Department of Economic History
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Demographic, socio-economic and cultural determinants of HIV in Ethiopia

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Abstract

High prevalence of HIV/AIDS has been the most challenging problem in developing countries, especially in sub-Saharan Africa countries since when the epidemic is identified in the region. Ethiopia is classified in this region, where wide spread of HIV/AIDS currently manifested and hard hit by the epidemic .The prevalence rate is estimated to be 2.3% in country level, 7.8% in towns and 0.9% in rural areas. The aim of this paper is to identify the main factors that keeps the prevalence of HIV/AIDS at High level and identifying which factor(s) is/are attributed to wide range discrepancy between rural and town areas of Ethiopia based on the Ethiopian Demographic and Health Survey of 2005 (EDHS) data sets. Logistic regression is employed for analysis and selected socioeconomic, cultural and demographic variables are included in the analysis to point out the main factors that has a significant impact on the epidemic of HIV. The result shows that marital status, age circumcision, male employment status and female education and wealth have found a significant effect on the prevalence of HIV in Ethiopia..

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Key words: HIV/AIDS, sub Saharan Africa ,logistic regression ,cultural socio economic and demographic variables.

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1.INTRODUCTION

AIDS is a diseases which is caused by a virus called human immunodeficiency (HIV), that weakening the immunity of a person. HIV/AIDS has firstly recognized in 1980's, since then the epidemic is spread out rapidly all over the world. The trend of the number of people living with HIV AIDS is growing substantially from year to year and reached to high to its high level. According to the US Global Health Policy report , the number of people living with HIV in the world is estimated to be 33,400,000, and more than 2 million people have died due to this epidemic in the year 2008 (UNAIDS 2008).

Many scientists and health researchers have been conducting different researches in different times to stop the epidemic by developing medicine or vaccine , however, no one could be successful in developing the medicine or vaccine that potentially protect or cure human beings who are infected by the this disease. Although much efforts and money have been spending in controlling and preventing the epidemic, it is still a serious problem all over the world especially in the third world countries. Since the medicine that can cure HIV AIDS couldn't discover yet, almost all countries in the world have been focusing on awareness raising tasks of how people can protect themselves being infected by this diseases.

Different researches reveal that there is a wide discrepancy among in developed and developing countries, in prevalence rate and main mode of transmission of HIV AIDS. In most developed countries homosexual sex and intravenous drug injection are usually mentioned as to be the main mode of the transmission of the pandemic where as, on the contrary in developing countries heterosexual sex is stands as the main and prevalent mode of transmission of the HIV/AIDS. Different data sources reveal that the prevalence rate of the pandemic is vey high in developing countries as compared to the first world countries. Among developing countries, sub-Saharan African region is the most affected area with this pandemic. Let alone other developing countries , according to WHO estimates of 2002, sub-Sahara region only accounts about more than 67.7% of the total people living with HIV AIDS all over the world(WHO 2002).

Ethiopia is categorized in the sub- Saharan Africa countries which hard hit by the HIV pandemic and substantial number of infected people have been residing. The estimated prevalence rate of HIV AIDS in Ethiopia has got different estimates among different surveys. For example, the estimate of prevalence rate from EDHS's in 2005, indicates that 1.4% in country level 6 % in urban and 0.7 % in rural areas (EDHS 2005).Federal Ministry Of Health of Ethiopia (FMOH) data base of ANC survey for the year 2005 shows that the estimated prevalence rate is 3.5% ,10.5% and 1.9% in country ,urban and rural areas of respectively. By reconciling these two estimates, the Federal HIV/AIDS Control Office (FHAPCO) estimates a single figure that are reached to consensus on different international organization which works on HIV. According to this report the rate of prevalence in the year 2005/ 2006 was 2.1 %, 7.7% and 0.9% in country ,urban and rural areas respectively. The current estimate of prevalence rate is 2.8% in country level and it is 9.3% in town and 1.4% in rural areas (FMOH data base 2009) . General trend of prevalence rate is varies across each year and each region with in the country. The ANC survey [1] shows that In the year between 1997- 2000 the high prevalence rate is recorded (4.5%) and shows a slight decline in the consecutive 5 years starting from 2000 to 2005 and reaches to 3.5% and it shows nearly a stable trend afterwards (see fig 1.1).

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[1] *ANC survey is conducted in selected hospitals and regions by testing the blood of pregnant women who is attending antenatal care and is used for proxy for the prevalence rate for both sexes.*

The figure of national prevalence rate overlooks the heterogeneities among different regions and place of the residence(urban and rural) , when we look at individual regions of Ethiopia there is a high range of differences among them, it ranges from 0.2% (SNNP) to 6 % (Gambela region)(EDHS 2005).The disparity between the regions prevalence rate is depend on different socioeconomic , cultural and demographic factors that are fuelling HIV prevalence of a specific regions. Although the prevalence rate of the epidemic is low at national level as compared to other many of sub-Saharan African countries, the number of people living with HIV is very enormous at a country level and According to MOHE 2005 report estimation, HIV infected population is reached to1.32 million which stands Ethiopia in the top 15 countries in the world which have ranked by their high number HIV infected population.

