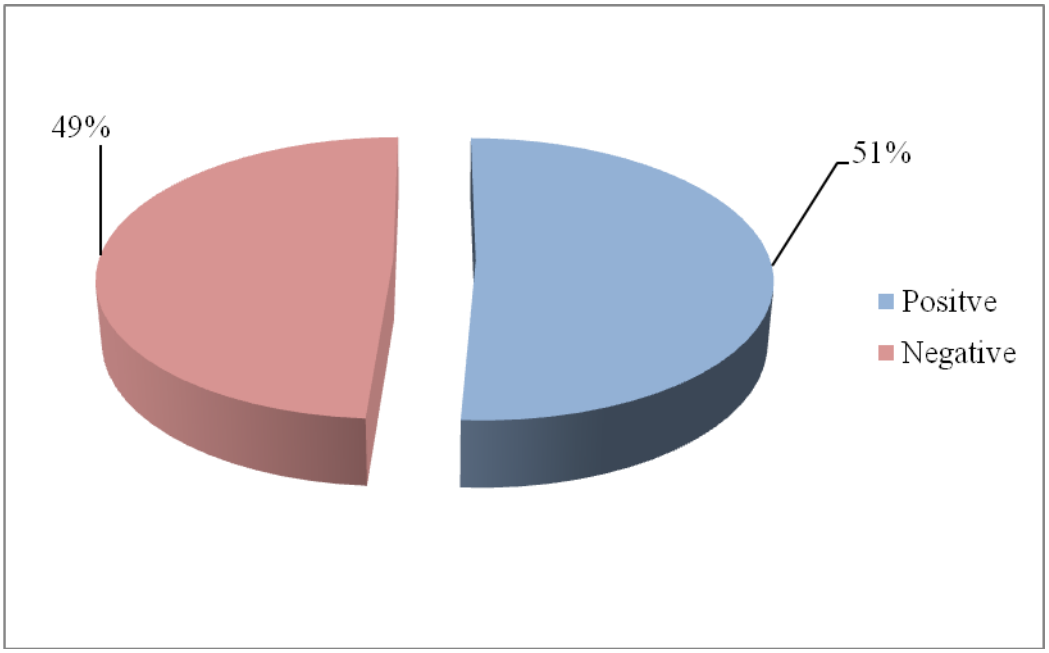

Figure 5: Attitude of pregnant women on PMTCT of HIV

Table 6: Association of sociodemographic characteristics and attitude of pregnant women towards PMTCT of HIV

Variable	Attitude		Total	p-value
	Negative (n, %)	Positive (n, %)		
	123 (49)	128 (51)	251	
Age group (years)				
≤20	29 (54.7)	24 (45.3)	53	
21-25	36 (50.7)	35 (49.3)	71	0.719
26-30	40 (45.5)	48 (54.5)	88	
31 and above	18 (46.2)	21 (53.8)	39	
Marital status				
Single	4 (80)	1 (20)	5	
Married	110 (49.8)	111 (50.2)	221	0.275
Divorced	7 (38.9)	11 (61.1)	18	
Widow	2 (28.6)	5 (71.4)	7	
Education level				
Non formal	61 (61.6)	38 (38.4)	99	
Primary school	33 (48.5)	35 (51.5)	68	0.003
Secondary school	17 (37.8)	28 (62.2)	45	
College/University	12 (30.8)	27 (69.2)	39	
Occupation				
Housewife	71 (53)	63 (47)	134	
Employed	22 (37.9)	36 (62.1)	58	0.151
Business	30 (50.8)	29 (49.2)	59	

The table 6 above shows education has significant association with pregnant women attitude towards PMTCT. Participants with college/University education appeared to have positive attitude, with the statistical significance ($P<0.003$)

Table 7: Utilization of PMTCT of HIV services among pregnant women

Variable	Frequency (n)	Percentage (%)
Received HIV counselling		
Yes	231	92
No	20	8
Tested for HIV		
Yes	181	72.1
No	70	27.9
If tested, HIV results		
Positive	12	6.6
Negative	169	93.4
If positive, received ARV/ART		
Yes	12	100
CD 4Tested		
Yes	4	33.3
No	8	66.7
ARV/ART Regimen		
AZT + 3TC +NVP	9	75
AZT+3TC+EFV	3	25
If positive, husband was told		
Yes	8	66.7
No	4	33.3
Husband was tested		
Yes	7	87.5
No	1	12.5
Husband's results		
Positive	7	100
Positive husband, he was kept ARV/ART		
Yes	7	100
Positive husband, preventive method used		
Condom/barrier	2	28.6
Other methods	5	71.4

Table7 above shows all positive tested mothers and their partners were kept on ARV/ART and condoms use as a protective method was extremely low (28.6%).

