DETERMINANTS OF REPEATED PREGNANCY AMONG HIV POSITIVE WOMEN ATTENDING ANTRETROVIRAL TREATMENTS IN GEDEO ZONE PUBLIC HEALTH FACILITIES, SOUTHERN ETHIOPIA,UNMATCHED CASE CONTROL STUDY

BY

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DECLARATION

I, the undersigned, declare that this thesis is my original work, has not been presented for a degree in this or any other university and that all sources of materials used for the thesis have been fully acknowledged.

Name: _____

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This thesis has been submitted for examination with my approval as University advisor.

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Name: _____

Signature: _____

Abstract

Background: As Antiretroviral treatments improves the health of mothers, repeated pregnancy among HIV infected women become increasing .However, in sub Saharan Africa where family planning among People Living With HIV/AIDS is not widely used, the risk of mortality due to HIV/AIDS increase as the number of pregnancy increases .The desire to have more children among these groups of people in Ethiopia is also increasing.

Objective: This study was aimed to assess determinants of repeated Pregnancy among HIV positive Women on Antiretroviral Treatments in Gedeo Zone, public health facility, Southern Ethiopia 2020.

Methods and materials: A facility based unmatched case control study was conducted among 76cases (women with repeated pregnancy) and 228controls (women with first pregnancy) since HIV infection for both case and controls and who are on Prevention of Mother toChild Transmission program in the selected health facilities. The participants were selected by simple random sampling technique. Data was collected using face-to face interview. Data was entered by using Epidata3.1 and exported to SPSS version 20 for analysis purpose.Bivariate logistic regression was used to see the association between one explanatory variable and outcome variable at p value<0.25. Hosmer- Lemeshow method was used to test the model fitness. Multivariable logistic regression analysis was performed to identify determinant factors which affect the dependent variable. Those variables with adjusted odd ratio and p value < 0.05, at 95%Confidence Interval were declared statistically significant in multivariable analysis.

Result: The mean age of cases 25.5 (Standard Deviation: ± 3.6) was less than that of the controls 28 (Standard Deviation: ± 5). Determinants which were found to be associated with repeat pregnancies were history of abortion,[AOR=4.75, 95 %CI (2.13 – 10.57)], low educational attainment [AOR= 4.62,95%CI (1.69-12.67)] ,30-43years of age [AOR=0. 23, 95%CI,(0.10-0.56)], Employment status[AOR=0.19,95%(0.06-0.52)] and urban residence[AOR=0.10,95%CI(0.05 -0.22)].

Conclusion: The results of this study suggest that repeated pregnancies were more common among HIV-infected women who have history of abortion, low educational attainment. Appropriate reproductive health services to be provided for HIV positive pregnant women who are and treated with ART.

Keyword: repeated pregnancy, determinants, Gedeo zone

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Abbreviations and Acronyms

AIDS: Acquired immune deficiency syndromes

ART: Antiretroviral Therapy

AOR : Adjusted Odd ratio

BMI : Body Mass index

BPH : Bule primary hospital

CD4 : Clusters of differentiation fourth cell

CI : Confidence interval

DURH : Dilla University referral hospital

EFY : Ethiopian fiscal year

FP : Family planning

GC : Gregorian calendar

GPH : Gedeb primary hospital

HC : Health center

HEW : Health extension worker

HIT : Health information trained personnel

HIV : Human immunodeficiency syndromes

HMIS: Health information Management system

HSTP : Health sector transformation plan

HR : Hazard rate

IUGR : Intrauterine growth restriction

MDG : Millennium development goals

MPH : Masters of public health

MRN : Medical record number

MTCT : Mother to child transmission

NGO : Nongovernmental organization

LBW : Low birth weight

OR : odd ratio

RH : Reproductive health

SD: Standard deviation

SDG: Sustainable development goals

SPSS : Statistical package for social science

SNNP : Southern nation nationalities and peoples

TB : Tuberculosis

PAC: Post abortion Care

PHS : private hospitals

PMTCT: prevention of mother to child transmission

PLWHA : people living with HIV Aids

UN : united Nations

USA: united States of America

UK : united Kingdom

WHO : World Health Organizations

WLWH : Women living with HIV Aids

YPH:Yirgacheffe primary hospital

CHAPTER ONE

INTRODUCTION

Background

Human Immune Virus in pregnancy is the presence of HIV in a woman while she is pregnant[1].In the world 39.6million people were living with HIV/AIDS. Among this group of people, 0.94million people died and new infection now in world were1.8m in 2017.In the world 50% of people infected with HIV/AIDS were women and with complications related to pregnancy ,is the leading cause of death among women of reproductive age[2]. According to United nations 2013 global report, women of reproductive age in Sub-Saharan Africa were disproportionately affected by HIV/AIDS; 80% of thenearly13million women living with HIV worldwide live in this region. Of the 3.2 million children living with HIV, 91% live in sub-Saharan Africa, while 240 000 children worldwide acquired HIV in 2013: one new infection every two minutes[3]. In 2016 an Estimated0.4 million women living with HIV and 77% of pregnant women with known HIV status,69% received Antiretroviral for PMTCT in Ethiopia[4, 5].Women who are HIV infected, especially those with a history of multiple pregnancies, should ensure that they implement measures to control TB and other HIV-related infections before further family planning[5].Many people living with HIV choose to have children and require safer conception services to support their goals while minimizing the risk of HIV transmission to partner and child[6]. HIV-positive individuals in Africa have additional considerations to take into account when deciding whether or not to have children. These include the possibility of passing HIV from mother-to-child and the likelihood that one or both parents could die before the child reaches adulthood[7].

Women with HIV infection undergo repeat pregnancies not because of ineffective contraception, but as a result of the desire to have multiple children. But, the desire of HIV infected woman to have children in the future has significant implication for the transmission of HIV to sexual partner and new born .Some studies have demonstrated an increase in repeat pregnancy among women with HIV infection[8, 9]

The majority of new HIV infections that occur in children worldwide were among children born to HIV positive mothers, who acquire HIV infection from their mothers[10].According to the study conducted in South Wollo Zone, Northeast Ethiopia; substantial number of PLWHA wants to have a child currently or in the near future and the number of children desired in the future ranges from 1 to 6[11].Even though it is their right to have children, women are discouraged from getting pregnant while on ART due to the fact that giving birth from HIV positive mother could result in HIV positive babies. If proper care for the mothers is not in place, maternal death due to complications related to HIV and pregnancy can be very high. With an increasing number of pregnancies in HIV-infected women, TB or HIV-related mortality rates increased steadily. The risk of mortality from TB or AIDS increased by 1.48-fold, 1.76-fold, and 1.59-fold for one, two, and three more pregnancies compared to no full-term pregnancy[12, 13]

Some hospital-based studies in areas where the prevalence of HIV infection is high have shown that HIV/AIDS is one of the leading causes of pregnancy related deaths. UN Maternal Mortality Estimation Inter-agency Group, assumed that 50% of deaths in HIV-infected pregnant or postpartum women were maternal;.In particular, in regions where HIV prevalence is greater than 15%, more than 50% of maternal mortality was attributable to HIV .UNAIDS recommends that HIV positive women should be able to control their fertility and to prevent HIV transmission perinataly if they decide to have children.[14, 15].

Statements of the problem

The tendency of getting pregnant and having HIV negative baby is highly improved due to the introduction of ART service which prevent Mother to child HIV transmission resulting in increased incidence of pregnancy among HIV positive women[12].However: globally, HIV and complications of childbearing (pregnancy) are the top causes of death among women of reproductive age. As the number of pregnancy increase, the risk of AIDS mortality increased 1.48-fold , 1.76-fold , and 1.59-fold for one, two, and three or more full-term pregnancies compared to none, respectively[13, 16-19].

The magnitude of repeat pregnancy among HIV positive woman differs from country to a country .According to study conducted in different parts of world ,it revealed that, 9.2% ,26%, 32.4% ,17.6% were reported from LatinAmerica&carribean, United kingdom (UK), Zimbabwe, and Kenya respectively[20-23].ART improves health of mothers and these mothers may be

motivated to have more children. However,Maternal HIV infection may result in transmission of HIV to her child as well as other adverse pregnancy outcomes such as stillbirth, low birth weight (LBW), prematurity and intrauterine growth retardation (IUGR), which are known risk factors for per natal and neonatal mortality and morbidity, regardless of the transmission of HIV to the fetus/child[24] On the basis of a systematic review of 23 studies, 17 of which were done in sub-Saharan Africa, HIV-infected pregnant or post-partum women were estimated to have nearly eight times the risk of death that non-HIV-infected women [16].Having an index pregnancy that did not result in a live birth was an important predictor of having a repeat pregnancy.Hospitalization during the index pregnancy or up to 6 months postpartum and for poor index pregnancy outcome (stillbirth or spontaneous/therapeutic abortion), were associated with increased occurrence of repeat pregnancy[21].Although HIV-infected women are counseled to use condoms consistently, compliance is generally poor in sub-Saharan Africa and Fertility and reproductive behavior among HIV-infected women is poorly understood and one of the most difficult problems facing health care providers and policy makers[25] .Efforts that focus on PMTCT services' delivery as an integral component of MNCH care packages with focus on areas with high unmet needs is being implemented in order to achieve the goals of eliminating MTCT of HIV.Ethiopia has achieved the MDG target by reducing HIV new infection by 90% and mortality by more than 50% among adults in the last decade. Currently treatements given for pregnant woman on HIV ,that prevent Viral transmission to fetus (option B+) is being implemented in all regions of the country reaching a 97% target achievement at national level in 2014.Ethiopia has committed to reducing new adult HIV infections by 50 percent by 2020 and to ending AIDS as a public health threat by 2030.[26]

This is clearly reflected in the Country's HSTPII (2015-2020), where one of the major indicators is reduction of HIV incidence rate from 0.03 percent to 0.01 percent. However, the PMTCT coverage is challenged with factors such as low level of skilled delivery, poor referral linkage in some areas, stock interruption of diagnostic kits and suboptimal community awareness. Healthcare providers counsel WLWH to wait until they have improved their immunologic status and physical health before considering having children; yet most WLWH will have children sooner to secure their relationship with their partners, despite increased risk of maternal morbidity associated with shorter birth intervals .Although there is increased use of contraceptives by women living with HIV (WLWH), pregnancies still occur and in Ethiopia

because of the desire to have more children or unmet needs of family planning services, the incidence of pregnancy among women living with HIV in Ethiopia reported to be 49.2 per 1000 person years. Limited but increasing attention to reproductive decision making for WLWH in sub-Saharan Africa suggests that a complex set of clinical, psychosocial, religious, and cultural factors influence repeated pregnancy[12, 22].Given the decrease in the MTCT rate over time, we expected to find that socioeconomic and health features would predict repeat pregnancy later in the epidemic. If the proportion of women choosing to pursue repeated pregnancies is in fact increasing, providers of care for HIV infected women should be made aware of this so that they can arrange for appropriate health services in a timely fashion ,but The literature has gaps in the areas of determinants for subsequent pregnancy among HIV-infected women in Sub saharanAfrica[20, 27]. Several investigators in our county have tried investigating Fertility desire in HIV infected women, but none of them have tried to study determinants of repeated pregnancy in HIV positive woman. There is no published report on this topic focusing on HIV-positive women in Ethiopia. Therefore: this study examines determinants of repeat pregnancy among women enrolled in ART Programme in Gedeo zone of southern Ethiopia.