Currently, the government of Ethiopia along with many international and national NGOS and stakeholders has actively participated in the process of mitigating the prevalence rate of the epidemic. National HIV/AIDS council secretariat which is headed by the president of Ethiopia and HAPCO (HIV/AIDS preventing and controlling office) are the two main governmental organizations which are established in the aim of preventing and controlling of the pandemic at national level. The health policy of Ethiopia is focusing on prevention of diseases than cure, therefore it is usually focusing on identifying the main factors or causes that will facilitate the prevalence of diseases and take measures from their sources. The first concern of this paper is to identify some demographic, socioeconomic and cultural factors that determine the prevalence of HIV. variables (factors) that determine the prevalence of HIV classified as demographic, socioeconomic and cultural determinants as shown below:
1)Demographic determinants, sex of the person, age and marital status
:2) Socioeconomic determinants poverty ,level of education , occupation , women empowerment , exposure to the media, place of residence and employment status
3) Cultural determinants: religion type, circumcision, age at the first marriage, and premarital sex, sexual behaviour. This categorization will be used in this paper afterwards for analysis.

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Since Ethiopia is a home of people who have many and different cultures traditions, and ethnic groups with various and distinct economic and social background, big disparities and heterogeneities of social and economic status is observed with in a country. These wide differences of socioeconomic ,cultural and other related variations among place of residence will in turn may affect the rate of prevalence of HIV and create a difference in the spreading of the pandemic among rural and urban and region with in a country. By considering and basing these differences, an attempt will be made to identify the factors that are associated with discrepancy of prevalence rate which manifested currently in urban and rural areas of the country.

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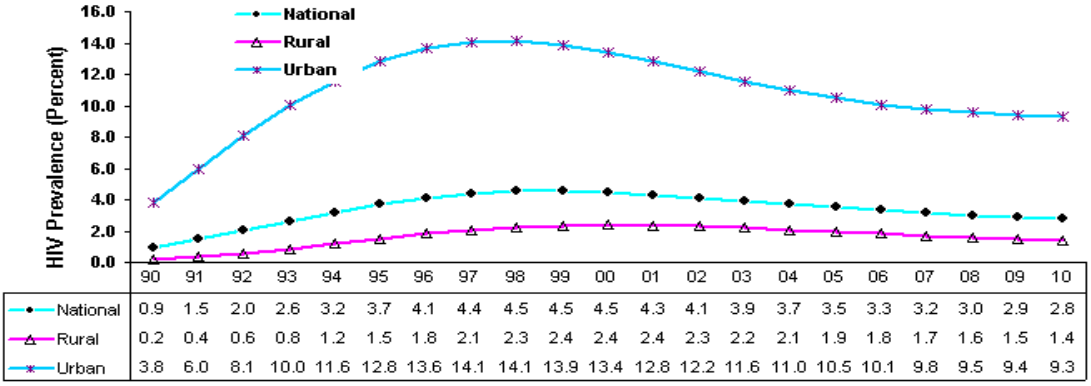
Figure 1 : Estimated and Projected HIV Prevalence By Year
Adult Population 15-49, Urban, Rural, and Total Country, 1990-2010



	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10
National	0.9	1.5	2.0	2.6	3.2	3.7	4.1	4.4	4.5	4.5	4.5	4.3	4.1	3.9	3.7	3.5	3.3	3.2	3.0	2.9	2.8
Rural	0.2	0.4	0.6	0.8	1.2	1.5	1.8	2.1	2.3	2.4	2.4	2.4	2.3	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4
Urban	3.8	6.0	8.1	10.0	11.6	12.8	13.6	14.1	14.1	13.9	13.4	12.8	12.2	11.6	11.0	10.5	10.1	9.8	9.5	9.4	9.3

Year and Estimated HIV Prevalence Values in Percent

Figure 1.1 estimated and projected HIV prevalence by year Adult population 15-49 , Urban ,Rural ,and Total Country ,1990-2010.

(source :adapted from FOMH data base).

Different researches reveals that a difference in the nature of risk factors in some areas are attribute to the difference of spread of HIV/AIDS among regions or societies. Demographic, socioeconomic and cultural differences of societies will in turn alter the rate prevalence of HIV/AIDS differently among these societies. For example, Population movements, widespread of prostitution in towns, and lack of education will facilitate the spread of HIV/AIDS among urban areas than rural areas (Kloos, et al., 2007).

1.1 AIMS AND SCOPES

The Government of Ethiopia, together with many stakeholders and NGO'S has been performing many tasks in prevention and controlling of the prevalence of HIV AIDS starting from the year 1984, since when firstly the epidemic has recognized in Ethiopia. However, due to wide range disparities and heterogeneities of ethnic, cultural and socioeconomic factors along with some obstacles like: budget constraint, problem in allocating the major factors that attributed for HIV infection and other related problems, the effort of prevention and controlling of the pandemic couldn't go far as expected. Hence, the prevalence rate of the pandemic continuing being high in a country especially in urban areas for a long period of time.

[2] *demographic, socioeconomic and cultural differences among rural and urban areas of Ethiopia will be more elaborated and discussed in background section of this paper .*

The aims of this paper are to asses and identify the main or prominent factors that contribute for the prevalence of HIV AIDS in the year 2005 and try to figure out the reasons why the prevalent rate get high discrepancies among rural and urban areas of Ethiopia by tracking different demographic socioeconomic and cultural variables which are attributed to the spread of HIV AIDS. The variables which will be used for analysis are selected from EDHS 2005 survey which is conducted at national level in the year 2005. The EDHS collected different datasets at house hold levels on different demographic, socioeconomic cultural and health aspects of Ethiopia which are considered to be the factors that fuelling the prevalence of HIV AIDS at regional and country level. The focus group of this paper is eligible individuals(women aged 15-49 and men 15-64) who are testing for HIV AIDS and the analysis will be conducted based on this group with an assumption that these individuals are the representative of all women and all men in the respective age group. So far, only two consecutive demographic and health surveys are conducted at country level in Ethiopia. From this surveys, only EDHS 2005 survey collected data on prevalence of HIV AIDS, therefore it becomes impossible to compare and contrast the two surveys and see the consistency and discrepancy of the factors that fuelling the prevalence rate through time.

