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SCHOOL OF GRADUATE STUDIES

**Cultural Practices Contributing for Transmission of HIV Infection
and Affects use of ART at Gambella Hospital, South west Ethiopia.**

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The thesis entitled ‘Cultural Practices Contributing for Transmission of HIV Infection and Affects use of ART at Gambella Hospital, Southwest Ethiopia’ has been approved by the department of Biology for the partial fulfillment of the Degree of Master of Science in General Biology.

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I, the under signed, declare that this is my bona fide work, has never been presented in this or other University, and that all the resources and materials used for the thesis have been dully acknowledged.

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Acronyms and abbreviations

AIDS-Acquired Immune deficiency syndrome

ART- Anti retroviral therapy

HAART – Highly active antiretroviral therapy

CSA- Central Statistical Agency

CSW – Commercial Sex Workers

DHS-Demographic and health survey

EDHS-Ethiopia Demographic and health survey

FGD - Focus Group Discussion

HIV – Human Immune deficiency virus

KII – Key information interview

MOH – Ministry of health

SSA – Sub –Sahara Africa

PLWH- people living with HIV/AIDS

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Abstract

This study was assessed the cultural practice that contribute the transmission of HIV infection among people living in Gambella region especially in Gambella woreda. Data on socio-demographic characteristics, potential variables contributing for the HIV transmission, and affecting adherence of ART use from people living with HIV (PLWH) and attending Gambella hospital (n=384) and health professional working in ART clinic were collected using pre-structured questionnaire. Sample size was selected by Systematic sample technique and data were analyzed using SPSS version 16.0 software. Response rate was 100%. Factors contributing for HIV transmission in the study sites were; polygamy (29.7%), widow inheritance (17.7%), early marriage (11.2%), male uncircumcision (9.4%), weekend parties (4.4%), cutting of fore head by nuer ethnic group (4.2%) and taking out the lower tooth in Anguwa and Majang ethnic group (3.6). PLWH agreed to the potential role of cultural practices contributing to the high HIV transmission in the region were significantly larger ($P < 0.0001$) than those disagreed. Number of respondents engaged in all cultural practices were significantly higher ($P < 0.01$) than non-engaged. Among the PLWH enrolled in the study, about 8.3% (n= 32) were not started use of ART. For majority of those PLWH not yet started use of ART had CD₄ count >350 cell/mm³. Most of the respondents (230 (79.58) used ART for more than three years. Those non-adhered to ART use were, 17.89% (n= 63). Adherence of male participants to ART use were significantly lower ($P=0.023$) than female. Significantly differences were observed on the cultural practices affecting adherence of respondents to ART. These were perception on toxicity of ART ($P=0.015$), interference of ART use with daily activity ($P=0.026$), those prefer traditional medicinal treatment and prayer to over ART use as a remedy for the HIV infection ($P=0.044$). This finding was supported by responses from the health professionals working in the ART clinic. Use of traditional medicinal plants and prayer over than use of ART, fear of ART toxicity and thinking that use of ART interfere daily activities were suggested as factors affecting use of ART. Thus, awareness creation activities and consultancy of PLWH and on ART is very important to ensure their adherence.

Key words:- ART, CD₄, Gambella, HIV/AIDS, PLWH, Cultural Practice

1. Introduction

1.1 Background of the study

Acquired Immune Deficiency Syndrome (AIDS) is a global epidemic which is caused by the virus called human immunodeficiency virus (HIV). It will affect the immune system of the body of human beings. The epidemic was firstly recognized in the year 1980. Since then about 20 million people died and 38 million people were estimated living with HIV in the world (MOH, 2005). The rate of infection of the HIV is still increasing in many countries of the world and it is distributed unevenly. HIV is a major development concern in many countries and is destroying the lives and livelihoods of many people around the world. In spite of increased funding, political commitment and progress in expanding access to HIV treatment, the AIDS epidemic continues against the global response. The epidemic remains extremely dynamic. It is expanding fast and also changing its character as the virus exploits new opportunities for transmission. Hence, the number of people living with HIV/AIDS is growing substantially from year to year. Since HIV/AIDS was acknowledged as a human being problem, the health researchers have been conducting different research in order to tackle or control the epidemic by developing medicine or vaccine. However, due to the very unique nature of the virus they could not succeed in developing a medicine or vaccine that totally cures or protects from the disease. The antiretroviral medicines which are available currently, at best can diminish the infection rate. i.e they are not able to cure people who are infected by this epidemic. More than this, the price of such medicines has been a major problem especially for developing countries (UNAIDS, 2004).

Various ways have been pointed out regarding how the epidemic has transmitted from one individual to another. However, there are common modes of transmission of HIV; the main mode of transmission is also different in different regions of the world. For example, in developed countries homosexual sex and intravenous drug injection are usually considered to be the means of transmission of HIV/AIDS, on the other hand, in developing countries heterosexual contact is the main mode of transmission (UNAIDS, 2002). Almost all countries worldwide are affected by the HIV epidemic. No region of the world has been spared. Although the epidemic is global, there is a remarkable regional variation in its distribution. Some regions are highly affected by the epidemic as compared to other regions. Sub-Saharan Africa (SSA) is one of the

hot spots where HIV/AIDS is widely spread and it is more hard hit by the consequences of epidemic than other parts of the world. It is the region where the highest number of victims of HIV/AIDS is found. Ethiopia is one of the sub-Saharan Africa countries which is hard hit by the HIV pandemic and a large number of infected people have been living with HIV. Ethiopia accounts for a big share in the number of cases at worldwide as well as at the regional levels. Following the first detection of the virus in 1984, AIDS cases were reported in 1986 in the country. In Ethiopia the estimated prevalence rate of HIV/AIDS among different survey has got different estimates. For example, the estimate of prevalence rate from Ethiopia Demographic and Health Survey(EDHS) in 2005 shows that 1.4% in country level 6% in urban and 0.7% in rural areas (Central Statistical Agency, 2005).

According to EDHS (2011) report, in the year 2011 the prevalence rate shows a very slight increase as compared to the 2005 prevalence rate. According to this the prevalence rate of women and men of individuals in the age group 15-49 was 1.5% and a very recent reports revealed that, currently the prevalence rate was estimated to be 1.9% and 1% for women and men respectively (Central Statistical Agency, 2011).

Due to the existing socio-cultural diversity of Ethiopia, the pattern and distribution of HIV in the country varies widely. Some regions are more highly affected than others. Recent reports indicate that there is a large discrepancy in HIV prevalence across region of the country and place of residence. According to 2011 Ethiopia Demographic and Health Survey (Central Statistical Agency, 2011), the prevalence rate of HIV/AIDS ranges from the highest prevalence rate 6.5% (Gambella region) to the lowest level of 0.9% in South Nation, Nationality and People (SNNP) region. There is also significant discrepancy among place of residence. For example, currently the prevalence rates of women who live in urban areas are 6.5 times higher than the women who are living in rural areas (EDHS, 2015).

1.2 Statement of the problem

As data from several sources suggested that the prevalence of HIV/AIDS in Gambella was continuing to grow. According to EDHS (2015), the prevalence rate of HIV/AIDS in Gambella region were 6.5%. This makes the region at which the high transmission rate was recorded Indigenous ethnic groups living in the region had different and common cultural practice. In addition to cultural practice lack of awareness among major people gave chance for the virus to spread widely through the region. AIDS was a major problem in the region that destroy the lives and livelihoods of many people, this epidemic had remained the major cause of death in the region (GRSSHER, 2012).

2. Objective of the study

2.1 General objective

- To assess cultural practices contributing for the transmission of HIV infection and affect the use of ART at Gambella Hospital, Southwest Ethiopia.

2.2 Specific objectives

- To identify potential cultural practices affecting transmission of HIV infection among HIV/AIDS patients seeking medication in Gambella hospital,
- To determine magnitude of the cultural practices and their association with the high prevalence of HIV infection among HIV/AIDS patients seeking medication in Gambella hospital,
- To evaluate anti-retro viral therapy usage among HIV positive adult people attending Gambella Hospital ART clinic,
- To identify factors that affect utilization of ART among HIV/AIDS patients seeking medication in Gambella Hospital ART clinic,

2.3 Significance of the study

The death of many people has become issues of global, national and regional concern in recent years. In developing region, one of the reasons for the high mortality were HIV infection. Therefore, the finding of this study will have significant role in identifying major contributing factors for the high transmission of this infection in the study area. The outcome of this study will be recommended for concerned bodies/policy makers to design realistic interventional strategy meant to minimize prevalence HIV and promote utilization ART for positive cases in the study area. Moreover, result of this study will be served as a base line date for other researchers to make nationwide survey on cultural practices contributing for the high prevalence of the infection and usage of ART.

3. Literature review

3.1 Historical background of HIV/AIDS

3.1.1 What is HIV/AIDS?

HIV stands for human immunodeficiency virus, which is the virus that causes AIDS. The abbreviation “HIV” can refer to the virus or to HIV infection. The human immunodeficiency virus (HIV) is a virus that progressively weakens the immune system. In the absence of treatment, it leads ultimately to the acquired immune deficiency syndrome (AIDS) and death (Johnson, 2003).