Significance of study

Identifying determinants for repeated pregnancy in HIV-infected women who are on ART in study area might be important to inform decisions forplanning of reproductive health and HIV services for these women. This study can help identify women most likely to benefit from reproductive counseling in order to assist with healthy pregnancy planning. Asthe child born to HIV positive parents have high risk of acquiring HIV infection: study might provide information for pregnant women to decide on fertility and to be integrated with PMTCT services. Since the literature has gaps in the areas of determinants for subsequent pregnancy among HIV-infected women in Gedeozone, it will provide the most current information for health service managers. As to the knowledge of the principal investigator there is no similar study done in the area while is serving for integrated ART services. The finding helps for healthcare workers in study area highlights to design Effective plannng strategies on determinants of repeated pregnancy among HIV positive women.

CHAPTER TWO

LITERATURE REVIEW

Overview of Repeated pregnancy among HIV AIDS positive women

In sub-Saharan Africa, where maternity is highly valued, meeting family and social obligations concerning reproduction can be more important for an HIV-positive woman than her own health and the risk of giving birth to an HIV-infected baby[28] .Repeated pregnancy among HIV-infected women in HIV care increased from approximately 20% to 39% between 1997 and 2009. [29].HIV-positive women groups still conceived more frequently and earlier than did the HIV-negative and fertility intentions among PLWH are strong[20]. In women with sequential pregnancies, the second pregnancy was characterized by a significant improvement in several outcomes, suggesting that women with HIV infection who desire multiple children may proceed safely and confidently with subsequent pregnancies[30] .The magnitude of repeat pregnancy was 17.6%in kenya,9.2% in Latin America,16.2 in british,;22% in USA[21, 22, 27, 30] . Similarly high incidence of repeat pregnancies(32.4%) has been described in other studies of HIV-positive women especially among HIV-positive women in Zimbabwe in 2010[31]. ART improves health of mothers and these mothers may be motivated to have more children. However, HIV-infected pregnant women were estimated to have nearly eight times the risk of death & had a nearly doubled risk of having a newborn with a LBW than non-HIV-infected women [16] .

Determinants of Repeat Pregnancy in Women with HIV infection

Sociodemographic and socioeconomic characterstics

According to study conducted in Zimbabwe, age was determinant factor for repeated pregnancy, for each additional year of agethe odds of repeated pregnancy became decreased. (OR, -0.86; 95% CI, 0.77–0.97).According to study conducted in Kenya on experience and determinants of repeated pregnancy among HIV positive women reveals that higher proportion of repeatedpregnancy was observed among women who live with their husband in the same compound (married)compared to those who do not[20, 22]Studies conducted on Incidence and Predictors of Pregnancy among Women on ART in DebreMarkos Referral Hospital, Northwest Ethiopia shows that :Living in rural, being married, were found to be positively associated with

being pregnant. In their study, risk of getting pregnant was 17.87 times higher among the rural women compared to their urban counterparts. The number of children at care enrollments will determine having repeated pregnancy. Unemployed women had 4.37 times higher incidence of pregnancy compared to employed counterparts[12]

According to study in six USA states,they have found that there are significant determinants of repeat pregnancy, including younger age(mean years 26.8), lower educational attainment, were more likely to have more than one pregnancy[32]. Another study from UK and Ireland shows that younger age at first pregnancy was associated with an increased probability of further pregnancies. In their study, the probability of repeat pregnancy significantly declined with increasing age at first pregnancy [29, 32]. In America & Caribbean for each one-year decrease in age at initialenrollment, women were 7% more likely to have a repeat pregnancy with (OR) 1.07, 95% confidence interval (CI): 1.04–1.11)[21].As different findings have reported from study on effect of HIV in pregnancy that women with a lower educational status, death from TB or AIDS increased up to two full-term pregnancies(HR = 1.52 and 1.78 for first and second full-term pregnancies), which was higher than the risk seen in highly educated women (HR = 1.40 and 1.63 for first and second full-term pregnancies),(HR = 1.36 in poorly educated women vs. HR = 1.68 in highly educated women .i.e.poorly educated women more exposed to HIV related maternal death and this risk increase as the number of pregnancy with HIVAIDS [33].

Past obstetric history

The number of children at care enrollments will determine having repeated pregnancy. Women who had less than two children had 2.05 times higher risk of pregnancy compared to those who had two or more children[12].According to cross sectional study on Factors Associated with Repeat Pregnancy among Women in an Area of High HIV Prevalence in Zimbabwe found that factors associated with an increased likelihood of repeat pregnancy were miscarriage (OR, 3.4; 95% CI,1.23–9.34) and death of a child(OR, 3.9; 95% CI,1.25–12.52;). Studies from America & Caribbean revealed that hospitalization during the index pregnancy or up to 6 months postpartum (OR=2.0, 95% CI: 1.2–3.4),and poor index pregnancy outcome (stillbirth or spontaneous/therapeutic abortion) (OR=3.4, 95% CI: 1.4– 8.4) were associated with increased occurrence of repeat pregnancy .The risk of pregnancy was 2.05 times higher among mothers who had zero or one child compared to those who had two and above children[12, 20, 21]

Health service utilization factors and Current Clinical characteristics of women

Study from Kenya on Determinants and Experiences of Repeat Pregnancy shows that: Women who had talked to their partner about FP were less likely to have a repeat pregnancy, also those who had prior use of FP were less likely to have a repeat pregnancy[20].In Uganda, retrospective cohort study shows that, prior use of family planning decreased risk of pregnancy (HR = 0.23, CI = 0.18- 0.30, $p < 0.0001$). About 80% of the women who had ever used any family planning method were still not pregnant compared to about 60% among those who never used family planning.[34]having talked to a partner about family planning (FP) use and prior usage of FP were associated with a decrease in odds of repeat pregnancy

Conceptual frame work

Based on review of literatures done in Ethiopia and other part of the world factors associated with repeated pregnancy among HIV infected women can be affected by Socio demographic characteristics, Socio economic information, clinical characteristics, and history of biologicalvariables.

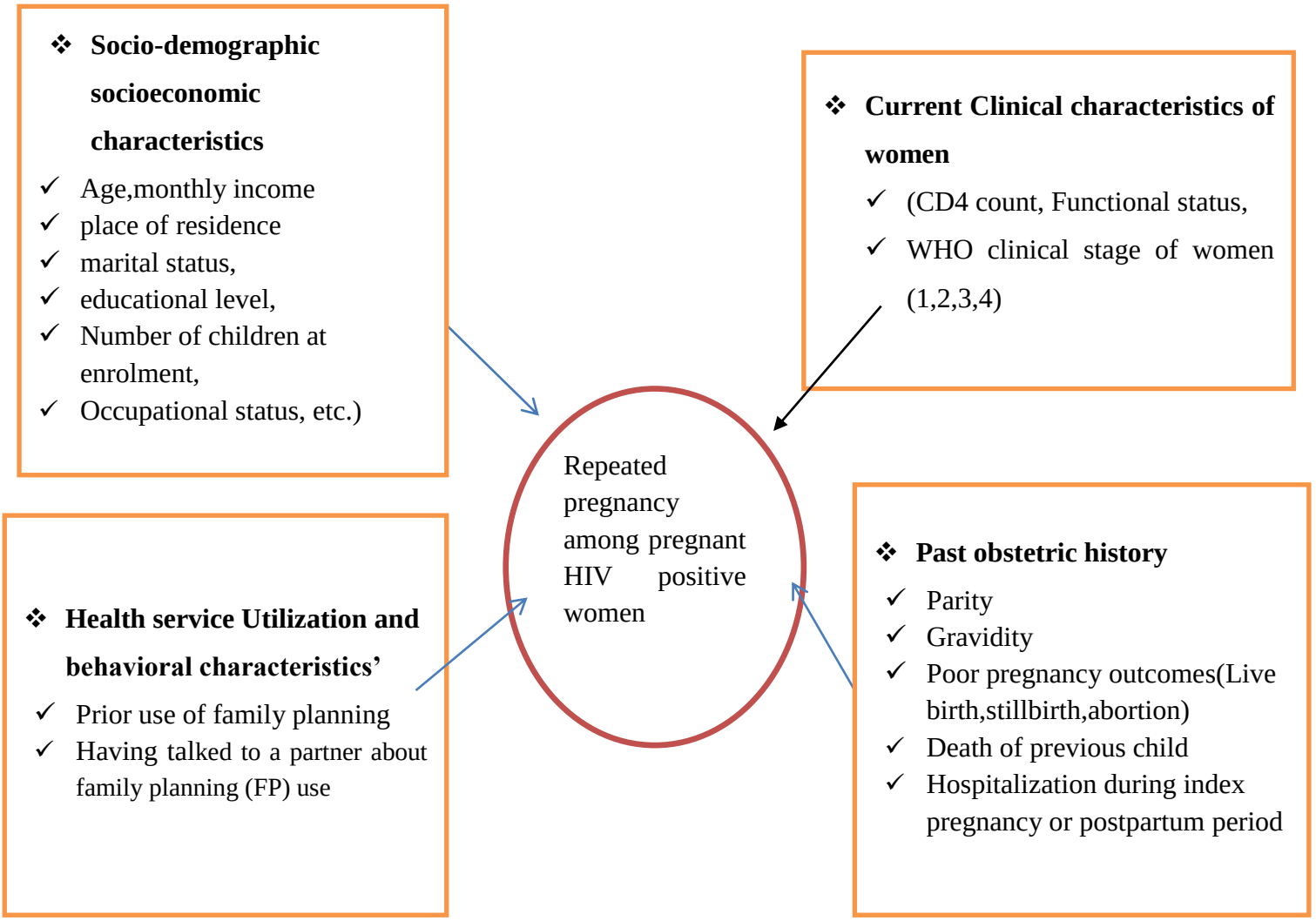


Figure 1: Conceptual frame work showing determinants of repeated pregnancy among HIV positive women which was adapted after reviewing different literatures[20, 22]