1.2 RESEARCH QUESTIONS

In this paper it is trying the answer two main research questions:

1) Which factors were attribute for the prevalence of HIV AIDS in Ethiopia in 2005?
2) Which were the more prominent one among the variables listed in demographic ,cultural and socioeconomic factors.

An attempt will be made to answer these research questions by considering the real setup of cultural demographical and socioeconomic differentials of the country that facilitate or reduce the prevalence of the epidemic. Therefore this paper will focuses on variables which are expecting to be the factors and fuelling agent for the prevalence of HIV AIDS in Ethiopia at national level. Some of the variables employed and will be analyzed are categorized below as follows:

1) Demographic factors which include: gender, age and marital status.
2) Socioeconomic factors: education, employment status, place of residence (urban and rural), wealth status as a proxy for poverty, , mobility of men and
3) Cultural factors: early marriage and having many sexual partners, and socio biological factors like sex difference and male and female circumcision

The above factors will be operated with the proximate factors like lack of awareness, condom usage to determine factors that attributed mainly for the prevalence of HIV in Ethiopia.

1.3 OUT LINE OF THE THESIS

The paper is outlined starting from the background which will discusses Ethiopia's general settings of cultural socioeconomic and ways of living giving a great attention to urban and rural areas of the country. In this section economy, population political and economic status of the current situation of the country also will be discussed in general terms. Since the main objective of the paper is to point out prominent factors that most contribute for the prevalence of HIV AIDS , the prevalence rate and trend among different urban and rural areas will discuss by constructing theoretical frame work schemas that shows the interrelation ship between the prevalence rate of the epidemic and selected variables. This theoretical framework will also be forwarded in statistical modeling and analysis of statistical results.

The next subsection, after setting the background of the paper, will be formulating of statistical modeling that serves for analyzing the relation ship between the independent variable being (HIV positive or negative) and the selected explanatory variables (demographic ,cultural ,socioeconomic and biological variables which are stated above), by using logistic regression model. Hypothesis will also be formulated in this section by re considering the theories set at the back ground section. Then after by examining and identifying the explanatory Variables that significantly affecting the prevalence rate, an attempt will be made to answer the first research question. And based on this outputs further analysis will be made to track and identify the factors that makes the prevalence rate of the epidemic high in urban areas and low in rural areas by reconsidering cultural socioeconomic and demographic differentials of urban and rural areas of the country .

The over all discussion and conclusion will be presented on the last section based on the statistical analysis out puts that are computed under data analysis section and it is also try to compare and contrast the empirical out puts with other literatures which have written on this issue so far.

2. BACK GROUND

2.1 GENERAL SETTING

Ethiopia is a land locked country which is situated in the horn of Africa, With the coordinates of 8 00 N, 38 00 E, the total area is 1,127,127 sq km: and it is bordered on the countries Eritrea, Djibouti , Somalia, Kenya, and Sudan. Due to a magnificent altitude difference with in the country the temperature of the country ranges from below 0°C to(simen mountains) to the hottest temperature zone in the world (Danakil Depression) 48 °C . Although , the country is categorized under least developed countries and substantial proportion of the people are living under poverty level , it is endowed with diverse cultural heritage, various ethnic groups who speak more than 80 different native Languages , its own unique alphabet , diverse climate, and known by maintaining of its independence for a long period of time even during the African era of colonialism.

Ethiopia is divided into 9 regions and 2 city administrative. Each regions except the regions of two city administrative areas lead by their own head of president of regional center . each and every region has the right to decide and lead its people with out the interference of the central government of the country ,except some sensitive issues like military and monetary polices which are managed at country level. A wide range heterogeneities disparities of cultures, traditions living standards is shown inter and intra regions of the country . The largest proportion of the country's population was found in Oromia Region(36.7%), followed by Amhara region (23.3%) and SNNP region. . The lowest proportion was in Harari Regional State which constitute 0.2% (CSA 2007).

.According to Ethiopian people and housing census 2007, Ethiopian population soars to 76.9, million with annual growth rate of 2.6 million people per year it shows an increase of 23.4 million people as compared to the previous census which were conducted before 14 years ago. Nearly 62 million people, or 83.8 percent, live in rural area and the rest 16.2 percent of the population living in urban areas. The percentage distribution of sex of male and female is 50.5 % and 49.5% respectively and the proportion of working age(15-64) ,and the childhood (0-14) and elderly (above 65 years) is 51.9 % , 45% and 3.2% respectively (2007 CENSUS REPORT). The most dominant religion in Ethiopia is orthodox Christian, followed

by Muslim protestant and traditional religions. There is a discrepancies among the proportions of the religion followers in urban and rural areas. The proportion of most Muslims and traditional religion followers are residing in rural areas, in the contrary most of orthodox Christian are living in urban areas.