AIDS is the most advanced stage of HIV infection. HIV attacks and destroys the infection-fighting CD4 cells of the immune system. AIDS is the final stage of HIV infection, and not everyone who has HIV advances to this stage. AIDS is the stage of infection that occurs when the immune system is badly damaged and the person become vulnerable to opportunistic infections. When the number of the CD4 cells falls below 200 cells per cubic millimeter of blood (200 cells/mm³), the patients are considered to have progressed to AIDS (The CD4 count of an uninfected adult/adolescent who is generally in good health ranges from 500 cells/mm³ to 1,600 cells/mm³.) The person can also be diagnosed with AIDS if he develop one or more opportunistic infections, regardless of your CD4 count. Without treatment, people who are diagnosed with AIDS typically survive about 3 years. Once someone has a dangerous opportunistic illness, the life expectancy without treatment falls to about 1 year. People with AIDS need medical treatment to prevent death (Anon, 2015).

HIV has in the last thirty years gone from a rare, barely-ever-heard-of-virus to a virus known and feared by almost everyone around the globe. Unfortunately, the spread of HIV/AIDS across the globe, and especially in Africa, has become a familiar story to most countries (Webb, 1997). South Africa is currently experiencing one of the most severe AIDS epidemics in the world, where almost 1,000 AIDS deaths occur every day (Avert, 2007).

3.1.2 Origin and spread of HIV/AIDS

Many theories exist as to the possible origin of HIV. Simian immunodeficiency viruses from two primates, the sooty mangabey and the chimpanzee, have been found to be similar genetically to

HIV-2 and HIV-1 respectively (Hirsch *et al.*, 1989). This has given strength to the most widely accepted hypothesis of origin: that HIV is the result of cross-species transfer of simian immunodeficiency viruses. Some have suggested that this transfer occurred as a result of hunting monkeys, for food or for use in laboratories, but several other theories exist (Hooper, 1999).

Scientists identified a type of chimpanzee in Central Africa as the source of HIV infection in humans. They believe that the chimpanzee version of the immunodeficiency virus (called simian immunodeficiency virus, or SIV) most likely was transmitted to humans and mutated into HIV when humans hunted these chimpanzees for meat and came into contact with their infected blood (Hooper, 1999). Studies show that HIV may have jumped from apes to humans as far back as the late 1800s. Over decades, the virus slowly spread across Africa and later into other parts of the world. We know that the virus has existed in the United States since at least the mid- to late 1970s (Huet *et al.*, 1990).

Hence vervets are the principal suspect in the transmission of disease. Typically the female vervets, unlike baboons, are sexually receptive for long periods and during the time mate with multiple male partners, sometimes engaging in dozens of copulation on a single day activity that may lead to traumatic lesions of the vaginal or perineal area. Although vervets do not exhibit the large and fragile sexual swellings common to other cercopithecine monkeys (baboons), vervets perineal skin is slightly edematous during the breeding season. Exposure to multiple sexual partners may be a factor in the spread of AIDS throughout vervet populations. Although a possible source of exposure of humans to monkey virus is bites from monkeys kept as pets, the commonest type of exposure to monkey s, including vervets, is the hunting of monkeys for meat .in all rural areas and cities (e.g, Kigali.the capital city of Rwanda) ,smoked monkeys are a common food item for seal in markets (Lyons *et al.*,1986).

As study cited by Herdy (1987) the monkeys are either trapped or shoot ,eviscerated ,and prepared for eating by singeing of the hair and then smoking of the carcass over a fire .During the evisceration process, humans are exposed to blood and internal secretions that presumably contain virus. Although smoked monkeys are sold throughout sub-Saharan Africa, Monkey hunting is mainly limited to forested areas these forested areas occur most prominently in central Africa. Actual transmission of virus to humans through these processes would require a break in

the skin for systemic viral absorption .Although monkeys are eaten throughout sub-Saharan Africa, it is extremely unlikely that the eating monkeys a source of virus exposure.

The first reported AIDS cases were among homosexuals in the United States (Gottlieb *et al.*, 1981), earlier serological evidence of HIV suggests that HIV may have originated in the former Belgian Congo (Nzilambi *et al.*, 1988)). During the 60s and 70s there was considerable migration between this country and Haiti (Piot *et al.*, 1984), which at the time was a popular tourist destination for American homosexuals. This probably explains the high initial incidence of AIDS, observed in the United States, among homosexuals and Haitian immigrants. It was not until 1984 that it became apparent that significant heterosexual transmission of the virus was already occurring in African populations (Piot *et al.*, 1984). Since that time, HIV has spread to every corner of the globe, infecting individuals of all races and religions, regardless of sex or sexual orientation. It is estimated that roughly 42 million people are currently infected with HIV worldwide, and that over 20 million have died since the disease was first identified in 1981 (UNAIDS, 2002). Following the first detection of the virus in 1984, AIDS cases were reported in 1986 in the country. In Ethiopia the estimated prevalence rate of HIV/AIDS among different survey has got different estimates. For example, the estimate of prevalence rate from EDHS's in 2005 shows that 1.4% in country level 6% in urban and 0.7% in rural areas (Central Statistical Agency, 2005). Federal ministry of health of Ethiopia (FMOH) database of ANC survey for the same year shows that the estimated prevalence rate was 3.5%, 10.5% and 1.9% in country, urban and rural areas of respectively. The FMOH estimates a single figure that is reached to consensus on different international organizations which work on HIV. According to this report the rate of prevalence in the year 2005 was 2.1%, 7.7% and 0.9% in country, urban and rural areas, respectively (UNAIDS, 2004).

In Ethiopia the general trend of the prevalence rate varies across in each year and in each region. A trend analysis carried out for the country from 1982-2011 shows a continuous gradual rise of HIV/AIDS prevalence rate until the late 1990's and then a steady decline in the years after 2000. The national adult HIV prevalence rate was estimated at 0.2% in 1985 increasing to 3.2% in 1995 and reduced to 1.4% in 2005. However, according to 2011 EDHS report, in the year 2011 the prevalence rate shows a very slight increase as compared to the 2005 prevalence rate. According to this the prevalence rate of women and men of individuals in the age group 15-49

was 1.5% and a very recent reports revealed that, currently the prevalence rate was estimated to be 1.9% and 1% for women and men respectively (CSA, 2011).

Due to the existing socio-cultural diversity of Ethiopia, the pattern and distribution of HIV in the country varies widely. Some regions are more highly affected than others. Recent reports indicate that there is a large discrepancy in HIV prevalence across region of the country and place of residence. According to 2011 Ethiopia Demographic and Health Survey (Central Statistical Agency, 2011), the prevalence rate of HIV/AIDS ranges from the highest prevalence rate 6.5% (Gambella region) to the lowest level of 0.9% in South Nation Nationality People (SNNP) region. There is an also significant discrepancy among place of residence. For example, currently the prevalence rates of women who live in urban areas are 6.5 times higher than the women who are living in rural areas (EDHS, 2015)

3.1.3 Determinants of HIV prevalence

HIV prevalence levels can vary considerably between different countries and between different populations within a country. This diversity is usually attributable to a range of socio-economic, biological, demographic and behavioral factors (Johnson and (Budlender, 2002).

A number of significant biological factors affect the risk of sexual transmission of HIV. The risk of HIV transmission per sexual contact is increased substantially if either partner is experiencing a sexually transmitted disease (Røttingen *et al.*, 2001), and countries in which access to treatment for sexually transmitted diseases is poor are thus especially vulnerable and the risk of HIV transmission per sexual contact is thought to be highest among younger women (Gray *et al.*, 2001); this partly explains the high HIV prevalence levels observed in young females in purely heterosexual epidemics. It has also been shown that circumcised men are less likely to be infected with HIV than uncircumcised men (Weiss *et al.*, 2000), and that women who use hormonal contraceptives are at a high risk of HIV infection (Wang *et al.*, 1999; Martin *et al.*, 1998). Differences between cultures and countries in terms of contraceptive use, circumcision practices and access to treatment for sexually transmitted diseases can therefore explain much of the observed variation in HIV prevalence levels.

Related to these biological factors is the form of sex practiced. While oral sex and vaginal sex carry a relatively low risk of HIV transmission, the risk of transmission through anal intercourse is high (Leynaert *et al.*, 1998). The high levels of HIV prevalence observed among men who have sex with men may be partially explained in terms of this, although anal intercourse is by no means an exclusively homosexual practice. The sexual transmission of HIV is also facilitated by a range of socio-economic factors. In industrialized countries, it is usually members of ethnic minorities and poorer communities that are at greatest risk of HIV infection (UNAIDS, 2002).

In developing countries, economic migration plays an important role in the spread of the epidemic (Lurie, 2000), and accounts for the higher HIV prevalence among individuals of higher socio-economic status (particularly miners, truck drivers and security forces). The higher prevalence levels among the more affluent are also explained, to some extent, by the concentration of wealth in urban areas, where there is greater opportunity for sexual networking, and where traditional value systems have less influence on sexual behavior. The existence of substantial income inequalities and the subordinate position of women are other factors that have fuelled the growth of the AIDS epidemic in many developing countries. HIV prevalence levels vary considerably with age. In heterosexual epidemics, the prevalence of HIV among females is usually highest between the ages of 25 and 30, while for males prevalence usually peaks between the ages of 30 and 40 (Buve *et al.*, 2001).