CHAPTER THREE

OBJECTIVES OF THE STUDY

General objectives

To assess determinants of repeated Pregnancy among HIV positive Women on Antiretroviral treatments in Gedeo Zone public health facilities, Southern Ethiopia 2020

CHAPTER FOUR

METHODS AND MATERIALS

Study Area

Study was conducted in Gedeo Zone which is one of the 15 Zonal administration divisions of Southern Nations, Nationalities and Peoples (SNNP) regional state. The zone is located in the Southern part of the region and 371 km far from Addis Ababa, the capital city of Ethiopia and 96 km from Hawassa city, the capital (SNNPR) regional state.The Zone is bordered by Boreana Zone of Oromia regional state in the South and West, Sidama Zone of SNNP region in the North and Guji Zone of Oromia regional state in the East. The zone covers a total area of 5,890.2 sq. km and has 8woreads, 2 administration towns, and 133 rural and 17 urban kebelles. The three largest ethnic groups reported were the Gedeo (82%), the Amhara (9.4%) and Gurage (5%); all other ethnic groups made up 3.6% of the population

According to Gedeo zone health department report, currently, the zone has 1 referral hospital, 3PHS, 38 health centers, 148health posts, and 12 privet and 4 NGO clinics. Four hospitals and four health centers provide a comprehensive ART service in the zone. According to zone health department, the potential health coverage is estimated to be 87% based on HC expansion. With respect to human resource, there are 53 physicians, 38 Health officers, 428 nurses (all type) and 325 HEWs. According to the Gedeo zone ART case team Health Management Information system(HMIS 2019,,) report, a total of 3597 adult PLHIVs (629 pre-ART (370 female, 259 male) and 2968 currently on ART (1813 female, 1155 male)) existed in the zone. Of which, while 2922 (1790 female and 1132 male) of them were in the first-line regimen, only 46 (23 female, 23 male) were in the second-line regimen. Among these subjects, while 1892 (135 pre-ARTand 537 ART exposed) were enrolled in the ART clinics of health centers, the remaining 2807 (412 pre-ART and 2395 ART exposed) of them were enrolled in the hospitals found in the zone

Study period: Study was conducted from February 10 to April 27/2020 G.C

Study Design: Institution based unmatched case control study design was employed.

Source Population

All HIV positive pregnant women on PMTCT care in Gedeo zone public health facility.

Cases: All HIV positive pregnant women on PMTCT care who have repeated pregnancy after her index child pregnancy since HIV/AIDS diagnosis and recruited from eight public health facilities.

Controls: All HIV positive pregnant women on PMTCT who had only one index pregnancy since HIV/AIDS diagnosis and recruited from eight public health facilities

Study population

For cases : HIV positive pregnant women on PMTCT care who have repeated pregnancy after her index child pregnancy since HIV/AIDS diagnosis who was selected by simple random sampling technique from eight public health facilities in Gedeo zone in study period.

For controls: HIV positive pregnant women on PMTCT care who have only index pregnancy since HIV/AIDS diagnosis who was selected by simple random sampling technique from eight public health facilities in Gedeo zone in study period

Inclusion and Exclusion Criteria

Inclusion: for cases all women who have repeated pregnancy after HIV diagnosis who was selected by simple random sampling technique and volunteer to provide information from eight public health facilities in Gedeo zone in study period.

For controls: all women who have index or first pregnancy after HIV diagnosis who was selected by simple random sampling technique and volunteer to provide information from eight public health facilities in Gedeo zone in study period.

Exclusion: those women with severe illness to extent unable to provide information for both case and controls during data collection since they were unable to give information because of medical illness.

Sample size determination

Different variables were considered to calculate the sample size[35, 36]which is listed in following table. The sample size was computed using a formula for two population proportions formula for unmatched case control and calculated by open EpiVersion 3.03 statistical software packages by considering: following information listed in table OR: 0.45, CI: 95%. Power of the

study: 80% and ratio of cases to controls of 1:3. With adjustment for 10% non-response rate the final sample size was 312which is maximum, (78cases, and 234controls).

Table 1: Sample size calculation for determinants of repeated pregnancy among HIV positive women in Gedeo zone public health facility,SNNPR, Ethiopia, 2020

S.n	Variables	Power	CI%	OR	Percent of controls exposed	Sample size	final sample size with 10%
1	Number of children at index pregnancy	80	95	4.6	17.5	80	88
2	Being age group 30-43	80	95	0.25	94.1	202	222
3	Stillbirth	80	95	3.4	8.9	194	213
4	Abortion or miscarriage	80	95	3.4	7.4	224	246
5	Prior use of family planning	80	95	0.45	80.7	284	312

Sampling procedure/ techniques

Facility that provide comprehensive ART service which is Dilla University referral hospital, Yirgachefe primaryhospital, Bule primary Hospital, Gedeb primary hospital, Wonago health center Dillahealth center, Chelelekitu health center and Garse health center were selected to get adequate number of study participants. To allocate proportional sample size for each facility the numbers of pregnancy in each PMTCT facility was taken as a reference. They grouped as cases or controls based on number of pregnancy. Both cases and controls was selected using simple random sampling technique which means a list of all repeated and first pregnancy was identified through registry and crosschecked by midwife by asking a woman whether repeated or first pregnancy based on operational definition then sampling frame developed.; for one case and three controls were interviewed until the allocated sample is achieved at each facility.

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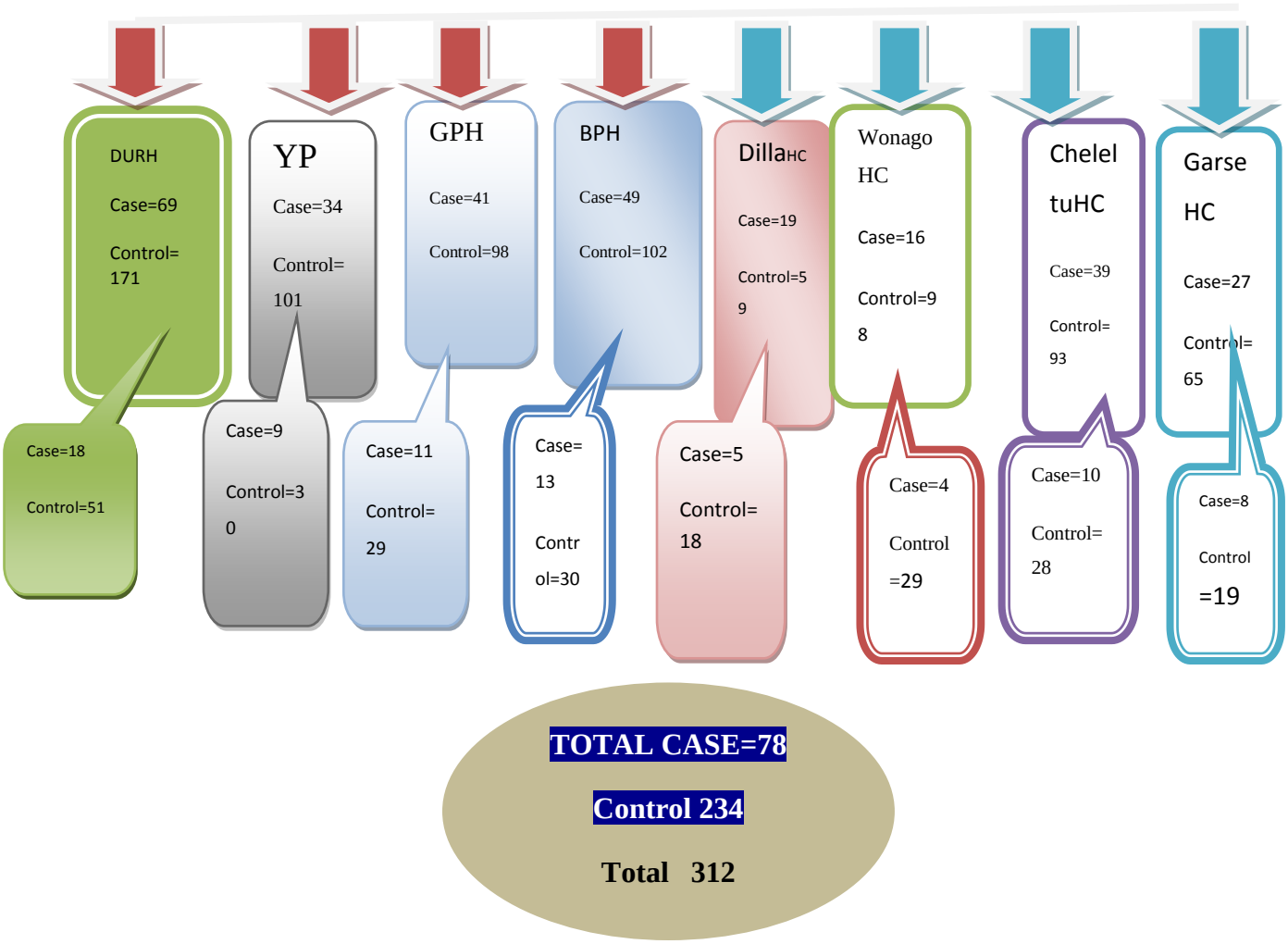


Figure 2: Schematic presentation of sampling procedure

Study variables

Dependent variable

Repeated pregnancy

Independent variable

Sociodemographic/socioeconomic characteristics

- Age
- Place of residence
- Educational level
- Marital status,
- Occupational status, etc

Clinical characteristics of women at enrollments

- CD4 count,
- WHO staging,
- Functional status of women on ART.