9.0 DISCUSSION

This study assessed the knowledge, attitude and the utilization of PMTCT of HIV services among pregnant women who attended the antenatal care at Juba Teaching Hospital.

It appeared in this study that two third of the participants had moderate to good knowledge on HIV/AIDS. Comparing these findings with other similar studies conducted in Ethiopia, Hawasa, Tikur and Zewudita memorial hospitals, which showed all participants, had sufficient knowledge on HIV/AIDS, and more than ninety percent of pregnant mother had heard of HIV/AIDS. The difference in knowledge level could be due to the fact that, HIV awareness and PMTCT program coverage in Ethiopia is more expanded and organized than in South Sudan(25)(37)

This study showed the level of education influenced pregnant women's' knowledge on PMTCT. Majority of participants with college/university and secondary education were found to have moderate to good knowledge compare to their counterparts with primary and no education. Similar findings have been reported from studies conducted in Ethiopia and Tanzania citing the influence of education. This is due to the fact many programs which work on promotion of PMTCT of HIV awareness provide community health education through mass media campaign, workshops, booklets, magazine, radio and TV(38)(39).

The study identified that occupation of the respondents and advance in age have significant association with the level of knowledge on MTCT risks and PMTCT of HIV, participants who were government employees, business women and age group of20 years and older, appeared to have sufficient knowledge. Similar findings were reported in studies conducted in Khartoum, Sudan and Kisii County, Kenya. The difference in knowledge could be attributed to the degree of exposure exercised by business and employed women working in institution, increasing chances of interactions with colleagues and traveling abroad to attend seminars and workshops. Community perception of pregnancy at younger age could be a clear barrier to pregnant teenagers in getting necessary information and access to PMTCT services. Marital status appeared not to have any influence on pregnant women level of knowledge on PMTCT of HIV(21)(40).

More than half of the participants (51%) in this study had a positive attitude towards PMTCT interventions services. The finding concurred with the results found in studies conducted in Mombasa, Kenya and rural area of western Uganda where only half of the participant had positive attitude towards PMTCT of HIV. But different results were obtained in a study from Western Nigeria where only less than one third of the participants had positive attitude. The difference in attitude , could be due to community stigma about HIV and quality of counseling offered by providers, where tested positive pregnant women could find it difficult to maintain their social status within their families if counseling sessions were inadequate (41)(42)(43).

Provider initiated counseling and testing of HIV to all pregnant mothers attending ANC is a crucial component in PMTCT of HIV services utilization. This study identified that 92% of the participants had receive counseling for HIV, but only 72.1% of them accepted the HIV testing. Results from a similar study conducted in Tiko Health District, Cameroon, were quiet higher, where 95% of the pregnant women attending ANC accepted the testing for HIV. Also it appeared in this study that two third of the tested positive pregnant mothers received ARV/ART and managed to informed their partners about the positive test results. Comparing these findings with that of a similar study conducted in Botswana where only 54% of the 94% counseled participants agreed to be tested for HIV, it showed improvement in services utilization. This can be due to the counseling sessions offered pre-test given to pregnant mothers at ANC play role in increasing their knowledge, thus making them accept the services(44)(32).

Effective safe sex practice achieves two goals at a go, which are prevention of transmission of HIV infection to discordant partner, and unwanted pregnancy among women living with HIV. It has been shown in this study that only one third (28.6%) of the positive pregnant mothers mentioned the persistent use of condom as a mean of preventive method. Similar findings were reported from a study conducted in Juba, South Sudan, and Northeast Nigeria. Results from a study conducted in Kisumu District, Kenya showed only 8% of the respondents reported the use of condoms. Poor knowledge and partners perception toward condoms use could be the possible reason behind this poor practice of preventive method among tested positive mothers (24)(28)(30).

10.0 CONCLUSION

This study identified that the overall knowledge on HIV/AIDS among pregnant women was moderate. Specific knowledge on MTCT, MTCT risk factors during breastfeeding, and PMTCT prophylaxis was also found to be low among the participant. Only half of the participants showed positive attitude towards PMTCT services utilization. Although majority of the participants reported, had received counseling for HIV, about one third did not accept the test for HIV. About 75% of the HIV positive women did not receive HAART and more than two third of the participants reported low use of condoms as protective gears.

11.0 STUDY LIMITATIONS

1. Study was conducted in one facility and may not reflect the whole situation in the city.
2. The study did not address other risk factors related to the facility and service providers' side that contributed directly or indirectly to poor knowledge on PMTCT of HIV.
3. The study did not asses the availability of the resources (service providers, testing kits and ARVs).