Ethiopia is one of the least developed country where rampant Poverty is manifested . According the World Bank 2006 report , the country's per capital income is US $ 110 per annum .The economy of the country is mainly depend on agriculture which accounts about 54% of the Gross Domestic Product (GDP) and engaged 80% of the population from whom a large proportion reside in rural areas of the country and this sector accounts to 90 % of the total export of the country . In Ethiopia agricultural practices are very backward and seasonal and therefore less production is maintained in each year. Since many lands are rain fed , deforested and highly grazed and over populated most of the Ethiopian history associated with , circular famines and droughts. Since the year 1975, the first worst drought, had occurred. After this instant, Ethiopia has been affecting repeatedly by famines epidemics and droughts due to both natural and artificial causes. Even in the very recent year of 2009, Ethiopia has been facing shortage of food and droughts. According to ministry of Agriculture and rural development of Ethiopia (MoARD), Now a days nearly about 19.5 % of the total population is exposed to food insecurity who needs humanitarians support.

The impact of HIV AIDS is enormous in the countries where high prevalence rate is manifested. Together with rampant Poverty, high rate of unemployment, repeated drought, gender inequality and illiteracy, the epidemic of HIV AIDS has devastated the society of Least developed countries demographically, economically and socially. Now a days substantial number of children lost their parents and became orphaned due to this wide spread of HIV AIDS and many are forced to quit their job and leaving the working force due to the health problems related to the epidemic ,and many others exposure to death ,extreme poverty and health problem. In Ethiopia, 4.6 million children (which accounts about 13 % of the total Ethiopian children of the country) are missing one or both parents and became orphaned (UNICEF) . When we look at demographical impact of HIV AIDS in Ethiopia, it decreases the life expectancy of the people of the country. According to AIDS in ETHIOPIA database, the life expectancy of the society is decreased nationally from 52 years in the year 1986 when the epidemic is first detected to 49 years in the year 2000 and shows a slight improvement in the year 2005 and reaches to 50.4 years (MOH data base).

2.1.1 URBAN VS. RURAL AREAS OF ETHIOPIA

To have a clear over view of differential and inequality of urban and rural resident of Ethiopia it is reasonable to look the different settings of these place of residences separately. Therefore, in this sub section of the paper social and economical differentials of resident of urban and rural areas of Ethiopia will be discussed. The aim of this subsection is to figure out some socioeconomic and cultural differentials that in turn will affect the rate of prevalence of the epidemic of HIV AIDS among rural and urban areas.

Ethiopia is one of the country where Magnificent differences in living standard and other socioeconomic characteristics is observed among urban and rural areas .85% of the total population is living in rural areas and this people is dominantly depend on farming and grazing of animals in a very traditional and backward ways . The rest 15% of the population is residing in urban areas among this 25% living in Addis Ababa , the capital of Ethiopia .

2.1.1.1 *Poverty*

Poverty is more persistent and rampant in rural areas of Ethiopia as compared to that of urban areas. Most of rural dwellers are peasants and they produce their food by using very backward and traditional way farming practices. Each peasant has less than two hectares of land which is eroded and unfertile due to extensive ploughing for several years. Since almost all the farming is rain fed , the production is totally depend on the availability and scarcity of rain. Therefore, these areas are highly vulnerable to drought and food insecurity and it has been entertained severe drought and famines repeatedly for the past long years.

According to wealth index [3] criteria of EDHS, among the poorest living in the country 99.3% living in rural areas only 0.7 % live in urban areas. On the other side, 74.7% of the richest house hold of the country live in urban and only 25.7% live in rural areas.(JOHN ULIMWENGU ,2009).The access of clean water and sanitation infrastructures is generally poor in the country level ,and it is worse in rural areas. Only 22% of Ethiopians have access to improved drinking water coverage, the urban and rural coverage is 81% and 11% respectively. Concerning to proper sanitation system the national ,urban and rural coverage is 13, 44 and 47 percent respectively(WHO and UNICEF 2006).

Infrastructure and health coverage is also very limited in rural areas .Most the hospitals and health centers and other basic and important infrastructures like (road, telephone access, and transportation services) are accumulated in towns and cities. The patients in rural area are forced to move many kilometers to get medical treatment. Due to the farness of the health centers from residential areas and afraid of medical costs; substantial number of people are trying to treat themselves traditionally.

2.1.1.2 Gender Inequality

Most of rural areas of Ethiopia are horrible places for women. They are suffer from harmful traditional practices of early marriage , abduction and circumcision . In addition to this many tiresome and waist breaking chores like collecting of fire woods from forests, fetching water from a long distant and preparing foods are solely left to women.

The constitution of Ethiopia is criminalized several harmful traditional practices such as early marriage, marriage by abduction or forced marriage, and female circumcision. However , in practice this harmful traditional practices are very common in rural areas and it is widely accustomed by this society . Concerning to marriage, rural women has no power and right to select their husband by themselves. Substantial number of marriage is consummated by the consent of the family with that with out notification of the women. More than this many women in rural areas of Amhara region [4] are forced into marriage at their early age of 10 to 12, 48% of women are married before the aged of 15 [5].