Past obstetric history

- Parity
- Gravidity
- Poor pregnancy outcomes
- (Live birth, still birth. abortion...)
- Death of pervious child
- Hospitalization during index pregnancy or postpartum

Health service Utilization and behavioral information

- Prior use of family planning
- Having talked to a partner about family planning (FP) use

Operational definitions

- Repeated pregnancy: it is subsequent or second pregnancy after HIV care enrollments
- Index pregnancy: first pregnancy after HIV care enrollments
- Hospitalization during index pregnancy: any history of hospital admission during her first pregnancy or delivery of child for pregnancy reason.
- Functional status:

  Working: able to perform usual work in or out of the house

  Ambulatory: able to perform activities of daily living

  Bedridden: not able to perform activities of daily living

Data collection and measurements

Face to face interview using a pre-tested and structured questionnaire was used to collect the data .Questions extracted from different published literatures was used to prepare the instrument .Data extraction form was used to extract the relevant data from the individual patients chart. The Data extraction form and questionnaires' was developed in English based on objectives to be addressed after review of relevant literature and the items included in the chart of the facility. Variables included in the questionnaires and data extraction form was socio-demographic characteristics such as age, residence, marital status, occupation, educational status, number of children, Occupational status, Place of residence and Clinical characteristics like CD4 count, WHO staging,, and functional status of women on ART, hospitalizations during index pregnancy (or up to 6 months postpartum) Index birth outcome: Number of children at enrollment Gravidity, Parity. Two data collectors who had Bachelor of Science in midwifery were recruited. In addition to these data collectors, one Health informants (data clerk person) and two runners working in the card room was also recruited to collect the individual charts using the medical

record number (MRN) and replace it to the card room respectively .Two day theoretical and practical training was given to the data collectors and runners. In the training the data collectors was briefed on how to collect the charts and fill the checklist and fill the questionnaires as well. Later, after one day training, the midwives used delivery, and PMTCT/ART registration books to get the MRN of all the repeated and Index pregnancy deliveries. By the MRN the runners collected individual charts from the chart room. Then, the midwives and Health information trained personnel(HIT) filled the checklist from the patients' individual chart and then midwife collect data from individual care taker after validating her for number of pregnancy based on operational definition. The principal investigator was strictly follow for each activity on daily base to ensure the completeness of the questionaries&checklist, to give further clarification and support for data collectors. Since the individual chart is not allowed to be brought out of the hospital; data collectors was health professionals, and they have worn a white coat to blend in to the service delivery. The cards was not exposed to other than the members of data collecting group

Data quality assurance

The data collection tools were pre-tested in theAletachuko primary hospital which is not the same place with study area, with 5% of sample. Then checked for its clarity and understands ability by the data collectors, completeness, plus consistency and then correction was made accordingly before the actual data collection. Training was given for data collectors. They were instructed to check the completeness of each questionaries' &checklist at the end of each data collection. The principal investigator rechecks completeness of the data during submission. For better data quality, patients' individual chart was cross checked with PMTCT/delivery room registration book, if there missed data.

Data processing and analysis

Data was entered by using Epidata3.1version and exported to SPSS version 20 for analysis purpose. Frequency distribution was used to organize the data and present the responses obtained. Measures of central tendency, standard deviation, and proportion was calculated and utilized for appropriate variables to describe the data. Bivariate logistic regression was used to see the association between one explanatory variable and outcome variable at p value<0.25. Multivariable logistic regression analysis was performed to predict factors which affect the

dependent variable. Those variables with AOR and p value < 0.05 were declared statistically significant in multivariable analysis. Hosmer- Lemeshow test was used to test the model fitness and it was 0.889 which is not significant.

Ethical considerations

After the research has approved by Ethical Review Committee of college of medicine and health sciences of Dilla University, Ethical clearance was obtained from research coordination office, college of medical and health sciences, Dilla University. Official letter was written to each hospital or heath center from zonal health Bureau. Then informed verbal consent from study participants was taken afterbrief explanation of the purpose of the study. The respondents have the right to refuse participation or terminate their involvement at any point during the interview. The information provided by each respondent was kept confidential.

CHAPTER FIVE

RESULT

Socio-demographic characteristics of the women on ART

Total numbers of mothers included in the study were 304with overall response rate of 97.4%. This number included 76 cases that had two or more pregnancy after HIV care enrollments and 228 controls that had first pregnancy since HIV care enrollments that came for PMTCT care service in selected public health facilities. The mean age of cases 25.5 (SD: ± 3.6) was less than that of the controls 28 (SD: ± 5). Additionally, more than half 42 (55%) of the cases and about one third of the controls74 (32.5%) were within age group of 20-24 years.

With regards to the participants residence, majority of cases 58(76.3%) were from rural residents, while 158(69.3%) of the controls were from urban area. Educationally, half of the cases 39(51%) and quarter of controls 61(26%) attended elementary school (1-8 grade).

Regarding households wealth status, 12(37.5%) of cases and about half of controls45 (49.5%) were from poorer category, while quarter of cases 9(28%) and 17(18.7%) controls belonged to top two wealth quintiles (richer category). About half of the cases 37(48.7%) and 131(43.2%) of controls follows protestant religion. With regards to their occupation 54(71.1%) of cases and majority of controls 193(84.6%) were unemployed. more than quarter 22(28.9%) of cases and 35(15.4%) of controls were employed (Table2)

Table 2Socio-demographic characteristics of mothers among HIV positive women in Gedeo zone public health facilities, SNNPR, Ethiopia,

Variables		Case, N(%)	Control, N(%)	n(%) Total	Chi-square(df)
Age of respondents	20-24years	42(55.3%)	74(32.5%)	116(38.2%)	17.2(2)
	25-29 years	23(30.3%)	68(29.8%)	81 (30.1%)	
	30-43years	11(14.5%)	86(37.7%)	197 (31.9%)	
Residence	Rural	58(76.3%)	70 (30.7%)	128(42.1%)	48.6(1)
	Urban	18(23.7%)	158(69.3%)	176(57.9%)	
Educational status of the respondents	Can't read and write	9(11.8%)	49(21.5%)	58(19.1%)	17.1(3)
	Read and write	19(25.0%)	65(28.5%)	84(27.6%)	
	1-8	39(51.3%)	61(26.8%)	100(32.9%)	
	High school and above	9(11.8%)	53(23.2%)	62(20.4%)	
Occupational status	Employed	6(7.9%)	64(28.1%)	70 (23.0%)	13(1)
	Unemployed	70(92.1%)	164(71.9%)	234(77.0%)	
Religion	Orthodox	16 (21.1%)	37(16.2%)	53(17.4%)	2.2(4)
	Muslim	11(14.5%)	23(10.1% %)	34(11.2 %)	
	Protestant	37(48.7%	131(57.5%)	168(55.3%)	
	Catholic	10(13.2%)	23(10.1%)	32(10.9%)	
	Others	2(2.6%)	14(6.1%)	16(5.3%)	
Wealth indicator	Poor	12(37.5%)	45(49.5%)	57(46.3%)	1.7(2)
	Middle	11(34.4%)	29 (31.9%)	40(32.5%)	
	Richer	9(26.1%)	17(18.7%)	26(21.1%)	

Health service utilization behavioral information of the woman on ART

Most of the participants 66 (86.8%)of cases &192 (84.2%) of the controls) have discussed about family planning with partner. Two hundred and ninthly four (96.7%) which was 70 (92.1%) of cases & 224(98.2%) of controls was in Prior use of Family Planning.

Two hundred and seventy seven (91.1%) of participants which was68(89.5%) of cases and 209 (91.7%) of controls had no history of hospitalization during pregnancy or postpartum periods.(Table 6)

Table 3: Health service utilization of the woman on ART characteristics of mothers among HIV positive women in Gedeo zone public health facilities, SNNPR, Ethiopia, 2020

Variable		Case, n(%)	Control n(%)	Total n(%)	Chi-square(df)
Discussed about FP with partner	Yes	66 (86.8%)	192 (84.2%)	258 (84.9%)	0.3(1)
	No	10(13.2%)	36(15.8%)	46(15.1%)	
Prior use of FP	Yes	70 (92.1%)	224(98.2%)	294(96.7%)	6.7(1)
	No	6 (7.9%)	4(1.8%)	10(3.3%)	
Hospitalization during pregnancy or postpartum periods	Yes	8 (10.5%)	19 (8.3%)	27 (8.9%)	0.33(1)
	No	68(89.5%)	209 (91.7%)	277(91.1%)	

Past obstetric history and clinical characteristics at enrollments

Among the study subjects, 264(86.6%) had one or less children at care enrollment (89.5%) ofcasesand (86.0%) of controls). Fifty nine (19.4%) of mothers had History of abortion which means about 34.2% among cases and 14.5% among controls). History of child death was documented in 9.2%of the study subjects ((11.8%)of cases and (8.3%)of controls). Among the study participant, eighty nine (29.3%) had CD4 count 200-350 cell/mm3at enrollment, (22(28.9%) of cases and 67(29.4%) of controls. (Table3).