3.1.4 The course of HIV infection

Following initial HIV infection, an individual may experience glandular fever-like symptoms that last for a few weeks. During this time, the so-called 'window period', an individual will test negative for HIV on antibody tests. It is only after the individual has sero-converted (i.e. started to produce antibodies to the virus), typically 3 to 4 weeks after the initial infection, that these tests will yield positive results (Lindbäck *et al.*, 2000). Following the passing of these initial symptoms, the individual enters a prolonged asymptomatic phase, which typically lasts 4 to 6 years. The individual then starts to experience intermittently symptoms such as weight loss, diarrhea and oral infections. Finally, when the individual's immune system has been severely weakened by the HIV infection, they experience a variety of opportunistic infections, such as Kaposi's sarcoma and pneumonia, which are regarded as being defining of AIDS. The term

‘AIDS’ thus refers to a range of conditions that are diagnosed in the late stages of HIV infection. In the absence of treatment, the individual typically dies within 1 to 2 years of the initial AIDS-defining illness (Johnson, 2003)

3.2 HIV Prevention

Currently there is no cure or vaccine for HIV/AIDS. However, many programmers have been developed for limiting the spread of HIV and treating HIV infection. The most obvious technique for preventing the spread of HIV is through education and promotion of less risky sexual behaviors. This can occur through voluntary counseling and testing program, condom promotion and distribution, social marketing, mass media campaigns, school-based AIDS education, and that target individuals at high risk of infection (Stover *et al.*, 2002). Less obviously, improved treatment for sexually transmitted diseases (Grosskurth *et al.*, 1995) and have been shown to be very effective in reducing HIV transmission. (Heimer *et al.*, 1993).

3.3 HIV Prevalence for key population

3.3.1 Female sex workers

Female sex workers are women and girls who regularly or occasionally trade sex for money in drinking establishments, night clubs, hotels, local drink houses, on the street, around military and refugee camps, construction sites, trade routes, and at their homes. In addition there are those who are not formal sex workers but rather trade sex in exchange for gifts. A recent study reported that there are an estimated 4,200 female sex workers in Gambella town, accounting for about 8.4% of the town population. This study revealed that the majority of commercial sex workers were between the ages of 15 to 40 years; those working on the streets mostly being 15-20 years of age. The study indicated that most venue and street-based sex workers have elementary and high-school education while most of the home-based sex workers tend to have no formal education. The study noted that while commercial sex workers are aware of the protective role of condoms, refusal of use by their clients was a major challenge for almost all types of sex workers. Despite commercial sex workers being recognized as a traditional high risk population group, there are no recent national or regional data for Gambella on the status of the epidemic within this population, thus the prevalence in this group remains unknown (GRSSHER, 2012).

3.3.2 Truck drivers

Truck drivers and their assistants are considered among the high risk groups due to their mobility, stay away from home for long periods of time and interaction with female sex workers. As per preliminary un-weighted results (weighted estimates will be published by EPHI shortly) HIV prevalence among truck drivers was 4.9% (GRSSHER, 2012). According to another study from a program targeting mobile populations 27% of truck drivers reported having two or more sexual partners in the past year and 17% reported having paid sex with one or more commercial sex worker (CPROTHR, 2014). Truck drivers and their assistants are considered among high risk groups due to their mobility, stay away from home for long periods of time, their interaction with commercial sex workers in bars and hotels, disposable income for purchasing sex and because they are harder to reach with HIV prevention services. Gambella is along the route used by long distance truck drivers from Addis Ababa and also is an emerging transport corridor for neighboring South Sudan. The main route frequented by long distance truck drivers in Gambella and to the emerging South-Sudan trade corridor is the Addis Ababa- Jimma-Bedelle-Mettu-Gambella- Lare route. Current estimates suggest that there are approximately 150-200 truckers (drivers and assistants) daily reaching and transiting in Gambella. Gambella town was cited as an important hub by truckers, with many remaining in between work contracts in order to take advantage of communication facilities which are not as available in other nearby towns. Although truck drivers are a well-recognized at risk population group in many countries there is no data on HIV prevalence among this group at either national level or for Gambella. Despite the lack of data, truckers move across regions in the country's main routes of trade and travel, and thus there is potential risk for spreading HIV infection to and from other parts of the country. The aforementioned on-going national MARPs survey will also collect sero-prevalence data on long distance truck drivers across all regions in Ethiopia, including Gambella (CPROTHR, 2014).

3.3.3. Mother- to - child

The spread of HIV from person to person is called HIV transmission. The spread of HIV from an HIV-infected woman to her child during pregnancy, childbirth, or breastfeeding is called mother-to-child transmission of HIV (Anon 2015). Mother-to-child transmission is the most common way that children become infected with HIV. HIV medicines, given to HIV-infected women

during pregnancy and childbirth and to their babies after birth, reduce the risk of mother-to-child transmission of HIV. The transmission of HIV from HIV positive women to their children can also be reduced through the use of antiretroviral drugs before and after birth, and through the use of formula feeding in place of breastfeeding (Dabis *et al.*, 2000).

Although individuals infected at young ages tend to survive for longer than individuals infected at older ages, children who are infected at birth are exceptions (Johnson, 2003). Children tend to experience relatively rapid disease progression (Taha *et al.*, 2000), with children infected through breast milk surviving for longer than those infected at or before birth. Separate staging systems tend to be used for children, as the pattern of symptoms and the prognostic values of certain markers differ between adults and children (Spira *et al.*, 1999)

3.4 Factors involving in the prevalence of HIV/AIDS

3.4.1 Demographic factors

In purely heterosexual sex, HIV prevalence level is higher among women than men. This is because women are biologically more susceptible to infection due to larger genital tract surface area, which may be also torn during sexual activity, which leads to higher risk of HIV transmission. The other demographic factor is age, which also affects the prevalence of the epidemic as follows. Most young people are rushing to sex and practicing unsafe sex due to their puberty age. Their economic status and knowledge about the epidemic also contributes to the prevalence level of HIV infection. For example, youth are more attracted to money specially if they are poor and have inadequate information about the disease. The third demographic factor which was identified in the conceptual framework was marital status of individuals. Marital status will affect the transmission of epidemic through acquiring new sexual partners and less autonomy. For example married girls have higher levels of sexual activity than their sexually active unmarried peers, and they have also limited ability to negotiate condom use and have low power to refuse sex with their partner (Silashi, 2013)

3.4.2 Socio economic factors

One of the crucial determinants on the prevalence of HIV epidemic is socio-economic factors. So far different studies have been carried out on the association between the different socio-

economic variables and the prevalence of the epidemic and they showed different results. Poverty is one of the socio-economic variables, which has an effect on the spread of the epidemic through different channels, including migration of people from one place to another (urban to rural) or (rural to urban), limited media exposure, access to health education, nutrition, sexual exploitation and gender inequality (Casale and Whiteside, 2006). There is strong negative association between HIV and poverty at regional level in Africa (Bloom *et al.*, 2002). On the other hand, different scholars have hypothesized that high HIV prevalence is a result of poverty especially in sub-Saharan Africa societies (Gillies *et al.*, 1996). The relationship between HIV/AIDS and poverty is complicated (Collins and Rau, 2000) and results from the current studies remain contradictory. A study conducted by Casale and Whiteside, (2006) on HIV infection shows that it does not disproportionately affect the poorer in sub-Saharan Africa country.

Furthermore, the result showed that in all eight countries, where the study was conducted, adults in the wealthiest quintiles have a higher prevalence of HIV than the poorer quintiles. Moreover, evidence from the Demographic and Health Survey (DHS) data from developing countries specially sub-Saharan suggest that wealthier men and women tend to have higher prevalence of HIV than the poorer ones (Mmbaga *et al.*, 2007). On the other hand, other studies showed that poverty increases individual exposure to HIV infection and it is a key factor for HIV transmission (Bloom *et al.*, 2002). Economically poor young women are 50 percent more likely to have had sex than their economically richer peers and he also found that richer women were twice as likely to practice safe sex and to know how to prevent HIV infection. Poverty is the main factor directing risk behaviors that exposed people to risk of HIV infection according to (Collins and Rau, 2000). One of the channels through which poverty increases the vulnerability of HIV infection is through limiting access to health care. Poor individuals mostly have limited access to health service. Limited health service access can fuel the spread of HIV infection. According to (Clark and Vencatachellum, 2003) economically poor people have a shortage of information about HIV and they have limited access to education and condoms.

According to Clark and Vencatachellum (2003) poverty also increases HIV transmission through nutrition. Malnourished individuals are more exposed to illness and therefore infectious disease like HIV/AIDS. Most of the time economically poor individuals are exposed to malnourishment.