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[3] *wealth index includes household assets such as type of flooring, ownership of refrigerator, water supply, type of vehicle, sanitation facilities, persons per sleeping room, electricity, ownership of agricultural land, telephone, radio, and domestic servant*

[4] *the second populous region among 11 regions which are found in Ethiopia.*

[5] *http://www.buzzle.com/articles/fidh-report-awful-life-conditions-of-tyrannized-women-in-abyssinia-fake-ethiopia-denounced.html*

Marriage by abduction and domestic violence is also a common practice in Ethiopia particularly in rural areas. Considerable proportion of marriage in the country is taking place by abducting a woman and forced her in to marriage. Similarly, in most of the household the husband has a full right to lead his house hold and it is usually nominated as the head of the house hold. Substantial Wives have no right or has a very limited right to decide on family issues. On the other hand, in the society it is widely believed that a husband has full right to punish and put his wife under his control . A study conducted by the World Bank in July 2005 show that 88 percent of rural women and 69 percent of urban women believed their husbands had the right to beat them (http://www.buzzle.com).

2.1.1.3 *Educational Attainment*

Education is one of the basic and crucial factors to bring about development and alleviating poverty through innovation and human capital formation. More than it is pointed out that education has an impact on prevention of diseases and building of a healthy generation . However, due to various reason most of developing countries in the world couldn't be benefited from it. These countries are characterized by low enrolment rate and high dropout rates of school. Currently every county in the world are struggling to achieve millennium development goals by increasing enrolment rate and completion of elementary schools, eradicating illiteracy and developing the quality of education. And many developing countries have brought about considerable progress in improvement of enrolment rates in the past decade. According to UN 2008 report , "the proportion of children in developing countries who have completed primary education rose from 79% to in 1999 to 85% in the year 2006" (UN 2008 report).

Sub-Saharan Africa, one of the regions which is lower enrolment and school drop out is currently manifested especially in primary schools. Even though significant improvement of enrolment rates have currently seen in the last few years, still out of " 75 million primary school age children remain out of school all over the world , nearly half of them are in Sub-Saharan Africa"(world bank 2004).

No exception is in Ethiopia, it is in the categorized under the countries where low enrolment rate, high school dropouts and grade repetition is widely observed. However, there is a scene of improvement in school enrolment rate following the millennium development goals campaign, but still much effort and resources is needed to make it universal in Ethiopia. According to the UNDP 2007 human development index report gross school enrolment and adult [6] literacy ratio is 49% and 35.9% respectively. The problem of low school enrolment rate, drop out and grade repetition is more prevalent and severe in rural areas as compared to that of urban areas. According to EDHS 2005 on average 65.5% of rural dwellers have never attend school as compared to the urban dwellers(23.5%). Similarly high rate of school drop out and grade repetition is revealed in rural areas than that of urban areas. The table below shows that the disparity of educational attainment ,school drop out and grade repetition among rural and urban areas of Ethiopia in the year 2005.

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[6] *The adult in the report represents individuals in the Age group 15 and above*

Place of residence	Educational attainment (in %)								School Drop out Rate(in %)					Grade Repetition Rate (in %)				
	No education		Primary		Secondary		tertiary		GRADE LEVEL					GRADE LEVEL				
	M	F	M	F	M	F	M	F	1	2	3	4	5	1	2	3	4	5
URBAN	16,3	30,7	33,8	27,6	41,1	31	8,8	4,4	1,1	3,1	2,8	3,6	4,7	4,3	1,1	1,3	2,5	0,7
RURAL	57,3	72,8	36,7	25,1	5,4	1,8	0,6	0,3	5	6,1	6,6	7,9	8,9	5,8	1,8	1,5	1,5	1,9

Source: adapted from EDHS 2005.

Table 2.1 the rate of educational attainment school drop out and grade repetition between rural and urban areas of Ethiopia ,2005.

2. 1.2 CURRENT STATUS AND TREND OF PREVALENCE OF HIV AIDS IN ETHIOPIA

Ethiopia is one of the sub-Saharan countries which have hard hit by HIV AIDS. The first HIV case was firstly detected in 1984 in Ethiopia, then after in the mid of 2003 there have been 1.47 million HIV infected people in Ethiopia (AIDS in ETHIOPIA 6th report, 2004). Although ,In the year 2005 the number of HIV infections is reduced to 1.32 million, Ethiopia is still classified among the most affected countries in terms of total number of cases (UNAIDS 2005). The prevalence rate of the epidemic has differences among sexes and place of residences. In 2005 the prevalence rate was 3 % among males and 4% among females at national level and it was 9.1% among males and 11.9% among females in urban areas of the country (MOH 2006).

HIV infections occur due to the transfer of blood, semen, vaginal fluid or breast milk from the infected to healthier person. There is different mode of transmission of HIV AIDS from one person to the other. Heterosexual sex, homosexual sex, Intravenous drug Use (IDU) [7], and breast feeding can be mentioned as the mode of transmission of the epidemic . The main mode of transmission is different from one region to the other. In most developing countries especially , in sub-Saharan African region hetero sexual practices is the prominent mode of transmission of HIV AIDS where as, in East Europe and central ASIA intravenous drug use and western Europe homosexual sex and intravenous drug user are the main mode of transmission(UN/WHO,2002).

Like most of sub-Saharan African countries the main mood of transmission of HIV AIDS in Ethiopia is heterosexual sex. About 87% of the transmission of the epidemic is caused by unsafe heterosexual sex (FMOH 2005)[8].