Table 3: Past obstetric history and clinical characteristics during care enrollment of HIV positive mothers on ART, 2020

Variable		Case n (%)	Control n(%)	Total n (%	
Number of children at care enrollment	0-1	68(89.5%)	196(86.0%)	264(86.8%)	0.61(1)
	2 and above	8(10.5%)	32(14.0%)	40(13.2%)	
History of abortion	Yes	26(34.2%)	33(14.5%)	59(19.4%)	14.1(1)
	No	50(65.8%)	195(85.5%)	245(80.6 %	
Number of abortion	0-1	64(84.2%)	187(82.0%)	251(82.6%)	0.19(1)
	2 and above	12(15.8%)	41(18.0%)	53(17.4%)	
History of child death Since HIV positive	Yes	9(11.8%)	19(8.3%)	28(9.2%)	0.84(1)
	No	67(88.2%)	209(91.7%)	276(90.8%)	
Number of child Death	0-1	63(82.9%)	195(85.5%)	258(84.9%)	0.3(1)
	2 and above	13(17.1%)	33 (14.5%)	46(15.1%)	
Parity	0-1	31(40.8%)	97(42.5%)	128(42.1%)	0.57(2)
	2-3	89(39.0%)	28(36.8%)	117(38.5%)	
	4 and above	17(22.4%)	42(18.4%)	59(19.4%)	
WHO clinical stage	Clinical Stage 1	51(67.1%)	167(73.2%)	218(71.7%)	2.2(2)
	Clinical Stage2	18(26.5 %%)	50(21.9%)	68(22.3%)	
	Clinical Stage3	7(9.2%)	11(4.8%)	18(5.9%)	
CD4 counts at Enrolments	less than 200cell/mm3	29(38.2%)	106(46.5%)	135(44.4%)	2.5(2)
	200-350 cell/mm3	22(28.9%)	67(29.4%)	89(29.3%)	
	≥350cell/mm3	25 (232.9%)	55(24.1%)	80(26.3%)	

Determinants of repeated pregnancy

In Bivariate logistic regression analysis variables like CD4 count at enrolments, history of abortion, educational status respondents, age of the women, place of residences,CD4 counts at care enrollments ,employment status of respondents found to have association with having repeated pregnancy.(Table 4).The multivariable logistic regression analysis result showed that compared to mothers who have first pregnancy after HIV infection, mothers' who had history of abortion were about 4.75times more likely to have repeated pregnancy (AOR=4.75, 95% CI: 2.13, 10.57).Mothers who had low educational attainment, had4.6 times more likely to have repeated pregnancy compared to those who have attended higher education.(AOR= 4.6, 95% CI: 1.69-12.67).Multivariate analysis also revealed that repeated pregnancy was 82% lower for women who had employed comparing to the women who had not employed (AOR:0.18, 95%CI: 0.06-0.52).The risk of having repeated pregnancy was 90% lower among urban women compared to rural HIV infected pregnant women. OR=0.1(0.05- 0.22).Similarly the risk of becoming repeated pregnancy was 77% lower among 30-43 aged women compared to20-24years (AOR=0.23, 95%CI 0.10 -0.56).(Table 4)

Table 4; determinants of repeated pregnancy mothers among HIV positive women in Gedeo zone public health facilities, SNNPR, Ethiopia, 2020

Variable		Cases, n (%)	Controls, n (%)	COR (95%CI)	AOR (95%CI)	P-value
Educational status of the respondents	Can't read and write	9(11.8%)	49(21.5%)	1	1	1
	Read and write	19(25.0%)	65(28.5%)	1.6(0.66-3.82)	1.06(0.36-3.13)	0.91
	1-8 grade	39(51.3%)	61(26.8%)	3.5(1.53-7.87)	4.62(1.69 - 12.67)	0.003***
	High school and above (>9 grade)	9(11.8%)	53(23.2%)	0.92(0.34-2.51)	1.3(0.38-4.50)	0.65
Age of respondents	20-24years	42(55.3%)	74(32.5%)	1	1	1
	25-29 years	23(30.3%)	68(29.8%)	0.6(0.32.-1.09)	0.87(0.34-1.90)	0.718
	30-43years	11(15.5%)	86(37.7%)	0.22(0.108-0.469)	0.23(0.10 -0.56)	0.001***
Residence	Rural	58(76.3%)	70 (30.7%)	1	1	1
	Urban	18(23.7%)	158(69.3%)	0.13(0.076-0.250)	0.1(0.05-0.22)	0.0001***
Occupational status	Unemployed	70(92.1%)	164(71.9%)	1	1	1
	Employed	6(7.9%)	64(28.1%)	0.22(0.091-0.531)	0.18(0.06-0.52)	0.001***
History of abortion	Yes	26(34.2%)	33(14.5%)	3.0(1.68-5.60)	4.75(2.13-10.57)	0.0001***
	No	50(65.8%)	195(85.5%)	1	1	1
CD4 counts at Enrolments	less than 200cell/mm3	30(39.5%)	106(46.5%)	1	1	1
	200-350 cell/mm3	26(34.2%)	67(29.4%)	1.2(0.63-2.26)	1.3(0.55-3.03)	0.284
	≥350cell/mm3	20 (26.3%)	55(24.1%)	1.6(0.88-3.10)	1.55(0.68-3.54)	0.191

Discussion

The finding show that HIV-positive women who had repeated pregnancy were on average younger than HIV positive woman who had index pregnancy after HIV care enrollment. Such findings may be due to higher desire for children among the younger women. The finding also delineated others determinants of repeated pregnancy among HIV-infected women, including history of abortion, lower educational attainments, being age groups of 30-43, urban residence, and employment status. In this study the majority of study subjects were 20-24 years among cases and controls. With regard to CD4counts, 30(39.5%) of cases and 106(46.5%) of controls were less than 200cell/mm3, while20 (26.3%) of cases and 52(24.1%) of controls were found ≥350cell/mm3.with respect to respondents' WHO staging, 218(71.1%) of participants were in stage one while 18(6%) of participants were in stag three.

Women whose age ranges from 30–43, the risk of having repeat pregnancy was 77% lower compared to 20-24years. This is in agreement with studies conducted in Kenya[22] .These observations are expected, because women are generally most fertile between the ages of 20 and 24 years and as they get older the likelihood of getting pregnant declines and in 30-43 years period the desire of children might be decrease. It is also likely that younger age is associated with more fertility .This finding also supported by Case Control study by desire for Children among HIV-Positive Women in the Afar Region, have reported that Women whose age ranges fell into20–29 had higher desire for children[20, 37]. Other finding from southeast Brazil support the finding, they reported that a higher pregnancy risk among women younger than 30 and younger age was strong pregnancy predictor[38].

Concerning past obstetric history this study revealed that the odds of HIV positive women with history of abortion to have repeated pregnancy was about 4.75 times higher compared to their none history abortions. This finding is consistent with the studies conducted in Zimbabwe and Latin America[20, 21].Some literatures suggest that women who are HIV-positive have a greater risk of abortion. [39]. This and our finding implies women with history of abortion while HIV positive ,Post abortion care (PAC) is needed to provide treatment for complications caused by incomplete or spontaneous abortion and critical family planning counseling and services to prevent future unplanned pregnancies that may result in repeat abortions. It was supported by the findings from sub Saharan Africa have shown that reported death of a child

were associated with a higher desire to get pregnant and indicating that child loss is a powerful motivator to decide for repeated pregnancy [40, 41]The other important risk factor for repeated pregnancy was status of education. Compared to mothers who have higher educational attainments, mothers who have low education attainments (1-8grade) was4.6 times more likely to a repeated pregnancy. This might be due to their lesser understanding of child bearing within the context of HIV positivity.

The risk of repeated pregnancy was 82% lower for women who had employed comparing to the women who had not employed. The possible justification of this finding might be due to the fact that in most circumstances in Ethiopia employed women are those with better educational status; in line those women having better education may have a chance to access information from different types of media. There still exist a considerable knowledge gap regarding ART and there is the need to raise awareness. [42]

Study also revealed that women whose resident in urban area to have repeated pregnancy was 90% lower compared to rural HIV infected pregnant women. It might be improved understanding about child bearing within HIV positive. It also due to the fact that, in urban areas, the accessibility of quality family planning services was higher in the community and for mothers on ART in particular than rural and it might have a chance to access information from deferent types of media.

Strength of the study

- Since the principal investigator utilized primary data for analysis it may reduce record biases.
- The design being analytical approach.

Limitations of the Study

- This study used a case control study design and is, therefore, Relies often on recall or records for information on past exposures and Vulnerable to recall bias. Therefore in this study the possibility of recall bias since most data is based on patients self-report.

CHAPTER SIX

CONCLUSION AND RECCOMMENDATION

CONCLUSION

The results of this study suggest that there are preventive and risk factors for repeat pregnancies. We found that repeat pregnancies were more common among HIV-infected women who have history of abortion, low educational attainment. On the other hand the likelihood of having repeated pregnancy is lower among 30-43years age, employed and urban women.

Recommendation

1. For the Health Planners at regional and zonal level

Particular attention needs to be given to the women who are diagnosed repeated pregnant as they are more likely to develop birth complication (abortion).

2. for Health Practitioners

Women who are pregnant and treated with ART need particular attention and appropriate reproductive health services to be provided.

3. Further research implication

A prospective study on the predictors of repeated pregnancy among HIV positive women while using ART drug will demands attention.