Education is the other socio-economic factor, which influences the prevalence of HIV and amplifies the awareness of people. In many researches, education is one of the most focused socio-economic factors in the context of AIDS epidemic. In the short run, education raises awareness of individuals, which enables individuals easily access and utilize different information regarding the epidemic. And in the long run education more likely helps individuals to have personal autonomy and increased income. According to (Fylkesnes *et al.*, 1997) report the sero-prevalence of HIV is increasing significantly with increasing educational attainment among both urban and rural residents in Zambia. The same result was observed in Cote d'Ivoire, where educated people run a higher risk of HIV infection. This is due to a high frequency of changing of sexual partners. However, this result (the case with Cote d'Ivoire) is somehow compensated by a higher chance of condom use relative to less educated people (Cogneau and Grimm, 2006). More educated people are more likely to receive and to employ information about HIV prevention methods than less social status group.

A marked decrease in transmission of HIV is related to higher education and stable or rising prevalence to low education (Fylkesnes *et al.*, 2001). More educated individuals are more responsible about their health status and better able to take action on HIV prevention methods by changing their sexual behaviors. Individuals' condom usage is strongly associated with their educational level (Fylkesnes *et al.*, 2001). According to Demographic and Health Survey report in 11 countries, the likelihood of using a condom at last sex was higher for women with primary school education than for those with no education (GCE, 2004). In nine of these countries there was a parallel increment of individuals' likelihood of using a condom at last sex and education attainment. On the other hand many studies showed that educated individual have higher risk of HIV infection in Africa. In a study conducted by Mmbaga *et al.* (2007) on educational attainment and risk of HIV-1 infection in the rural Kilimanjaro region of Tanzania, 1991-2005, the study showed that there was a positive relationship between education attainment and HIV infection in the year 1991. A reversed association was observed in 2005 where odds of acquiring HIV infection decrease with increasing level of individual education (Silashi, 2013)

3.5 Cultural practice

The terms culture and race are at times used interchangeably in our daily use of the English language. This is however problematic as the term race refers to the concept of dividing people into different groups on the basis of various traits. Most commonly visible traits such as skin colour, facial features, and hair texture are used to place individuals into racial categories (Reber & Reber, 2001).

The word culture comes from the Latin “cultura” which means ‘to cultivate’ and is generally used when referring to patterns of human activity and the structures that give these activities meaning and importance (Wikipedia, 2008).

According to the definition of Nhlanhla Mkhize (2004) culture “refers to knowledge that is passed on from one generation to another within a given society, through which people make sense of themselves and the world. It incorporates language, values, assumptions, norms of behaviour, ideas about illness and health, etc.” According to the American Heritage Dictionary (2004, electronic version), culture is, “the totality of socially transmitted behavior patterns, arts, beliefs, institutions, and all other products of human work and thought”.

The culture of any community embraces many factors that influence the people who belong to that community and who live according to that culture. Culture thus also influences community members’ behavior, including sexual behavior. According to Güss (2002) cultural values influence a person’s decision making. These values can influence the way in which a person perceives a problem and thus also influence his / her generation of strategies and alternatives as well as which alternative he / she will select from the available alternatives.

Culture specific values and expectations are transmitted from generation to generation. These values and expectations are the indicators of what is appropriate within the culture. Making the culturally ‘correct’ decision requires specific expertise that develops through exposure to making different kinds of decisions within different domains of one’s life. This exposure is in part created by culture, for example value systems, familial socialization, and patterns of schooling – all of which are influenced and shaped by culture (Strohschneider, 2002).

Religion and other belief systems form an integral part of one's culture and has been part of cultures throughout human history (Wikipedia, 2008). Although culture and religion are two different concepts, they go hand in hand contributing to the formation of a person's life paradigm – his or her belief of what is true or false as well as what is right or wrong. It will be hard to conclude which has the most influence.

In simple terms, culture basically refers to the traditions and customs upheld by societies and communities because of their belief systems and values. Culture is defined as the learned, shared and transmitted values, beliefs, norms and life ways carried by groups of people, which guides their decisions, thinking and actions in patterned ways. The individual in society is bound by rules of his/her culture. Cultures are different in that the same events that may be fear-inducing in one culture may be anger-inducing in another (Leninger, 1991).

Culture manifests itself in terms of the art, literature, costumes, customs, language, religion and religious rituals. The people and their pattern of life make up the culture of a region. Cultures vary in different parts of the world. They are different across land boundaries and the diversity in cultures results in the diversity in people around the world. Culture also consists of a system of beliefs held by the people of a region, their principles of life and their moral values. The patterns of behavior of people of a particular region also forms a part of that region's culture. The word 'culture' hails from the Latin word 'cultura,' derived from 'colere,' means, 'to cultivate.' Hence, the way in which the minds of the masses inhabiting a particular region are cultivated, in some way determines the culture of a region (Oak, 2008).

According to Guss (2002) cultural values influence a person's decision making. These values can influence the way in which a person perceives a problem and thus also influence his/her generation of strategies and alternatives as well as which alternative he / she will select from the available alternatives. An individual is guided by cultural expectations and values when he/she selects specific dynamic decision-making strategies

The success with which specific problems are dealt with is influenced by these decision making strategies and how they are employed. Most of the African cultures favor the collectivistic value orientation which favors a hierarchical social structure and stresses the limitations of the

individual's initiatives and responsibility. Individuals thus use more reactive and adaptive decision-making strategies (Mkhize, 2004).

Culture specific values and expectations are transmitted from generation to generation. These values and expectations are the indicators of what is appropriate within the culture. Making the culturally 'correct' decision requires specific expertise that develops through exposure to making different kinds of decisions within different domains of one's life. This exposure is in part created by culture, for example value systems, familial socialization, and patterns of schooling – all of which are influenced and shaped by culture (Strohschneider, 2002).

A value is an ambiguous concept as values are considered subjective. Values vary across people and cultures. Personal values are not universal and evolve from circumstances in one's external world and can change over time (Wikipedia, 2008). Cultural values identify those objects, conditions or characteristics that members of a society consider essential (Wikipedia, 2008).

Strohschneider (2002) states that individuals have limited freedom in making decisions as in many cultures decisions are more influenced by the social and cultural context than by individual decisions. As culture influences (but not determines) marital systems, household structures, circumcision practices, sexual mores, and the social use of space, it is difficult to put culture (a spatial structure in itself) into the concept of 'high risk behavior' (Webb, 1997). Individual behavior will vary according to context but it is not determined by it. There is no simple cause-effect link or answer, only a relationship based on probability; an individual is more likely to contract HIV from participating in high risk sexual activity than when he / she does not participate in such activities. Culture cannot be blamed for spreading HIV, but it can be seen as one of the factors contributing to the complexity of the spread thereof.

3.6 Gender relationships

According to Shefer, (2003) view gender inequality and men's perceived sexual and economic superiority to women as central to HIV infection. Women's power inequalities make them, according to the feminization of poverty theory, especially vulnerable to HIV infection (Shefer, 2003). In a patriarch culture men are seen as dominant in the family as well as society at large (Boonzaier, 2003). The community in which the participants live is established around such patrilineal lines. The men make the important decisions for their families and the community.

Men are seen as more intelligent and superior to women. Women have to respect and accept men's decisions. This power dynamic between men and women also occurs in their sexual relations and is an example of how the spread of HIV can be enabled. The discourse of power, influence whether or not people practice safe sex (Collins, 2003).

Several factors work together to produce the perceived male power, as well as women's willingness to accept their decisions and behavior. In this community (as in many others) women are more likely to be unemployed, to be less educated, and to have fewer and worse paid employment opportunities. They are therefore many a time dependent on a man (or men) and thus forced to tolerate their behavior (whatever that behavior or the consequences thereof might be). Particular ideas about masculinity also support the discourse of male power. The idea that men cannot help having multiple sexual partners due to their uncontrollable drive for sex, or that a man has to prove his 'manhood' by having many children and therefore has the right to object to the use of condoms are but two of the ideas surrounding masculinity (Collins, 2003).

3.7 Cultural practice in Gambella

Cultural practices, values and traditions have strong influences on the visible aspects of individual behaviors which in turn influence their vulnerability to disease. In the case of women, they are exposed to the disease through traditional practices such as husband sharing, early marriage, female genital mutilation and condoning of gender based violence. Early marriage refers to any form of marriage that takes place before a child has reached 18 years. Early marriage severely increases young girls' vulnerability to HIV as they are most likely to be forced into having sexual intercourse with their (usually much older) husband. The severity of multiple sexual partners relates to the fact that if one person in a circle of partners gets infected with HIV, there is a very high likelihood that all persons involved will be infected GRSSHER (2012).

Female genital cutting places girls and women at increased risk of HIV infection through several routes. In the first place, instruments such as razors or knives, which are used for genital mutilation, may not be sterilized. In the second place, female genital mutilation renders the female genital more likely to tear during intercourse. The presence of the foreskin acts as a physical barrier, trapping HIV next to the surface of the penis for long periods. In this moist environment, the HIV virus can survive longer Shefer, (2003)

As study conducted by GRSSHER (2012) Cultural practices: such as the payment of dowries for wives (known locally as “Demui”) reportedly leads to unequal power relations and a sense of entitlement among husbands which reduces the ability of women to negotiate for safe sex, urge their partners to test or demand responsible sexual behavior. Cultural practices were highlighted as increasing the vulnerability of young women to HIV infection. These include coercion into early marriage by parents (even to older men) and polygamous relationships. As GRSSHER (2012) reported the practice of multiple sexual partners among youth regardless of ethnic or cultural divide is prevalent.