[7]*injection of drug into vein by using needles*

[8]*http://www.itacaddis.org/italy/index.cfm?fuseaction=basic_pages.basic_page&page_name=52*

during the first stage of the epidemic many prostitutes and truck drivers are highly affected. Persistent and wide range of stigma and discrimination of HIV infected persons is seen in Ethiopia. Considerable number of people are wrongly believe that HIV AIDS is a punishment from GOD and they associate it with improper sexual habit [9] (Nyblade, et al., 2003). Although recurrent and consecutive awareness raising tasks has brought about some attitudinal changes towards approaching and living with HIV victim persons still considerable persons couldn't change their wrong behaviour concerning to the epedemic.[10]

2.1.2.1 PLACE OF RESIDENCE VARIATION (URBAN vs. RURAL) AND HIV AIDS

The national prevalence rate of the pandemic overlooks the variations among regions and place of residence. There is a big discrepancy of prevalence rate inter and intra regions of the country. Gamblela region is the most affected region(6%) and Addis Ababa ,the capital city of Ethiopia is followed by 4.7% .Hareri and DireDawa regions are also among the regions where high prevalence rate is manifested , the prevalence rate in this regions are more than twice as much as compared to the national prevalence rate (CSA 2005). Among all regions of Ethiopia the SNNPR and Somali regions reveal lowest rate of prevalence rate HIV which is below the national prevalence rate. (EDHS 2005)

A wide discrepancy of prevalence rate has also seen between rural and urban regions of Ethiopia. Different data shows that the prevalence rate of urban areas are almost three fold of than that of rural areas (EDHS 2005, ANC survey).The trend of prevalence rate of HIV reveals sharp decline starting from the year 2000 in urban areas(World BANK 2008). However, the discrepancies of the prevalence rate among urban and rural areas are remains still very high(see fig 2.1)

Most of commercial sex workers are prefer to residing in areas where business activity is active in order to improve their working condition and widening the access of getting many clients. Since the main mode of transmission HIV AIDS in Ethiopia is heterosexual sex , towns which are situated in the main trade route and commercial sex is prevalent are the more affected and hot spot area of the epidemic . Analyzed data[11] from DHS confirmed that, Ethiopia's small towns exhibited higher prevalence of HIV among women than the bigger towns do (world bank 2008). According to the analysis the prevalence rate of HIV AIDS in small and major towns is 6.5 percent and 5 percent respectively.
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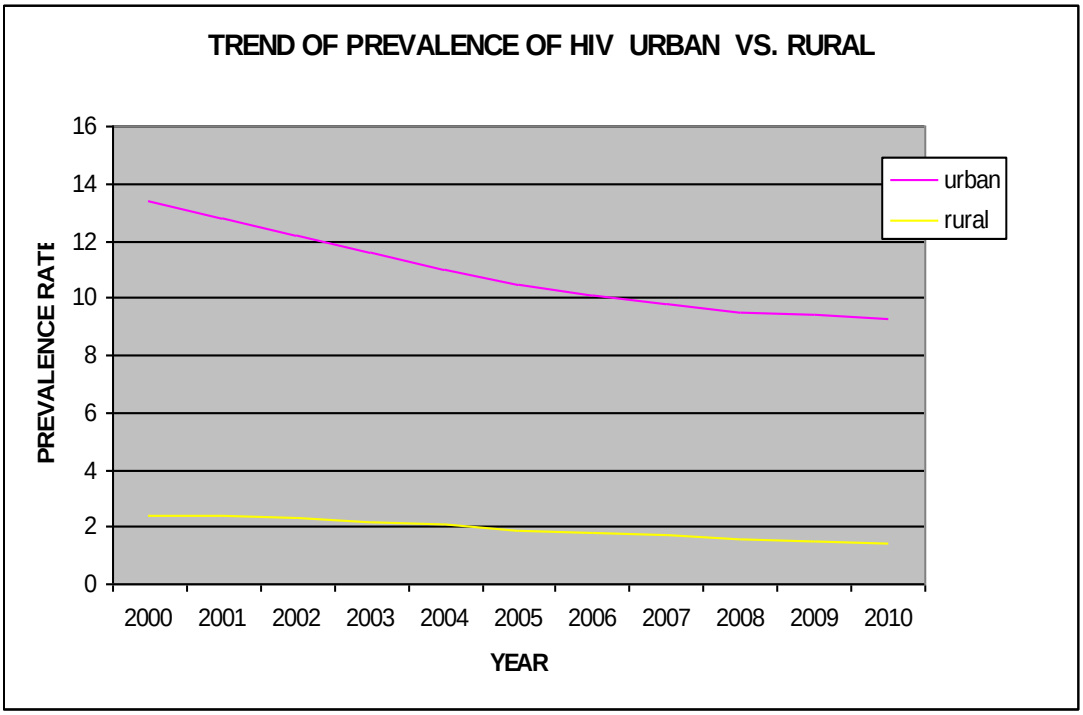
[9] *see http://www.unicef.org/infobycountry/ethiopia_30783.html*

[10] *http://www.savethechildren.net/ethiopia/key_issues/hiv.html*

[11] *data from DHS is analyzed and prevalence rate is calculated among small towns and large cities see (HIV/AIDS in Ethiopia – an Epidemiological Synthesis 2008)*



Source: adapted from ANC data base

Fig 2.1 The trend of prevalence rate of HIV AIDS in urban and rural areas of Ethiopia in the year 2000-2010.

2.1.2.2 TREND OF HIV PREVALENCE BY AGE AND SEX

Due to biological, social, cultural and traditional factors , women are more vulnerable to HIV AIDS than men peers. In Ethiopia, more women are affected by the epidemic as compared to that of men. According to the 2005 Ethiopian demographic and health survey reports the HIV infection ratio of female to male is 1.2 ,which is consistent to other sub Saharan African countries[11](EDHS 2005). Different studies and researches reveals that the discrepancies are arising from some biological ,socioeconomic and cultural factors that increase the susceptibility of women for HIV as compared to men [12].