REFERENCE

1. *HIV and pregnancy. From Wikipedia, the free encyclopedia available at*

https://en.wikipedia.org/wiki/HIV_and_pregnancy 11/11/2019 3;10.
2. UNAIDS, *The Road to 90-90-90 (95-95-95) Progress in HIV prevention and treatment scaleup in sub-Saharan Africa.* 2019.
3. UNAIDS, *GAP Report People left behind:Children and pregnant women living with HIV*2014.
4. WHO, *The Global HIV/AIDS Epidemic. available at https://www.kff.org/global-healthpolicy/fact-sheet/the-global-hivaids-epidemic/2;52 11/11/2019,*. 2019.
5. WHO, *Ethiopia HIV Country Profile: .* 2016.
6. Tamaryn L. Crankshaw, a.L.T.M., b Janet Giddy,c Angela Kaida,, *A conceptual framework for understanding HIV risk behavior in the context of supporting fertility goals among HIV-serodiscordant couples.* Reprod Health Matters, 2012. **20**.
7. Newell ML, B.H., *Child mortality and HIV infection in Africa: a review. AIDS . .* 18, 2004.
8. M Floridia, E.T., G Masuelli,etal, , *Rate, correlates and outcomes of repeat pregnancy in HIV-infected women.* HIV Medicine, 2017. **18**.
9. Chen JL, P.K., and C.R. Kanouse DE, etal, , *Fertility desires and intentions of HIVpositive men and women. Family Planning Perspecttive.* 2001 **33**.
10. ML, N.a.T.R.S., *Vertical transmission of HIV-1 infection.* Tropical Medicine and Hygiene, 2000. **94**.
11. Menberu, G. and a. Alemseged Fessehaye et, *Factors affecting fertility decisions of married men and women living with HIV in South Wollo Zone, Northeast Ethiopia.* Ethiopia. Journal of Health Developments, 2010. **24**.
12. Maru Meseret, A.S., Alemayehu Bekele, *Incidence and Predictors of Pregnancy among Wome on ART in Debre Markos Referral Hospital, Northwest Ethiopia:A Five-Year Retrospective Cohort Study*,AIDS Research and Treatment, 2017. **2017**: p. 1-8.
13. Hyunsuk Yoo, J.L., Jae-Joon Yim,et,al, *Effect of the Number of Pregnancies on Mortality Risk in HIV-Infected Women: a Prospective Cohort Study in Rural KwaZulu-Natal, South Africa.* AIDS and Behavior. **2018**.
14. Lathrop E, J. DJ, and D. I, *HIV and maternal mortality.* International Journal of Gynecology and Obstetrics, 2014.
15. Maria, D.B., *Safe Abortion for HIV-Positive Women with Unwanted Pregnancy: A Reproductive Right.* Reproductive Health Matters, 2003. **11**(22): p. 152-161.
16. Calvert C, R.C., *The contribution of HIV to pregnancyrelated mortality: a systematic review and meta-analysis.* AIDS, 2013. **27**.
17. Tamil, K. and D. Isabella, *Eliminating Preventable HIV-Related Maternal Mortality in Sub-Saharan Africa: What Do We Need to Know*. Research Priorities for HIV and Maternal Health, 2014. **2014**.
18. UNAIDS, *global plan towards the elimination of new hiv infections among children by 2015 and keeping their mothers alive 2011-2015*,2011.

19. UNAIDS, *A progress report on the Global Plan,towards the elimination of new HIV infections among children by 2015 and keeping their mothers alive.* 2012.

20. Nancy Smee, A.K.S., Lynda Stranix-Chibanda,etal, *Factors Associated With Repeat Pregnancy Among Women in an Area of High HIV Prevalence in Zimbabwe.* Lynda Stranix-Chibanda, 2011. **2011**.
21. Regis Kreitchmann, V.M., Adriana Aparecida Paz,et,al, *Repeat pregnancy in women with HIV infection in Latin America and the Caribbean.* AIDS care, 2015. **2015**.
22. Akelo V, M.-L.E., Toledo L, Girde S, Borkowf CB, Ward L, et a, *Determinants and Experiences of Repeat Pregnancy among HIV-Positive Kenyan Women—A Mixed-Methods Analysis.* PLoSONE 2015. **10**(6).
23. Clare E French, Mario Cortina-Borja, Claire Thorne, Pat A Tookey, B, *Incidence, patterns, and predictors of repeat pregnancies among HIV-infected women in the United Kingdom and Ireland,1990-2009.* J Acquir Immune Defic Syndr, 2012. **2012**.
24. ´Gonlez R, R.r.M., Sevene E, etal, *Effects of HIV infection on maternal and neonatal health in southern Mozambique: A prospective cohort study after a decade of antiretroviral drugs roll out.* PLoS ONE 2017. **12**.
25. Cooper, D., Harries etal, *"Life is still going on": Reproductive intentions among HIV-positive women and men in South Africa.* Social Science & Medicine,, 2007. **65**.
26. FMOH, *Ethiopia-health-system-transformation-plan.* 2015.
27. Allison S. Bryant, R.M.L., XianLin Shen, MS,Jennifer S. Read,, *Predictors of Repeat Pregnancy Among HIV-1-Infected Women* Journal of Acquired Immune Deficiency Syndromes,2007. **44**: p. 1–92.

28. Usman, H., Wester, C., Wester, et al, *Pregnancy rates and birth outcomes among women on ,efavirenz containing highly active antiretroviral therapy in Botswana.* Acquired Immune Deficiency Syndrome, 2007. **45**.
29. Clare E French, M.C.-B., etal, *incidence, patterns, and predictors of repeat pregnancies amongHIV-infected women in the United Kingdom and Ireland,1990-2009* Journal Acquired Immune Deficency Syndrome, 2012. **59**.

30. M Floridia, E.T., G Masuelli,etal, , *Rate, correlates and outcomes of repeat pregnancy in HIV-infected women.* HIV Medicine, , 2017. **18**.
31. Mukotami Vimbainashe[l], W.C.e., *Repeat pregnancies among women with known HIV-positive status in Chitungwiza, Zimbabwe.*
32. Allison S. Bryant, e., al,, *Predictors of Repeat Pregnancy Among HIV-1–Infected Women.* Acquired Immune Deficency Syndrdrome, 2007. **44**.
33. Yoo, H. and J. Lee, *Efect of the Number of Pregnancies on Mortality Risk in HIV Infected Women.* 2018.
34. Jane Kabami , E.T., Sam Biraro and Francis Bajunirwe, *Increasing incidence of pregnancy among women receiving HIV care and treatment at a large urban facility in western Uganda.* Reproductive Health 2014. **2014**.
35. Akelo V, M.-L.E., Toledo L, Girde S, Borkowf CB,Ward L, et al., *Determinants and Experiences of Repeat Pregnancy among HIV-Positive Kenyan Women—A Mixed-Methods Analysis.* PLoS ONE 10, 2015. **10**.
36. Regis Kreitchmann, A.A.P., etal, *Repeat pregnancy in women with HIV infection in Latin America and the Caribbean.* AIDS Care, 2015. **27**.

37. Mohammed F, A., *Determinants of Desire for Children among HIV-Positive Women in the Afar Region,Ethiopia: Case Control Study.* PLoS ONE 2016. **11**.
38. Friedman RK , b.F., et al, *Pregnancy rates and predictors in women with HIV/AIDS in Rio de Janeiro, Southeastern Brazil.* Pregnancy in HIV/AIDS women, 2011. **45(2)**: p. 373-81.
39. Curtis, C.C., *Meeting health care needs of women experiencing complications of miscarriage and unsafe abortion: USAID's postabortion care program.* J Midwifery Womens Health, 2007. **52**(4): p. 368-75.
40. Moyo, W. and M.T. Mbizvo, *Desire for a Future Pregnancy Among Women in Zimbabwe in Relation to Their Self-Perceived Risk of HIV Infection, Child Mortality, and Spontaneous Abortion.* AIDS and Behavior, 2004. **8**(1): p. 9-15.
41. Rou H, V.I., Djohan G, etal, *Contraceptive use and incidence of pregnancy among women after HIV testing in Abidjan, Ivory Coast.* Epidemiol Sante Publique, , 2009. **57**.
42. Atul, k., Arun kumar,etal, *knonwledge of Anti-retroviralTherapy among people living with HIV/AIDS.* Marine medical society, 2018.

Annexes

Annex: I Englishversion

Participant information sheet

My name is …….I am here on the behalf of Mr. YosefLelamo who is a master's student in Dilla university school of public health in department of reproductive health .He is working his thesis on determinants of repeated pregnancy among Hiv/Aids positive women in Gedeo zone public health facility . Prior to this I will be explaining information about the study and requesting you to participate in the study.

1. Questionnaire ID number _____
2. Status of pregnancy 1. Case ☐ 2. Control ☐

Purpose: To identify determinant factors of repeated pregnancy

Benefit: there is no any financial benefit to you but the response you give me is important to improve maternal health as a whole.

Harm: The study will take time of you and no other harm to you while you participate.

Confidentiality and right of participant: All the responses given by you and results obtained will be kept confidential using coding system whereby no one will have access to your response.You are not expected to give your name or phone number. Your participation in this research is voluntary. You have full right to refuse to a question that you don't want to answer and withdraw from the participation at any time if you don't wish to continue.

Duration of the interview: This interview will take approximately 30 – 40 minutes.

Have you any question regarding the aim and content of the interview?

Are you willing to participate on the study? 1. Yes 2. No

If you are willing to participate in this study, please sign the agreement form

Address: Mob +251-9-16-16-55-98 or E-mail:Lelamoyosef11@gmail.com

Annex II: Informed consent

I have read this form or it has been read to me in the language I understand. I understand that I can continue the interview without any problem. Therefore 1) I agree to participate 2) I refuse to participate. If the participant agrees to participate, skip to the next page. If no, skip to the next participant. Name of investigator: YosefLelamo Mob +251-9-16-16-55-98 Email:Lelamoyosef11@gmail.com

Supervisor address Tel ----------Date of interview ----------Time started ----------

Time completed: ----------Name of data collector…----------

Checked by: Supervisor Name: …… Sig……

Part one : socio demographic & socio economic characteristics			
S.N	Questions	Responses	remark
101	Age of the respondents	----------	
102	Marital status	1) Single 2) Married 3) Divorced 4) Widowed	
103	What is your occupation	1) Housewife 2) Farmer 3) Government employee 4) Merchants 5) Private organization employee 6) Daily laboures 7) Other	
104	Educational status of respondents	1) Illiterates 2) Can read and write 3) Primary Education 4) Secondary and preparatory	

		5) College and above	
105	Educational status of house band	1) Illiterates 2) Can read and write 3) Primary Education 4) Secondary and preparatory 5) College and above	
106	Place of residence	1) Urban 2) Rural	
107	What is your religion	1) Muslim 2) Orthodox 3) Protestant 4) Catholic 5) Others	
108	Family size	---------	
109	Do you have the following equipments in your household ? (multiple answer is possible	1. Electricity 1 2 2. Radio 1 2 3. Television 1 2 4. Refrigerator 1 2 5. Non mobile phone 1 2 6. Mobile phone 1 2 7. Chair 1 2 8. Table 1 2 9. Bed with cotton 1 2 10. Electric mitade 1 2	1 = yes 2 = no
110	Do you have the following vehicles? (multiple answer possible)	1. Cart 1 2 2. Bicycle 1 2 3. Motor cycle 1 2 4. Car 1 2	1 = Yes 2 = No