3.7.1 Male circumcision

Male circumcision is the surgical removal of all or part of the foreskin (the tissue that covers the head of the penis) (UNAIDS, 2007). After circumcision the penile shaft becomes less susceptible to viral infection (Silashi, 2013) On March 28, 2007, the World Health Organization (WHO) and the Joint United Nations Program on HIV/AIDS (UNAIDS) recommended that HIV prevention programs and policies recognize male circumcision as an additional, important strategy to prevent men from acquiring HIV from infected female partners WHO, UNAIDS(2007).Recent studies have demonstrated that circumcision offers men considerable though not complete-protection against acquiring HIV through heterosexual intercourse Since the 1980s, many studies have shown that circumcised men have a lower prevalence of HIV infection than do uncircumcised men WHO, UNAIDS (2007). The first randomized controlled trial, conducted in South Africa, showed male circumcision to provide a 61 percent protective factor against males’ acquiring HIV through heterosexual intercourse Auvert (2005) .Two more studies, in Uganda and Kenya, showed that male circumcision provided a 51 to 53 percent protective factor against heterosexually acquired HIV UNAIDS,WHO (2007).

In uncircumcised men the inner mucosal surface of the foreskin contains a high concentration of cells that HIV-targets—cells such as Langerhans and CD4+T cells. Removing the foreskin greatly reduces the number of available target cells through which HIV could invade a man’s body Bailey (2007). HIV and other pathogens may survive for some time on the protected, damp, inner surface of the foreskin. Eliminating this environment reduces the pathogens’ ability to survive WHO (2007). Abrasions and inflammation of the delicate foreskin tissue during sexual

intercourse may facilitate HIV's invasion of the body. Circumcision eliminates the foreskin and closes off this pathway for the virus WHO (2007).

Circumcision at birth is widely practiced in most regions of Ethiopia. Currently 92% of adult males report being circumcised (EDHS 2011). In Gambella, lower rates of male circumcision are thought to contribute to the particular severity of the epidemic in the region. Gambella region is home to ethnic groups that do not practice traditional neonatal or early adolescent circumcision, and it has been speculated that the higher HIV prevalence in Gambella might be strongly correlated to the absence of circumcision in the local population. In the 2005 DHS, HIV prevalence was 9.9% in uncircumcised men and 2.3% in circumcised men. In 2011, these proportions were 7.9% and 4.1% respectively. Majang and Anyuak ethnic groups have very high HIV prevalence levels for both males and females. Cultural norms among these groups appear conducive to sexual spread of HIV, which is made more dangerous by the lack of circumcision (GRSSHER, 2012).

3.7.2 Early marriage for women

Although the linkages between early marriage and HIV are still unclear, and some cultural practices that promote universality of marriage in societies may also work towards reducing HIV transmission in the society as a whole, early marriage was often mentioned as more prevalent in Gambella and perceived to be a risk factor for HIV. DHS data confirm that the percentage of women 20-24 years old who were married or in union by age 18 was 67% in Gambella in 2005. It significantly declined by 2011 but still remains as high at 47% (versus 41% in Ethiopia overall). In 2011 the median age at first marriage was reported to be 17.1 years in Ethiopia and 17.4 years in Gambella for women aged 20-49 while it was 16.5 years in Ethiopia and 17.1 years in Gambella for older women aged 25-49. Despite the lack of clear evidence on the association of HIV and early marriage, early marriage is perceived to have a potential impact on the education, overall opportunities, exposure to abuse and early pregnancy for young women (Gessher, 2012).

3.7.3 Widow/wife inheritance

A related cultural practice, which also promotes the exchange of sexual partners after death in a family, is wife or husband inheritance (also referred to as levirate unions). In its form a l sense this involves marrying off the surviving partner to a relative of the deceased which, as was traditionally meant to ensure that there is continuity of the family, its reproductive role and to ensure proper care of the minor children of the deceased.

The practice of widow/ wife inheritance by the brother of a woman's deceased husband was mentioned repeatedly in KIIs and FGDs as being prevalent in Gambella. Despite its alleged protective social and economic value for widowed women, this practice was perceived to pose risks in terms of HIV (Gessher, 2012).

3.7.4 Polygamy

A woman in a polygamous relationship is even more likely to accept the rules lay down by her husband on sexual matters, including whether he has additional partners and whether or not he used a condom during sex. Women in polygamous relationships often seek out additional partners themselves for various reasons and this raises the risk of contracting and spreading of HIV within the family. Then there is the issue of polygamy, in which a woman may not have more than one sexual partner, while a man may have many. This traditional marriage places women in a vulnerable position (Lule, 2006)

Prevalence of polygamy (i.e. men having more than one concurrent wife) is relatively higher in Gambella when compared to other regions in Ethiopia. In the 2011 DHS, 19.5% of Gambella women reported to be in a polygamous marriage, as compared to 10.5% for Ethiopia overall. About 7.4% of men in Gambella reported to have more than one wife versus 5.5% for Ethiopia overall. Although polygamy alone is not necessarily a risk factor for HIV, findings from FGDs revealed that in the context of a polygamous relationship, women were said to feel neglected by their husband, and resort to engaging in extramarital affairs. Moreover in this type of marriage, the submissive role of women and their lack of power in demanding their husband take preventive HIV measures was also highlighted (Gessher, 2012).

According to EDHS 2005 report, overall, 12% of married women reported that they are in a polygamous union, i.e. they are married to a man who has more than one wife. Moreover, these girls have no power and right to select their husband by themselves. A substantial number of marriages are consummated by the consent of the family without notifying the woman with to whom she is going to be married.

3.7.5 Abstinence following child birth

As reported by Gessher (2012) the practice of not having sex with a pregnant wife for three years, which prompts the practice of sex with other women. If his wife gives birth, the man will not have sex [with her] for about three years. He will go to the other wives or rather look for another woman as a wife. This practice was briefly reported in the literature in 1998 but no description of how prevalent and among which groups was provided. In Gambella, sexual intercourse following the birth of a baby is not allowed until the child is 2-3 years old at which time the husbands commonly find it difficult to wait for so long and seek sex elsewhere, which expose them to HIV and other sexually transmitted infections. Some women also find the long sex free period following birth unattainable and engage in extramarital sex exposing them to unwanted pregnancy.

3.8 Antiretroviral therapy

No effective cure currently exists for HIV. But with proper medical care, HIV can be controlled. Treatment for HIV is called antiretroviral therapy or ART. If taken the right way, every day, ART can dramatically prolong the lives of many people infected with HIV, keep them healthy, and greatly lower their chance of infecting others. Before the introduction of ART in the mid-1990s, people with HIV could progress to AIDS (the last stage of HIV infection) in a few years. Today, someone diagnosed with HIV and treated before the disease is far advanced can live nearly as long as someone who does not have HIV. ART improves the survival time and quality of life of HIV patients, several clinical and socio demographic factors contributing to this high mortality and poor treatment outcome are not well understood in Ethiopia. The most significant form of treatment, in terms of reducing mortality and morbidity, is antiretroviral therapy. Initially, single-drug therapy and dual therapy yielded modest reductions in rates of morbidity and mortality, but more dramatic reductions have been achieved since the development of new

classes of antiretroviral drugs in the mid-1990s (Jordan *et al.*, 2002). The terms ‘highly active antiretroviral therapy’ (HAART) and ‘triple therapy’ typically refer to the use of these new drugs in combination with the earlier dual therapy regimens (Johnson, 2003).

4. Study area and methodology

4.1 Description of study area

The study was conducted in Gambella hospital, found in Gambella town, in the Gambela Regional state, Ethiopia. Gambella regional State is one of the nine regions, which constitute the Federal Democratic Republic of Ethiopia. The Regional state is located in the South-west part of the country, at a distance of 776 km from Addis Ababa. The region, with a geographic size of about 34,063 Sq. Km, altitude ranging 450 to 2500 meter above sea level , annual temperature ranging 18- 45°C and annual rainfall ranging 500 – 2100mm, has a total population of 284,068 (female constitutes 49.1% of the total population) (CAS ,2007).



Figure 1. Study area

4.2 Study methods and material

4.2.1 Study design and study period

Cross-sectional study design was used in the current study, and the study was conducted from July 2016 to September 2017.

4.3 Population

4.3.1 Source of population

All HIV patients living in Gambella woreda.

4.3.2 Study population

The study population was all HIV patients attending Gambella Hospital ART clinic.

4.4 Inclusion and Exclusion criteria

4.4.1 Inclusion criteria

Those who were above 18 years of age, HIV positive, and both sexes were included.

4.4.2 Exclusion criteria

Those who were critically ill during data collection period were excluded.