12.0 RECOMMENDATIONS

Improvement of counseling sessions to pregnant women attending ANC at JTH is needed, as to increase their acceptance to services utilization. Also there is a need of educating pregnant women tested positive for HIV on safe sex practice, this can be achieve by listening to their concerns and provide answer to raised questions regarding their misconception about the practice. There is a need of conducting a similar study at national level, as this study was conducted in JTH, it did not reflect or represent the other settings across the country.

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APPENDICES

Appendix I: Questionnaire Adopted from Original Bloom's cut off point

Questionnaire (English Version)

PART I.

Socio demographic data

1. Age……. ……. (Exact age in years).
2. Marital status
    a. Single
    b. Married
    C .Divorced
    d. Cohabiting.
    e. Widow
    f. Separated
3. Level of education
    a. No formal education
    b. Primary not completed
    c. Primary completed
    d. Secondary not completed
    e. Secondary completed
    f. College/University
4. Occupation
    a. Employed
    b. Business
    c. Housewife
    d. Peasant
    e. Unemployed

PART II

KNOWLEDGE ON HIV/AIDS QUESTIONS

5. Do you know how HIV is transmitted?

a. Yes

b. No

If no skip question 6.

6. Mention ways of transmission of HIV (tick where appropriate)

a. Unsafe blood transfusion

b. Sharing sharps with an infected person

c. Mother to child transmission.

d. Unprotected sexual intercourse.

e. others…… (Specify).

7. Do you know the risks of acquiring HIV?

a. Yes

b. No,

If no skip question 8.

8 .Mention the risks of acquiring HIV infection

a. Unprotected sexual intercourse with an infected person

b. Multiple sexual partners.

c. Having sexually transmitted infections.

d. Others…….. (Specify).

9. Can you mention ways of preventing someone from acquiring HIV? (Tick where Appropriate)

a. Abstinence.

b. Having one faithful sexual partner.

c. Condom use.

d. Others……. (Specify).

10. Can a healthy looking individual be infected with HIV?

    a. Yes

    b. No

PART III

QUESTIONS ON MTCT

11. Can an infected mother transmit HIV virus to her child?

    a. Yes

    b. No

    c. I don't know

    If no skip question 12

12. When does an infected mother transmit the infection to her child?

    a. During pregnancy

    b. Through vaginal delivery

    c. Through breastfeeding

13. How can mother to child transmission of HIV be prevented?

    a. Antiretroviral therapy during pregnancy.

    b. Delivery by caesarean section.

    c. Giving antiretroviral drugs to the newborn.

    d. others…… (Specify).

14. Is there medication given to the mother during pregnancy to reduce MTCT?

    a. Yes

    b. No

    c .I don’t remember

15. When does a pregnant woman start ARV prophylaxis?

    a. First trimester.

    b. Second trimester.

    c. Third trimester.

    e. I don’t remember

PART IV

QUESTIONS ON INFANT FEEDING

16. Do you know the main alternatives of infant feeding? (Mention)

a. Breastfeeding for as long as the mother wishes

b. Breastfeeding for 6months exclusively

c. Infant formula /Cow's milk

17. What conditions/risk factors in a mother during breastfeeding increases the risk of MTCT?

a. Low CD4+ counts

b. Cracked or bleeding nipples

c. Mastitis

d .I don't remember

e. I don't know

18. What conditions in an infant increases the risk of acquiring HIV infection during Breast feeding

a. Oral ulcers or sores in the infant's mouth

b. Mixed feeding.

c. I don't remember

d. I don't know

PART V

QUESTIONS ON ATTITUDE TOWARDS PMTCT

19. It is important that every pregnant woman gets tested for HIV.

5. Strongly agree

4. Agree

3. No opinion

2. Disagree

1 Strongly disagree

20. If one is infected with HIV then she should not get pregnant again

5. Strongly agree
4. Agree
3. No opinion
2. Disagree
1 Strongly disagree

21. Using protective gears (condoms) during pregnancy and breastfeeding reduces MTCT?

5. Strongly agree
4. Agree
3. No opinion
2. Disagree
1 Strongly disagree

22 .Some women opt to breastfeed despite their HIV status due to stigma.