111	Do you have the following domestic animals	1. Cattle 2. Horse 3. Sheep 4. Goat	1 1 1 1	2 2 2 2	1 = Yes 2 = No
112	Do you have your own monthly income	1) yes 2) no			
113	Ifq8 yes Average monthly Income in birr	----------			
PART TWO: PAST OBSTETRIC HISTORY					
201	Gravidity	----------			
202	Parity	----------			

203	How many pregnancies have you had since you have diagnosed as HIV positive		
204	Number of children ever born		
205	Number of children curently alive		
206	Number of children at care		

	enrolment	---------	
207	History of child death since HIV positive	1) Yes 2) No	
208	If q207 yes, number of death	_____	
209	Is there history of abortion (abortions) in lifetimes	1) Yes 2) No	
210	If question 203 yes, number of abortion	----------	
211	Is there history of stillbirth in lifetimes	1) Yes 2) No	
212	If q205 yes, number of stillbirth	----------	
213	Is there hospitalization during pregnancy or postpartum period	1) Yes 2) No	
214	Is there history of HIV infected child	1) Yes 2) No	
215	Number of pregnancy prior to		

	ART enrolments	----------	
216	Number of children since ART use		
PART THRE: HEALTH SERVICE UTILIZATION RELATED CHARACTERISTICS			
301	Talked to partner about family planning	1) Yes 2) No	
302	Prior use of family planning	1) Yes 2) No	
	Types of contraceptives ever used?	1) Progestin only pills 2) Combine oral contraceptive 3) Depo injection 4) Norlant 5) Condom	
303	Have you ever discontinued using family planning methods?		
304	If Q No303 above yes,Reasons for discontinuation to use family planning methods	1) bleeding problem 2) abdomenal pain 3) Dizzness/headache 4) Breast problems 5) Pregnancy	
305	Conceieved again time from index pregnancy	----------	

306	Number of additional children desired or planned by participant	1) 0 2) 1 3) 2 4) 3 5) 4	
307	Have you changed partner since index pregnancy?	3) Yes 4) No	
308	If yes to Q 307 above, reason for partner change	1) Divorced 2) Deceased	
Data Extraction sheet			
1	CD4 count at enrolments	_____	
2	Functional status at enrolments	1. Working(W) 2. Ambulatory(A) 3. Bed ridden(B)	
3	Weight at enrolment	_____	
4	WHO clinical stage at enrolment	1. Stage 1 2. Stage2 3. Stage3 4. Stage4	

5	length of time since HIV positive and ART enrolment	----------	In years

Annex-ii-Amharic version

ለጥናቱተሳታፊዎችመረጃእናየስምምነትመግለጫፎርም

ጤናይስጥልኝ! ስሜ----------እባላለሁ፣

እዚህየተገኘሁትአቶዮሴፍሌላምንበመወከልሲሆን፣እርሱምበዲላዩኒቨርሲቲበህብረተሰብጤናየሁለተኛዲግሪውንበስተዋልዶጤ ናትምህርትክፍልበመማርላይይገኛል፡፡የዚህትምህርቱአካልየሆነጥናትየሚያደርግሲሆንይኸውምኤችኤይቪ/ፖዜትቪየሆኑእናቶ ችበተደጋጋሚእንድያረግዙየሚያደርጓቸዉንወሳኝነገሮችለመለየትያጠናል፡፡ስለሆንምበቅድሚያስለጥናቱናስለእርስዎድርሻእንደ ሚከተለውበማብራራትእጀምራለሁ፡፡

የመጠየቁመለያቁጥር ----------

Status of the pregnancy 1.CaseContro

የጥናቱዓላማ፡- ኤችኤይቪ/ፖዜትቪየሆኑእናቶችበተደጋጋሚየሚያረግዙበትምክንያትየሆኑወሳኝነገሮችንለይቶማወቅ

ጥቅም፡-

እርስዎበዚህጥናትሲሳተፉምንምእንኳንበቀጥታየሚያገኙትጥቅምባይኖርምየሚሰጡትምላሽበቀጣይየናቶችንጤናለማሻሻልከፍ ተኛአስተዋፅአይኖለዋል፡፡

የጉዳትሥጋት፡የዚህጥናትአካልበመሆንዎየሚደርስብዎትምንምአይነትጉዳትየለም፡፡ምናልባትጥያቄዎችንለመመለስከ30-40 ደቂቃያክልልንወስድብዎትእንችላለን፡፡

የጥናቱመረጃምስጢራዊነት፡-

እርስዎየሚሰጡትምላሽሁሉበምስጢርየሚያዝናለሌላሰውተላልፎየማይሰጥይሆናል፡፡ስምዎምሆነየስልክቁጥርዎአይመዘገብም፡ የጥናቱተሳታፊዎችመብት፡በጥናቱየሚሳተፉየእርስዎፈቃድእስከሆነድረስብቻነው፡፡በጥናቱሲሳተፉመመለስየማይፈልጉትንጥያ ቄመዝለልናእንዲሁምበፈለጉትሰዓትጥናቱንአቋርጠውየመውጣትመብትዎየተጠበቀነው፡፡ጥያቄካለዎትበየትኛውምሰዓትከዚህበ ታችበተገለፀውአድራሻየጥናቱንአድራጊማናገርይችላሉ፡፡እንግዲህከላይያነሳሁልዎትንሀሳቦችከግንዛቤአስገብተውበጥናቱስለመሳ ተፍዎያለዎትንውሳኔከዚህቀጥሎባለውፎርምላይይገልፁልኝዘንድበትህትናእጠይቅዎታለሁ፡፡

የጥናቱአድራጊ፡- ዮሴፍሌላሞ

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<u>የስምምነትዉሳኔመስጫፎርም</u>

ከዚህበላይያለውንመረጃአንብቤናበሚገባኝቋንቋተገልፆልኝ፤የጥናቱዓላማ፣ጥቅም፣ጉዳትናምስጢራዊነትየተረዳሁሲሆንበጥናቱ ስለመሳተፌምያለምንምግፊትበራሴውፍላጎትየሚከተለውንወስኛለሁ፡፡

1.በጥናቱለመሳተፍወስኛለሁ

2.በጥናቱለመሳተፍአልተስማማሁም

የጥናትአድራጊውስም፡- ዮሴፍሌላሞ

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ቃለመጠይቅየተደረገበትቀን----------የተጀመረበትሰዓት----------

ያለቀበትሰዓት----------የመረጃሰብሳቢውስም----------

------ፊርማ----------የትናቱተቆጣጣሪስም----------ፊርማ-

ክፍልአንድማህበራዊየስነሕዝብአወቃቀርእና ማህበረኢኮኖሚ ባሕርያት			
ተ.ቁ	ጥያቄዎች	ምላሾች	አስተያየት
101	የእናትዕድሜ	----------	

102	የጋብቻሁኔታ	ያላገባች የተጋቡ ባሏየሞተባት የተፋች	
103	ሥራዎትምንድንነው?	የቤትእመቤት አርሶአደር የመንግስትሰራተኛ ነጋደ የግልተቐማትሰራተኛ የቀንሰራተኛ ለሎች	
104	የእርሰዎትምህርትደረጃ	ማንበብናመፃፍየማትችል ማንበብናመፃፍየምትችል ከ 1- 8ኛክፍል ከ 9-12ኛክፍል ኮሌጅናከዚያበላይ	
105	የባለበትዎትምህርትደረጃ	ማንበብመፃፍየማትችል ማንበብመፃፍየምትችል ከ 1- 8ኛክፍል	

		ከ 9-12ኛክፍል ኮሌጅናከዚያበላይ	
106	የመኖርያቦታ	ከተማ ገጠር	
107	ሀይማኖትወምንድነዉ	ሙስልም ኦርቶዶክስ ፕሮተስታንት ካቶልክ ለላ---	
108	የቤተሰብብዛት	---------	

109	ከሚከተሉትዉስጥበቤትዎ የትኞቹይገኛሉ?	<u>ኤሌክትሪክ</u> 1 2 <u>ሬዲዮ</u> 12 <u>ቴሌቪዥን</u> 1 2 <u>ፍሪጅ</u> 1 2 <u>የቤትስልክ</u> 1 2 <u>ተንቀሳቃሽስልክ</u> 1 2 <u>ጠረጴዛ</u> 1 2 <u>ወንበር</u> 1 2	1 =አለ 2=የለ ም

		አልጋ 1 2 <u>የኤሌክትሪክምጣድ</u> 1 2	
110	የሚከተሉትየተሸከርካሪዓይነቶችአለዎት ?	ጋሪ 1 2 <u>ሳይክል</u>	1 =አለ 2=የለም

		1 2 ሞተርሳይክል 1 2 መኪና 1 2	
111	ከሚከተሉትየቤትእንስሳትየትኞቹአለዎት ?	የቀንድከብት 1 2 የጋማከብት 1 2 በጎች 1 2 ፍየሎች 1 2	1 = አለ 2=የለም
112	የራስዎትየሆነየገቢምንጭአለዎት ?	አዎ የለኝም	
113	የራስዎትየሆነየገቢምንጭካለዎትበአማካ ይበወርምንያህልነዉ?	----------	በቁጥር
ክፍልሁለት : ስነትዉልድታርክ			
201	ስንትጊዜአርግዘሻል (እርግዝናቁጥር)	----------	

202	ስንትጊዜወልደሻል (የተወለዱልጆችቁጥር)	----------	
203	በኤችአይቪመያዝወንካወቁትወድህስንትጊዜአርግዘዋል	----------	
204	ከዛወድህየተወለዱልጆችቀጥር	------	
205	አሁንለይያሎወትልጆችቁጥር	------	
206	ህክምናስጀምሩያላቸወልጆችቁጥር	------	
207	በኤችአይቪመያዝወንካወቁትወድህየተወለደልጅሞቶብሽያዉቃል	አዎ----- አይደለም-----	
208	ጥ.ቁ 15 አዎከሆነ,የሞቱትልጆችቁጥር	------	
209	በህይወትዘመንሽፅንስማስወረድአጋጥሽያዉቃል?	አዎ አይደለም	
210	ጥ.ቁ 17አዎበቁጥርስንትናቸወ	------	
211	በህይወትዘመንሽሞቶየተወለደልጅአጋጥሽያዉቃል?	አዎ አይደለም	
212	ጥ.ቁ 19አዎከሆነ,ሞቶየተወለደልጅበቁጥር	-----	
213	በእርግዝናወቅትወይምበድህረወሊድጊዜሆስፒታልተኝተሽታዉቅያለሽ?	አዎ አይደለም	
214	ኤችአይቪህክምናበፊትየእርግዝናብዛት	----------	