4.5 Operational definitions of terms

- **Cultural practice:** -is a complex set of distinctive spiritual, material, intellectual emotional features that characterize and define a society or social group.
- **Adult:**-a person who is fully grown and developed.
- **ART use:** - the one who use the anti-retro viral drug.
- **Polygamy:**-the practice or custom having more than one wife or husband as the same time.
- **Early marriage:** - Early marriage refers to any form of marriage that takes place before a child has reached 18 years.
- **Male circumcision:** - is the surgical removal of all or part of the foreskin of the penis.
- **Widow/wife inheritance:**-taking a woman who has lost her husband by death as a wife.
- **Adherence:** is the extent to which patients follow treatment regimen as prescribed by their healthcare providers.

4.6 Sample size and sampling technique

Sample size

The required sample size was determined using single population proportion

Accordingly, the sample size for this study was calculated considering the following assumptions:

n= Sample size

p= 50 % (because no similar study done)

α = level of significance to be 5% ($\alpha = 0.05$), and

Z= value of standard normal distribution (Z-statistic) at 95% confidence level, $Z \alpha/2 = 1.96$

D= Absolute precision or margin of error to be 5% ($D = 0.05$).

The formula for calculating the sample size was:

$$n = \frac{(z\alpha/2)^2 P (1-P)}{d^2}$$
$$n = \frac{(1.96)^2 * 0.5(1-0.5)}{(0.05)^2}$$

A total of 384 participants were included.

Sampling technique

Systematic sampling technique was used to select the study participants; where every k^{th} (sampling interval) participant from ART clinic was selected.

Sampling interval ($k = N/n$)

N= Number of patients following ART clinic

n= Sample size

4.7 Data collection procedures:

4.7.1 Data collection procedures from people living with HIV (PLWH)

Structured questionnaire were prepared in English and then translated into Amharic, Agnuwak and Nuer languages, for collection of data on cultural practices and ART use. Four diploma nurses who had the experience on delivering HIV care and ART treatment were used as data collectors and one health officer supervisor were trained for one day with the objective of standardizing the data collection instrument among the data collectors and providing them with

basic skill of communicating with the study participants. The patient health record review was conducted in order to identify their CD₄ count.

4.7.2 Data collection procedures from health professionals

Structured questionnaire were prepared in English for collection of data on cultural practices and ART use.

The purposive data collecting method was preferable than others, because the total number of health professionals working in Gambella hospital ART clinic were totally five (5) in number. Then to get full information all health workers in ART clinic were involved in the sample.

4.8 Quality control

To ensure quality of data, a pre-tested standard questionnaire was used. Training on the topic and purpose of the research, on how to approach study subjects and how to use the questionnaire were developed. The collected data were checked out for their completeness, accuracy and clarity before data entry.

4.9 Data analysis

The collected data were coded and entered into Epi info and exported to SPSS version 20.0 software for analysis. Analysis of variables was made using descriptive statistics. Multiple logistic regressions were used to assess the association between dependent and independent variables. Significance was considered at 95% CI.

4.10 Ethical considerations

The study was ethically approved by research and ethical Board of College of natural sciences, Jimma University. Permission and acceptance letter were obtained from Gambella hospital prior to data collection. The consent of the study participants was obtained and all the information obtained from study participants were kept confidential.

5. Results

5.1 Socio-demographic characteristics of the respondents

Most of the PLWH (54.5%, n=209) were found in age group 30-40 years, followed by those in age range 18-29 years. Proportion of female and male participants was 45.1 and 54.9% respectively. Relatively, participants completed elementary school were 27.9 (n=107). Marital status of most of the respondents was single (42.2%, n=162). Proportion of protestant religious follower was higher (28.6%, n=110) than others. Most of the respondents were civil servant (39.5%, n=151). In terms of ethnicity, most of them were Anguwa (33.6%, n= 129) (Table 1).

Table 1 Socio-demographic characteristic of PLWH in Gambella hospital ART clinic

Variables	Alternative	Proportion (%)
Age	18-29	75 (19.5)
	30-40	209 (54.5)
	41-50	73 (19)
	>50	27 (7)
Sex	Female	173 (45.1)
	Male	211 (54.9)
Education status	Illiterate	75 (19.5)
	Elementary	107 (27.9)
	High School	86 (22.4)
	College & above	116 (30.2)
Marital status	Single	162 (42.2)
	Married	102 (26.6)
	Divorced	75 (19.5)
	Widow	46 (12)
Religion	Orthodox	97 (25.3)
	Catholic	70 (18.2)
	Muslim	82 (21.40)
	Protestant & others	135 (35.1)
Job	Farmer	46 (12)
	Merchant	52 (13.5)
	Civil servant	151 (39.5)
	Student & daily laborer	135 (35.15)
Ethnicity	Anguwa	129 (33.6)
	Nuer	80 (20.8)
	Magang	38 (9.9)
	Komo and other	137 (35.67)

5.2 Cultural practices contributing for HIV transmission

According to their response, participants were engaged in different cultural practices such as polygamy (29.7%), widow inheritance (17.7%), early marriage (11.2%), male uncircumcision (9.4%), weekend parties (4.4%), cutting of fore head by nuer ethnic group (4.2%) and taking out the lower tooth in Anguwa and Magang ethnic group (3.6%). The ANOVA test result showed that, number of respondents engaged in all cultural practices were significantly higher ($P < 0.01$) (Table 2).

Table 2 Cultural practice that PLWH were engaged in Gambella hospital ART clinic

Variables	Alternative	Proportion	%	P. value
Cultural practice that participants were engaged	Early marriage	68 (17.7)	17.7	0.0001
	Polygamy	114 (29.7)	29.7	0.0001
	Uncircumcision	43 (11.2)	11.2	0.0001
	Weekend parties	36 (9.4)	9.4	0.0013
	Widow inheritance	76 (19.8)	19.8	0.0001
	Cutting of fore head	17 (4.4)	4.4	0.003
	Taking of lower tooth	16 (4.2)	4.2	0.046

As the result shown in table 3, majority of the study participants (>93%) agreed that lack of male circumcision(n=359,93.4%),early marriage(n=337,92.9%),polygamy(n=360(93.75%), weekend party locally called ‘Chagwad’ (n=330,(85.93%), widow inheritance(n=343,89.32%) cutting of forehead in some ethnic groups such as Nuer (n=347,90.36%) and taking off the lower tooth(n=348,90.62%) were among the cultural practices contributing for the transmission of HIV infection in the study area. This was evidenced by the big differences observed between those agreed and disagreed to the potential cultural practices contributing for high transmission of HIV in the study area. Number of participants agreed to the potential role of cultural practices contributing to the high HIV transmission in the region were significantly larger (P<0.0001) than those disagreed (Table 3).

Table 3 Cultural practices contributing for high transmission of HIV infection among PLWH attending ART clinic in Gambella hospital, 2016/17.

S/N	Cultural practices	Alternative	Proportion (%)	P. value
1	Absence of male circumcision	Agree	359 (93.4)	P<0.0001
		Disagree	25 (6.6)	
2	Early marriage	Agree	357 (92.9)	
		Disagree	27 (7.1)	
3	Polygamy/ multiple sexual partners	Agree	360 (93.75)	
		Disagree	24 (6.25)	
4	Week end practice “changwad”	Agree	330 (85.93)	
		Disagree	54(14.06)	
5	Widow inheritance	Agree	343 (89.32)	
		Disagree	41(10.677)	
6	Cutting of fore head in Nuer culture	Agree	347 (90.36)	
		Disagree	37 (9.63)	
7	Taking off the lower tooth	Agree	348 (90.62)	
		Disagree	36 (9.37)	

This finding was supplemented by similar response by the health professionals (n=5) working in the ART clinic. All of them were strongly agreed that, all the variables indicated as the cultural practice were responsible for the expansion of HIV/AIDS infection in the study area.