5. Strongly agree
4. Agree
3. No opinion
2. Disagree
1. Strongly disagree

23. Some women opt to breastfeed despite their HIV status due to poverty.

5. Strongly agree
4. Agree
3. No opinion
2. Disagree
1. Strongly disagree

24. Some women opt to breastfeed despite their HIV status due to fear of disclosure.

5. Strongly agree
4. Agree
3. No opinion
2. Disagree
1. Strongly disagree

25. Some women opt to breastfeed despite their HIV status due to lack of education.

    5. Strongly agree

    4. Agree

    3. No opinion

    2. Disagree

    1. Strongly disagree.

26. My family will support my choice of feeding the baby

    5. Strongly agree

    4. Agree

    3. No opinion

    2. Disagree

    1. Strongly disagree

27. Do you support the strategies for PMTCT?

    5. Agree

    4. Strongly agree

    3. No opinion

    2. Disagree

    1. Strongly disagree

PART VI

QUESTIONS ON PRACTICE/UTILIZATION OF PMTCT

28. Were you counselled for HIV test?

    a. Yes

    b. No

    c. Do not know.

29. Did you test for HIV?

    a. Yes

    b. No

    c. I do not know.

30. If tested, what was the result?

    a. Positive.

    b. Negative.

    c. Cannot remember.

31. If positive, did you receive ARV/ART.
    a. Yes.
    b. No.
32. If yes, which regimen
    a. NVP
    b. AZT+ 3TC+ NVP.
    c. AZT+ 3TC+LPV/r.
    d. AZT+3TC +ABC.
    e. ABC+3TC+LPV/r.
    f. AZT+3TC+ EFV.
33. Did you tested for CD4 count?
    a. Yes
    b. No
34. If positive, did you tell your husband.
    a. Yes.
    b. No.
35. Was your husband tested?
    a. Yes.
    b. No.
36. If tested, what was the result?
    a. Positive.
    b. Negative.
    c. Do not know.
37. If your husband was tested +ve, was he put on ART/ARV.
    a. Yes
    b. No.
    c. Do not know.
38. If your husband was tested +ve, what was your method of protection
    a. Condom.
    b. Any other method used

Appendix II: Consent Form – English Version

Consent to participate in this study

Greetings! My name is Dr. Giel Thidor, postgraduate student from MUHAS, Tanzania; I am working on this research project with the objective of assessing the knowledge, attitude and practice of pregnant women on PMTCT of HIV.

Purpose of the study

Mother-to-Child transmission is the most common way of infant and childhood infection by HIV virus. Over 90% of HIV infection in children is due to MTCT. This study will collect information on "Knowledge, Attitude and Practice on Prevention of mother-to-Child Transmission of HIV among pregnant women. The study will help us to know whether mothers retain the information given to them during counselling and their attitudes towards PMTCT options.

What Participation Involves

The study will be conducted on pregnant women who will be attending the Mother and Child Health Clinic at Juba Teaching Hospital who are seeking ANC services during study period. If you accept to take part in the study you will be asked some questions which will include the following:

1. You will be given a questionnaire which you will be required to answer questions that have been prepared for the study in order to obtain the intended information to improve pregnant women's knowledge and attitude on PMTCT of HIV.
2. You will be asked about your age, marital status, level of education, HIV status, and your husband HIV status.
3. The consent form will be the only document containing your personal information like your name, age and your signature.
4. You will be asked questions on PMTCT.
5. You will be asked questions on family planning.
6. You will take part in this study for approximately 20 minutes.

Confidentiality

I assure you that all the information collected from you will be kept confidential. Only people working in this research study will have access to the information. We will not put your name or other identifying information on the records of the information you provide.

Risks

There are no risks associated with this study.

Rights to Withdraw and Alternatives

Participating in this study is completely voluntary. If you choose not to participate in the study or if you decide to stop participating in the study you will not get any harm. You can stop participating in this study at any time, even if you have already given your consent. Refusal to participate or withdrawal from the study will not involve penalty or loss of any benefits or deny other ANC services you came for.

Benefits

Results from this study may be use by policy makers to improve some of shortcomings in implementing PMTCT package. Information obtained from this study will available to the Ministry of Heath, Republic of South Sudan and Juba Teaching Hospital in particular.

In Case of Injury

We do not anticipate that any harm will occur to you or your family as a result of participation in this study.

Who to contact

If you ever have questions about this study, you should contact the study Coordinator, who is reachable through these contacts: Phone number: +21198413009, +211955786866(JUBA), +255685683015 (Dar es Salaam).Emails: thuokyoach@gmail.com, Muhimbili University of Health and Allied Sciences (MUHAS), P.O. Box 65001, Dar es Salaam. If you ever have questions about your rights as a participant, you may call Chairperson of the College Research and Publications Committee (MUHAS), P. O. Box 65001, Dar es Salaam. Tel: 2150302-6, and Dr. Giel (+255685683016), who is the principal investigator of this project.

Signature

Do you agree to participate and for you to answer questions?

Agrees [__]

Disagree [__]

I _____ have read/understood the contents in this form. I agree to participate in this study.

Signature of Participant….....

Signature of witness (if participant cannot read)……..

Signature of research assistant.....

Date of signed consent.....……