215	ኤች አይቪህክምና ከጀመሩ ወዲህየተወለዱልጆችብዛት	----------	
216	ኤችአይቪየተያዙልጆችአሉሽ	አዎ አይደለም	
ክፍልሶስት: የጤናአገልግሎትአጠቃቀምንበተመለከተ			
301	ስለቤተሰብዕቅድከባልደረባሽጋርተነጋግረሽታዉቂያለሽ	አዎ አይ	
302	የቤተሰብምጣኔ አገልግሎት ተጠቅመዉ ያዉቃሉ	አዎ አይ	
303	ጥ.ቁ 202 አዎከሆነ የትኛዉን የእርግዝና መከላከ ያዓይነቶች ተጠቅመዉ ያዉቃሉ	1) ፕሮጀስትሮንክኒኖች 2) የአፍ የሚወሰዲ የተጣመሬ የወሊድ መቆጣጠሪያ ክኒን 3) የዴፖመርፌ 4) ኖርፕላንት 5) ኮንዶም	
304	ከመጀመሪያ እርግዝና እና በሁለተኛ መሃል ያለዉ ጊዜ በአማካይ	- ----------	በአመት

305	በተሳታፊው የሚፈለጉ ወይም የታቀዱ ተጨማሪ ልጆች ቁጥር	1) 0 2) 1 3) 2 4) 3 5) 4	

መረጃ መልቀሚያ ቅጽ ፀረኤች አይቪ መድሃኒት የሚጠቀሙ እናቶች ክሊኒካዊ ምርመራ ባህሪዎች			
1	በምዝገባወቅትያላቸዉሲዲ 4 ብዛት	----------	በቁጥር
2	በምዝገባወቅትየተግባርሁኔታ	በመስራትላይ ተንቀሳቃሽ አልጋ ላይ የሚዉል	
3	የዓለም ዓቀፍ የጤና ድርጅት የክሊኒካዊ ደረጃ	ደረጃ 1 ደረጃ 2 ደረጃ 3 ደረጃ4	
4	ኤች አይቪ ፖዜትቪ ሆነዉ መድሃኒት ከጀመሩ ምንያህለ ጊዜሆነዋል	----------	በወር

Annex-iii-Gedeuffa version

Gede’iinxxezoone’nmootuatikefayyatixxewirtto’n HIV dhukkubixxebalanweltihexxaaxxeamuwwagiddoittiiimasiila’watixxennafakkaaxxerakkonweltiabidenddeexxentarjjabukkasateeqixxeesendeexxaqorttumiinkabidiro

E’yichcho

Nage’angee?

Nage’akensummiAaddi/Baabba ----------

hiyyemaantenneqo’nekiillichchiyaaddizoonetennegiddo HIV weltihexxaaxxeamuwwagiddii’nittiiimasiilekeennafakkaaxxeyaaduwwauuddaaxxentarjjabukkasateeqixeesemeedheeken

Kunnibukkasema’neekitarjjila’ouwwa’neekibarachiisatiyaadi’ancallaten.konneetarjjauwwa’neekejaalimaqoheqqendeexennaakonneehiissichchouwwatihandaara’nhorddoffeassitinaashshasalalikilanqaannen.Teinniqo’nexxigummahiissichchidhugaate’nhundaayeessende’exxenqorttumakeela’oofantaannexxi yanna 30 daqiiqiiimi’aadhdhitaaxxekaddeebaaxxaaddachchiisonna’ahasaannen.

Weleyannaqorateeyortteaffinoo’noolekonneafemisanjjo’nafadanddeetinaan

Qo’netikiannichchiAaddiYooseefiiLeellammokehiyyemaan

Bibbili:- 0916165598

Safadandde’ano?

Eeti/Waawwoti

Hordofanjiikisummi ----------

Kutamitte :-Olla’iinxxaArddiinkaOfo’lichchonnaGalddumiinxxaBifa		
La/Da	Qorttumuwwa	Hiissichchuwwa
1	Wogga	----------
2	BulttetiJeeji	Heerundeebaaxxe Heerundeexxe MiniinkanniReyeexxe MiniikkannaTikkeexxe

3	Miniinkannix xiWogga	----------
4	HujetiJeeji	Ifixxe Mootummatixxe Daddalttote Hunnatixxe Wiisallok Wele
5	Miniinkkan Maahuja'ne	Ifixxe Mootummatixxe Daddalttote Hunnatixxe Wiisallok Wele
6	BarachotiJeej i	1. AbbabanaaBorreesadandde'ake 2. TaakkaxxeKooboxxabarachcho 3. Langgaxxekkobonnaqophphe 4. KoloojennOokkonechiniima
7	MiniikaniBar achchotijeeji	1. AbbabanaaBorreesadandde'ake 2. TaakkaxxeKooboxxabarachcho

		3. Langgaxxekkobonnaqophphe 4. KoloojennOokkonechiniima
8	HedhatixxiBaka	1. Qchcha 2. Hadigiddo
9	AddeMaachcho	1. Musiliime 2. Ortoodokise 3. Protetaante 4. Kaatolike 5. Wele
10	Min hadixxialffahiteeqica	1. 500 butti'a 2. 5001-999 3. 1000-1499 4. 1500 iimi'a 5. Ege'nee'non
11	Gosamaachcho	1. Oromo 2. Gedeo 3. Qawwe 4. Sidaama 5. Wele
12	HIV/Ediseci'losanfeewoddaanfeemmaxioose	1. 1-2 2. Lametiiimi'a
Kuta 2	Ci'lotixxawodoalffatihandaara'nhedheejeeja'n	
2.1	Mini hadiherregaminiinkanninmari'atineegen	1.

	ddinee?	
2.2	Konnechiedomin hadoqixxeesatihandaara'nla'ooffatineeegenddinee/	1. Eeti 2. Waawwoti
2.3	Hooneillafaacheeffatatiqorssala'ooffatineemma'a?	1. Projestiroonekiniine 2. Afo'oke'nliqiinsinaakailafaacheefatatixxakiniine 3. Diipoliillana 4. Noroplaante 5. Kondoome
2.4	Mine qixeesatixxaogela'ooffatinaa'naabakkageyagopheeegenddee	1. Eeti 2. Waawwoti
2.5	204 hiisichchieetitekadoolemayeetemma?	1. Munddedunematixxebuuton 2. Godobiinxxeelagonphphen 3. Muuso'a/umiinxiboca 4. Ununiixxeqarassan 5. Siiliinxxebuuton
2.6	Taakkakesiilinaa'nlanggakiqica'nhexxeexiyannahiteexe?	1. ----------

2.7	Horddofallokenaa'nilateehasendde'exxiooseherreg	1. 0 2. 1 3. 2 4. 3 5. 4
2.8	Ittilebateeherregendeexeooselaakkosi	1. 0 2. 1 3. 2 4. 3 5. 4
2.9	Miniinkannajijjiirteeegenddet?	1. Eeti 2. Waawwot
2.10	HiisichchiEetitekadoolemayeejijjiirteeta'a?	1. Reyammale 2. Tikeennaxxee
2.11	Jaalojijjiirttechiudumahabahexxeta?	1. Aniingemine'n 2. Kiriinkemine'n 3. Firuwwiinba 4. wele
Kuta 3	FedhiiIfixxebeloIlaUuddaaxxen	
3.1	Me'eyannasiila'witeegenddete?	1. 1 2. 2-4 3. >5

3.2	Me’eilleete	1. 1 2. 2-4 3. >5
3.3	Rime’afulchchiseeegendde te?	1. Eeti 2. Waawwoti
3.4	Hiissichchiee titekadoolem eyele?	1. Mittele 2. Lamele
3.5	Godobigiddo ba’eexxa anno ildeeegendde te?	1. Eeti 2. Wawwoti
3.6	Hiisichchieet itekadooleme ’ele	1. Mittele 2. Lamelennaookkonechchiniimi’a
3.7	1xxe ilaxxijeejihitt atemma?	1. Anno fayyaxxi 2. Godobigoddonbaxxeyookaangufatte
3.8	Siiliinxxeyan na’nyookaani latiudumadii pheeegendde	1. Eeti 2. Waawwoti

	?	
3.9	Edo ildeetaxxeoose'nbaxxeexihexxe?	1. Eeti 2. Waawwoti
3.10	Hiissichchieetikadooleme'ete?	1. Mitte 2. Lame
3.11	HIV dukubinabidendeexxaooseaffeete?	1. Eeti 2. Waawwoti
3.12	HIV/AIDS ci'losaffeboxxoedoheexxemmaxioose	1. Waawwo 1. Mittiinqica
3.13	HIV/EIDS ci'loadhafaffineechchiilddineexxioosehexxe?	2. Waawwo 3. Mittiinqica

TarjjaQocatixxaqitse ARTiiadhita'neexxiamuwwakiliniiketixxeqo'nexxiadabuwwi			
1	HIV?AIDS ci'losanfaawodda CD4 birasa'ne		1. 200cell/mm3 2. 200-350 kaaloore/mm3 3. ≥350 hiwaase/mm3
2	HIV?AIDS ci'losanfaawoddamuiuxatijeeji		1. Hijete'nhana 2. Ambulaalite(A) 3. TAqete'nOfo'leeke
3	HIV?AIDSci'losanfaawoddaanfeemmakhaurri		1. ≥50 KG 2. $51-60KG$ 3. 61-70KG 4. ≥ 71KG
4	WHO kiliniiketikoobbi		1. Koobbo 1 2. Koobbo2 3. Koobbo3 4. Koobbo4
5	Manjunttetixxeha'urrixxiqixx	1. <18.5 2. 18.5-25 3. >25	