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[11]*Female- to-Men HIV infection Senegal – ratio of 2.3 Guinea – ratio of 2.1 and Kenya - ratio of 1.9*

[12] *factors that determine the susceptibility of women has cussed in the theory subsection of this p*

The prevalence rate of HIV AIDS in a given age group is depend on the sex of the individuals of that group . For example, EDHS 2005 reveals that the most affected age group for female is different from that of male. According to the report the most affected age group for female is 35-39 where as for male 40-44. In general, the prevalence rate of HIV AIDS is high in the age group 35-44 in both sexes (EDHS 2005)[13.]

	% OF HIV POISTIVE	
AGE	WOMEN	MEN
15-19	0.7	0.1
20-24	1.7	0.4
25-29	2.1	0.7
30-34	1.5	1.9
35-39	4.4	1.8
40-44	3.1	2.8
45-49	0.8	0.0

Source : EDHS 2005

Table 2.2 Adult HIV AIDS prevalence rate by age sex of Ethiopia 2005.

In general, the data from all surveys show that there is a magnificent disparity of HIV prevalence rate among place of residences (urban vs. rural), sex and age group in Ethiopia. Poverty, gender inequality school drop out , low enrolment rate and experience of harmful traditional practices like marriage by abduction, female circumcision, early age marriage, are predominantly revealed in rural areas of Ethiopia as compared to urban. These disparities will serve as in the next sub section during developing a theoretical framework and the discussion part when empirical results analyzed.

2.2 THEORETICAL BACKGROUND

2.1.1 Theoretical Framework

Now days, the epidemic of HIV Aids has spread unevenly in the world. The prevalence rate of the pandemic is variable in different societies and regions. Some region of the world is highly affected by this pandemic, and in the contrary it is negligible in the other places. For example the society in sub-Saharan African region is hard hit by HIV aids and the prevalence rate is very high as compared to other regions in the world. Different Scholars figure out the factors that determine the prevalence rate of an HIV pandemic in a given society by examining some proximate factors that associate the prevalence of HIV with that of demographic, socioeconomic and cultural variables of a given society. The risk of incidence and prevalence of HIV Infection can be reduced or became spread out widely depend on cultural ,demographic and socioeconomic factors that determine preventing and mitigating ability of a given society(see Ethiopian society of population study ,2008, Desmond Choen,(2010) ,Bärnighausen, et al., (2010); Hailemariam and Lindtjorn (2007).

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[13] *the survey includes women age 15-49 and men age 15-59 (see EDHS 2005).*

In this subsection the relation between HIV infection and demographic, socioeconomic and cultural factors that may affect the risk of transmission of the epidemic will be discussed based on proximate –determinant theoretical frame work of Bonerma and Weir.

Many demographical and epidemiological studies are often accompanied by theoretical frame work to guide and visualize the relation between different explanatory variables and the epidemics of some disease. Further more, Collection analysis and interpretation of a certain data also need to be guided by the theoretical framework that explains the association between a given variables (Bonerma and Wier, 2005). " The proximate –determinants theoretical framework for factors affecting the risk of sexual transmission of HIV AIDS " , which is presented by Bonerma and Wier will be applied to study and asses the association between the main socioeconomical ,demographical and cultural factors that fuelling the prevalence of the epidemic of HIV in Ethiopia(See fig 2.2).

The proximate-determinant framework was first developed by Davis and Blake in around 1950, they constructed analytical frame work for the study of sociology of fertility by setting intermediate variables(factors affecting exposure to sexual intercourse , conception and gestation), through which any social factors affecting the fertility level .This framework was further developed by different researches; Bongarts, he replaced the term, " intermediate variables" which was used by Dabis and Blake with " proximate determinants ". And he figures out that the variation of the level of fertility can be decomposed in to some proximate determinants (marriage ,postpartum infecundity ,abortion and contraceptive methods). Next to Bongart, Mosley and Chen developed child survival frame work by using proximate determinants for fertility as a base. Then after it has been further developed and widen by different scholars at different times along with the proximate determinants.

In 2005, Bonerma and Wier has developed and presented a theoretical frame work that is helpful in the study and analysis of the distribution and determinant of HIV infection based on the "proximate–determinants theoretical frame work". As it shown below (fig 2.2) the underlying determinant variables link to the biological determinants through the proximate determinants. The underlying determinants (the socioeconomic, socio cultural and demographic factors) together with intervention programs[14] influence the proximate determinants. These proximate determinants have a direct effect on the biological determinants, which affect the incidence and prevalence of the infection, that will lead to disease and ultimately to death. Since the main focus of this paper is to identify socioeconomic ,socio cultural and demographic factors that are fuelling the prevalence of HIV/AIDS , we are discussing and stay focusing by following the sequence of the schema of the frame work and mainly giving emphasis for underlying determinants of the frame work. Additionally, the theories and discussion that we are going to tracking below are mainly focusing on the predominant mode of transmission (heterosexual sex) of HIV AIDS in most of the world especially in sub-Saharan Africa and specifically in Ethiopia.