As the result shown in figure 1, almost all of the respondents (99.5%) were co-infected with other infectious agents such as malaria (34.4%, n=132), tuberculosis (16.9%, n=65), helminthic infection (25.8%, n=21), skin problem (17.7%, n=68) and others infections (5.5%, n= 21) after they know their sero-positivity (Figure 1). Almost all (99%) PLWH enrolled in the study were well aware about the ART, its benefit (98.8%) and about 91.7% (n=352) were already started use of the drug. (Figure 1)

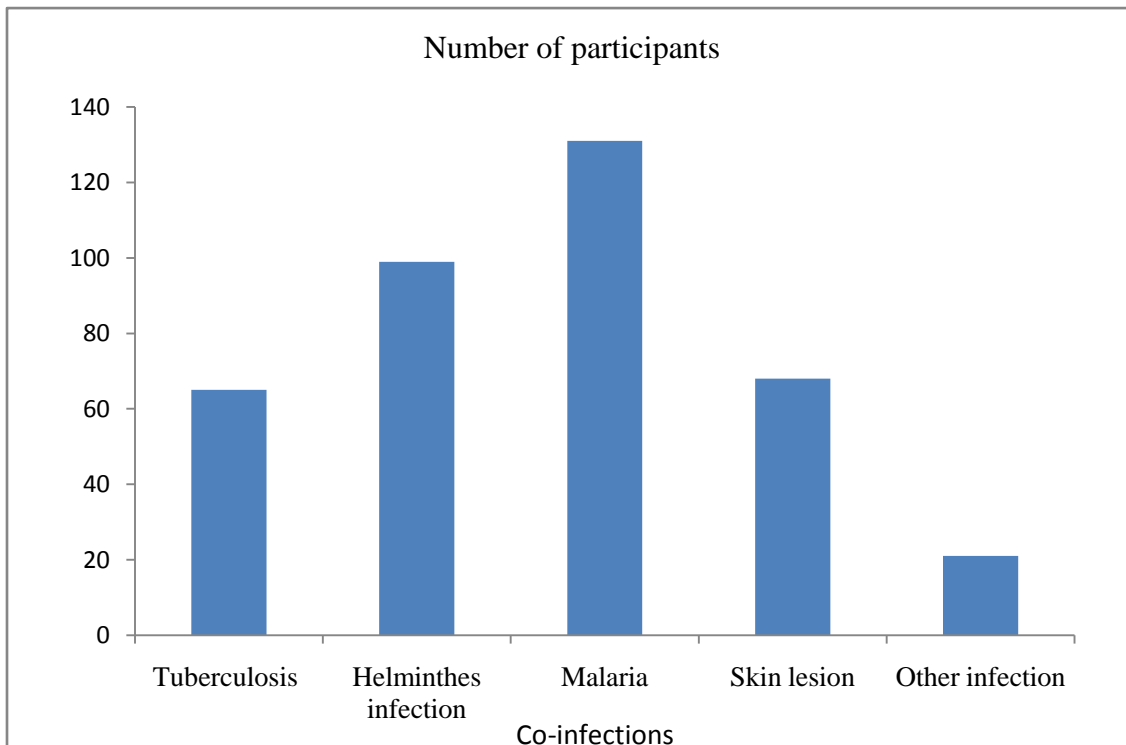


Figure 1 Co-infections associated with PLWH in Gambella hospital ART clinic

Except one individual all the PLWH participated in the study (99.7%) know the status of their CD₄. For majority of the participants (76.6%, n=294) their CD₄ count was greater than 350 cell/mm³, followed by 17.9, whose CD₄ count was between 200 and 350. The remaining 5.5% (n=21) had < 200 cell/mm³ CD₄ count. Among the PLWH enrolled in the study, about 8.3% (n=32) were not started use of ART. Majority of those PLWH not yet started use of ART had CD₄

count >350 cell/mm³, while two of them had <200 cell/mm³. Most of the respondents (230 (79.58) used ART for more than three years. Those non-adhered to ART use were, 17.89% (n= 63) (Table 4).

Table 4 The status of PLWH on their CD4 counts, use of ART and their adherence at ART clinic Gambella hospital

Variables	Alternative	Proportion (%)
Know the status of CD ₄ count	Yes	383 (99.7)
	No	1 (0.3)
CD ₄ Count	< 200	21 (5.5)
	200-350	69 (17.9)
	>350	294 (76.6)
Start ART use	Yes	352 (91.7)
	No	32 (8.3)
CD ₄ Count of those not started use of ART	< 200	2 (6.25)
	200-350	7 (21.87)
	>350	23 (71.87)
Duration on ART	<1 year	44 (15.22)
	Between 1& 3 years	76 (26.29)
	>3 years	230 (79.58)
ART use	Adhered	289 (82.1)
	Non-adhered	63 (17.89)

5.3 Variables associated with adherence to use of ART

Socio-demographic characters found to determine adherence of PLWH to use of ART were sex of the patients, religion and ethnicity. According to the response from PLWH involved in the study, adherence of female participants to ART use were significantly lower (P=0.023) than male. Likewise, catholic religion follower respondents were fewer adherences to ART use than other religion followers. With regard to ethnicity, respondents from Nuer were less adhered (38.46%) to ART use than respondents from other ethnic groups. Respondents from Anguwa ethnic group had better adherence to ART use (Table 5).

Table 5 Association of socio-demographic characteristics of respondents and adherence to ART use in Gambella hospital ART clinic

Variable	Alternative	Adhered	Non-adhered	AOR	P. value
Age	18-29	54 (18.68)	13 (20.6)	1.036 (0.82-1.3)	0.76
	30-40	177 (61.24)	24 (38.1)		
	41-50	47 (16.26)	18 (28.6)		
	>50	11 (3.8)	8 (12.7)		
Sex	Male	167 (57.78)	28 (44.4)	1.945 (1.09-3.45)	0.023
	Female	122 (42.21)	35 (55.6)		
Education status	Illiterate	52 (17.99)	15 (23.8)	1.023 (0.99-1.06)	0.173
	Elementary	80 (27.68)	19 (30.2)		
	High school	68 (23.5)	10 (15.4)		
	College & above	89 (30.8)	19 (30.2)		
Marital status	Single	133 (46)	19 (30.2)	0.88 (0.73-1.06)	0.17
	Married	78 (27)	16 (25.4)		
	Divorced	51 (17.54)	16 (25.4)		
	Widow	26 (9)	12 (19)		
Religion	Orthodox	74 (25.6)	15 (23.8)	1.42 (1.08-1.87)	0.013
	Catholic	49 (16.95)	13 (20.6)		
	Muslim	62 (21.41)	12 (19)		
	Protestant & others	104 (35.98)	23 (36.5)		
Occupation	Farmer	31 (10.72)	7 (11.1)	1.03 (0.8-1.32)	0.815
	Merchant	40 (13.8)	4 (16.35)		
	G/employer	116 (40.14)	27 (42.9)		
	Student & others	102 (35.29)	25 (39.7)		
Ethnicity	Anguwa	105 (36.33)	16 (25.4)	1.42 (1.03-1.96)	0.031
	Nuer	52 (18)	20 (31.7)		
	Magang	22 (7.6)	8 (12.7)		
	Komo and others	110 (38)	19 (30.2)		

5.4 Factors affecting use of ART

As the result shown in table 6, those PLWH were not adhered to use ART because of different cultural practices. Some of these cultural practices were respondents (60.9%, n=234) perception about toxicity of ART, interference of ART use on daily activities (24%, n=92), use of traditional

medicine as alternative treatment (21.6%, n=83), religious prayers (21.4%, n=82), and nonconductive time for ART use (12.2%, n=47) (Table 6). Significant differences were observed among respondents believed on toxicity of ART (P=0.015), interference of ART use with daily activity (P=0.026), those prefer traditional medicinal treatment and prayer to over ART use as a remedy for the HIV infection (P=0.044). Although, other variables such as discrimination and stigma, Lack of enough consultancy on use of ART, ART use disclosure of privacy, Accessibility of ART in the hospital and ART use interfere users privacy were suggested as a potential cultural practices affect ART use, significant differences were not observed (Table 6). This finding was supported by responses from the health professionals (n=5) working in the ART clinic. All of them were strongly agreed to the potential of the cultural practices on affecting ART use among PLWH (Table 6)

Table 6 Cultural practices affecting use of ART by PLWH at Gambella Hospital ART clinic

Variables	Alternative	Proportion (%)	P. value
ART is toxic to use	Yes	234 (60.9)	0.015
	No	150 (30.1)	
ART use interfere daily activities	Yes	92 (24)	0.026
	No	292 (76)	
ART use interfere users privacy	Yes	91 (23.7)	0.188
	No	293 (76.3)	
Miss use of ART	Yes	341 (11.2)	0.371
	No	43 (88.8)	
Use of traditional medicine as alterative treatment	Yes	83 (21.6)	0.000
	No	301 (78.4)	
Religious prayer is better curing than ART	Yes	82 (21.4)	0.000
	No	302 (78.6)	
Time of ART use	Yes	47 (12.2)	0.044
	No	337 (87.8)	
Accessibility of ART in the hospital	Yes	291 (75.8)	0.168
	No	93 (24.2)	
Disclosure of HIV status	Yes	79 (20.6)	0.169
	No	305 (79.4)	
Lack of enough consultancy on use of ART	Yes	344 (88.6)	0.25
	No	40 (10.4)	
Discrimination and stigma	Yes	84 (21.9)	0.94
	No	300 (78.9)	

6. Discussion

In Ethiopia the overall adult HIV prevalence was estimated to be 1.1% in 2015 (EDHS, 2015). The prevalence was varying from 6.5% in Gambella region, 4.9% in capital city, Addis Ababa and lowest, 0.7% in southern nations, nationalities people region (EDHS, 2015). Many factors are attributed for the high prevalence rates in the region, including low levels of male circumcision among certain ethnic groups (Szabo and Short, 2000), migration flows and sex work in areas of commercial farming (Family Health International, 2002), polygamy (Molla *et al.*, 2013) mining and major roads connecting Gambella to western Ethiopia and South Sudan (Ethiopian News Agency, 2009).

Major determinants of HIV transmission in the study area were polygamy, widow inheritance, early marriage, male uncircumcision, weekend parties, cutting of fore head by Nuer ethnic group and taking out the lower tooth in Anguwa and Magang ethnic group. Use of traditional medicinal plants and prayer than use of ART, fear of ART toxicity and thinking of use of ART interfere daily activities were suggested as factors affecting use of ART. Adherence of PLWH to ART was affected by socio-demographic characteristics.

From the other cultural practices supported by different literatures there are cultural practice peculiar to the community, called “Depho” in magang ethnic group, where young girls and boys at the age of 13 years are encouraged to construct their own hut and live independently, where they might have the opportunity to accept visitors of the opposite sex, have sexual relationships and engage in substance abuse (personal communication). This phenomenon could be potential factor that could contribute for the high transmission of HIV in this region.

The prevalence of highest number of female PLWH attending ART clinic does not necessary show that the number of female infected with HIV is higher than male. Because male HIV positive may not attend the ART clinic due to socio-cultural and other factors. This finding is in agreement with reports from other studies (Mabala, 2006; UNAIDS, 2012). This is partly due to the fact that women usually infected at young age from older men who are more likely to be HIV-positive as evidenced by early marriage was one of the contributing factors for the high

transmission of HIV in the study areas. Other variables could be responsible for the higher risk of women to HIV infection are biological differences between male and female, where the virus can stay longer hours in genitalia of women and able to enters the bloodstream via tiny abrasions occur during intercourse (Ackermann and Klerk, 2002). In addition, women don't have access to information about HIV/AIDs, they have little or no power to negotiate for safer sex (Duffy, 2005), financial dependence of women to male partner could make the males to have unsafe sex (UNAIDS, 2012), physical and sexual violence against women (UNAIDS, 2012) are among the very few factors contributing female risks to HIV.

According to EDHS report the overall polygamy status among currently married women in Ethiopia is 12% (EDHS, 2005). In the same report the highest polygamous union was observed in Gambela region (27%), followed by Afar, Somali and Benishangule Gumuz (accounting 21% in each) and the lowest in Amhara regions3% and Addis Ababa 3% (DHS, 2005). As polygamy is one of the major cultural practices in the study area, it could be one of the factors contributing for the high prevalence of HIV in the region. In this study significant number of PLWH engaged in polygamy (29.7%) and widow inheritance (19.8%), which is greater than reports by EDHS (2011), where 14% of men in the country, mainly among men from Somali and Benishangul-Gumuz are in polygynous unions (EDHS, 2011). Next to polygamy and widow inheritance, early marriage also had high contribution in transmission of HIV infection, 17.7% this is similar with study done by UNFPA (2012). As reported elsewhere and in the current study, male circumcision is believed to reduce sexual transmission of HIV in 60% (Auvert *et al.*, 2005), but it is rare in Gambella region (Patrick *et al.*, 2009). Generally in Ethiopia, 92% of men age 15-49 are circumcised. Circumcision is close to universal in most regions, except in Gambela and SNNP regions (EDHS, 2011).

Gambella region inherently owes inhabitants having different socio-cultural factors (Fanta and Worku, 2012). The other harmful cultural practices widely undertaking in the study area were weekend parties, cutting of Fore head and taking off lower tooth. PLWH enrolled in this study and health professionals working in the ART clinic replied that these cultural practices could be responsible for the high transmission of HIV infection in the study area. The Nuer ethnic group of Gambella region makes a marks or scars called “gaar” in local dialect. The marks are placed

on the forehead of male individuals only, not in female. This mark is used to as identical symbols which distinguish them from other ethnic groups in the region or from other tribes. They act as a prerequisite for marriage and joining or participation in the tribal or clan wars. Those who don't have marks on their face cannot either get marry nor participate in communal strife as they are considered too young regardless of how mature a person might be even if they might be well past their twentieth birthday (personal observation). During the process of making the mark on the forehead of male, people share all the equipment's used for piercing and cutting. Thus, potential blood contamination will occur, which could facilitate the transmission of HIV infection among the male in this ethnic group. Unlike in other regions of the country, in Gambella region there is a very high cultural practice of permanent front teeth extraction (Assefa *et al.*, 2005). This is also used as a marker for ethnic identity in the region (Assefa *et al.*, 2005).

In the region (Gambella) some risky cultural practices such as premarital unprotected sex at night dancing rituals, young girls engage in "jojde" (a picnic with the intention of meeting men to have sex in return for gifts such as cosmetics and dresses by young girls), weekend parties locally called "Changwad" organized by youth where they can freely have unsafe sex, were culturally excused (PPRCMG, 2014). These are among the factors contributing for the high prevalence and transmission of HIV infection in the region.

The advantage of antiretroviral therapy (ART) is to reduce HIV associated deaths (Ford *et al.*, 2016). The global ART coverage in 2015 was low, 40.6% in Africa and Middle East having the lowest coverage (19%) (Wang *et al.*, 2016). Developed countries had the highest coverage (67%), and in Sub Saharan Africa, with coverage of about 42% (Wang *et al.*, 2016). The ART coverage in Ethiopia in 2015 was moderate (52%) (WHO, 2013). In comparison to these reports, among PLWH enrolled in this study, 91.6% of them were already started use of ART. It is agreed that ART regimens require 70–90% adherence in order to be effective (Nachega *et al.*, 2010). Thus, the observed ART adherence in the study area was high. But very few PLWH although their CD4 count was very low, $<200\text{cells/mm}^3$, they haven't started the use of ART. The biggest challenge in ART use was discontinuation/non-adherence of the patients to ART use. Although the ART started PLWH were large compared to reports from other region, number of those non-adhered to ART use were relatively higher, 17.89%, than 2% reported in 2009

(Asseffa *et al.*, 2014). Some of the reasons they mentioned for not starting ART use were fear of toxicity of the ART, interference of ART use with their daily activity and privacy, and preference of traditional medicinal treatment and prayer than ART. Other factors affecting adherence to ART reported by other studies such as stigma and discrimination, accessibility of ART in the hospital, inadequate consultancy or poor relationship between patients-provider, disclosure of HIV status, and low level of support from other family members (Carr and Gamling, 2004; Halkitis *et al.*, 2005; Ayalu *et al.*, 2012) were not found as major factors.

Different study showed that gender is associated with adherence to medication and treatment (Catz *et al.*, 2002; Berg *et al.*, 2006). In this study female were less adhered to ART than male. This was supported by a review made from different similar studies (n=30/44 articles), where women less generally exhibit poorer adherence than men (Cathy *et al.*, 2011). Different studies indicated that reasons for poor adherence of women were due to depression (Miguez-Burbano *et al.*, 2008), young age (Plankey *et al.*, 2009), self-perception of abdominal fat gain (Plankey *et al.*, 2009), and ART of six or more pills per day (Vaz *et al.*, 2007), and sleep disturbance (Phillips *et al.*, 2005).

Also in this study religious prayer was one of the factors contributing for the poor adherence of PLWH to ART. This finding was supported by reports from Uganda and United States of America where, religion is one of the most supported values and it has been noted that in some HIV/AIDS patients' beliefs in divine healing contributes to poor adherence to ART treatment in Uganda (Parsons *et al.*, 2006; Wanyama *et al.*, 2007). Indeed, religion can influence people's health, both positively and negatively (Pargament *et al.*, 1998). On the positive aspects, research has shown that religion and religious behaviors help people to cope with chronic diseases (Koenig *et al.*, 2001), while on the negative side, it has been associated with beliefs in false spiritual healing leading to poor adherence to treatment (Wanyama *et al.*, 2007).

On the other hand use of traditional medicinal for treatment of HIV infection was reported as a factor affecting use and adherence of ART. Similar practices are reported from chines people who use traditional medicinal herbs instead of ART to enhance their immune function, to treat associated symptoms, to improve their quality of life, and to reduce side effects related to medications (Liu, 2007).

7. Conclusion

Cultural practices such as polygamy, widow inheritance, early marriage, male uncircumcision and some other peculiar cultures to the study groups such as weekend parties, cutting of fore head, and taking out the lower tooth were found to contribute for the high HIV transmission in the study area. Some of the PLWH were not started or non-adhered to ART use. Use of traditional medicinal plants and prayer than ART, fear of the toxicity of ART and thinking that use of ART interfere daily activities were suggested as factors affecting use of ART.

8. Recommendation

A recent reports from Federal ministry of Health of Ethiopia showed that HIV/AIDS epidemic is starting. Also Gambella region is one of the most affected regions in the country with HIV infection. Thus, activities on cultural practices contributing for high transmission, primary prevention and re-vitalization of consultancy services for PLWH on ART use is very important. Also concerned bodies such as regional government and health bureau's should work/support activities that could alleviate the harmful cultural practices that increase vulnerability of the community to the HIV infection. The regional Governments should employ qualified healthcare personnel's, who can also be deployed to teach the rural people positive cultural practices that will protect them from contraction of HIV/AIDS in the study area. In order to ensure adherence to treatment and retention of PLWH, it is important to understand multiple barriers that patients face and developing interventions that overcome these barriers. Thus, health bureau in general and health professionals in particular, should make a consistent monitoring of PLWH under ART and address potential factors affecting the adherence. Also further studies on assessment of other potential cultural practices facilitate transmission of HIV/AIDS and interfere use of ART must be conducted in the region.

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