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[14]*includes methods and practices that affect the transmission of* HIV *AIDS operating with proximate determinants.*

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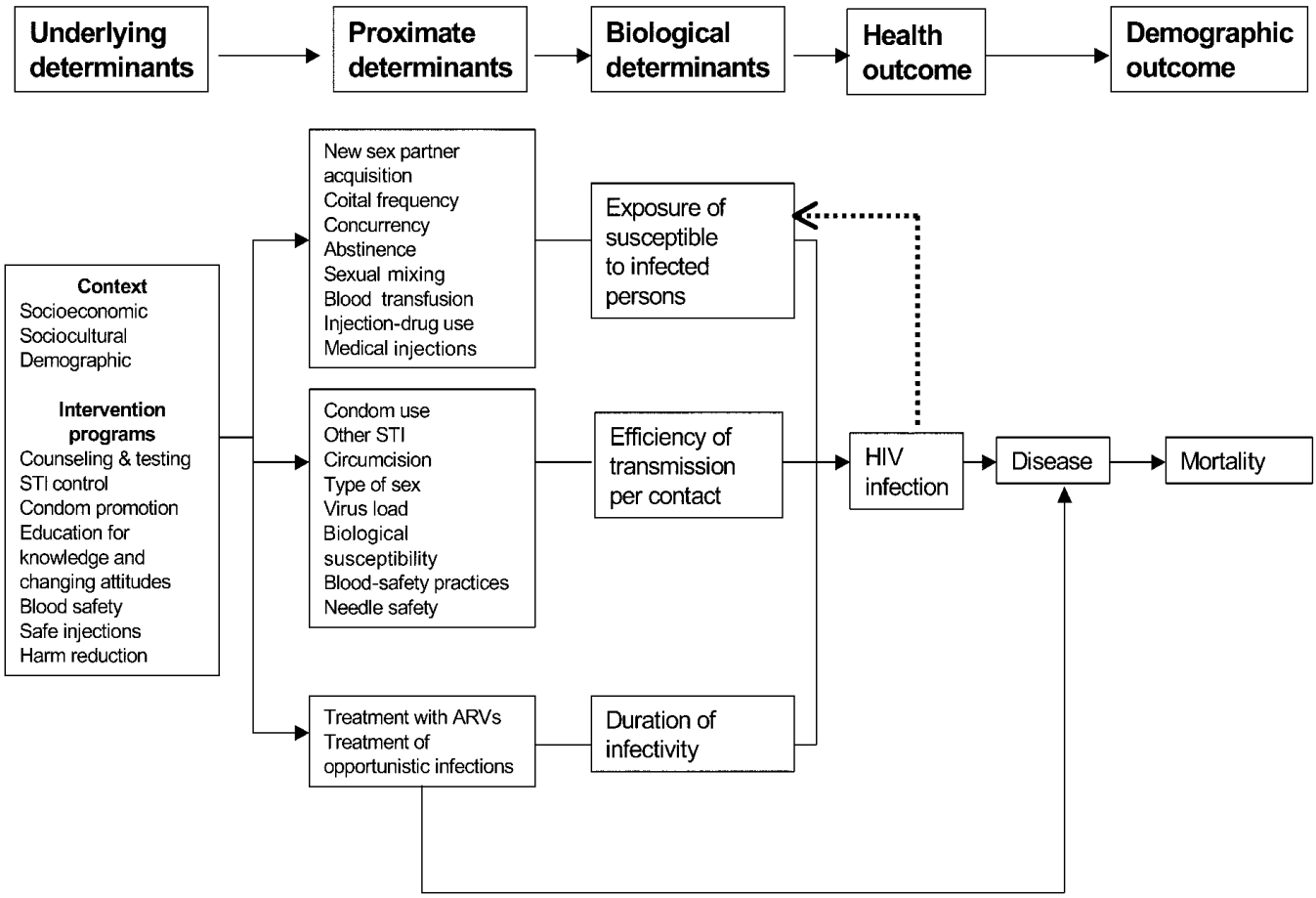

Source: Bonerma and Wier, (2005)

Fig 2.2 proximate –determinants theoretical framework for factors that affect the transmission of HIV AIDS.

The underlying determinants that include that termed as" context" and intervention programs are supposed to operate with the proximate determinants to determine the health out come of an individual as shown the above schema. Here, first over view of proximate and biological determinants will assed separately, and then their interaction with the underlying determinant will be discussed in the context of Ethiopia, based on the aim of the paper .

The proximate determinants in the proximate theoretical framework of HIV includes variables which are influencing by underlying determinants that determines the health out come of an individuals .The proximate determinants can be categorized in to three as: biological mechanisms determining the efficiency of transmission , physical barriers or practice that limit the dose of transmission of the virus that exposed to HIV andfactors influencing both. Under the *biological mechanisms of exposure* virus load, which is the

amount and concentration of the virus ,biological susceptibility of a person exposed to infection and infectious virulence of pathogens. *Physical barriers or practice* encompasses methods and practices that are used to prevent the epidemic by reducing the exposure to the virus ,these are condom , gloves and bleached sharp equipments . STIs included in the factors that increase both biological exposure and the efficiency of transmission of viruses.

Biological determinants are the basic components that determine the transmission and prevalence of an epidemic through three biological ways .These are the rate of exposure of susceptible person to infected person, the efficiency of transmission during exposures, which is determined by the proximate determinant of virus load[16], and duration of infectivity. The efficiency of transmission of the virus may be protected or reduced by using the proximate determinant of physical barrier and practicing. the biological component duration of infectivity of STIs has three stages as quoted by *Boerma and weir*" *The duration of infectivity is depend on the natural history of infection and divide in to an acute initial case during which virus loads are high ,a subsequent phase during which virus loads decrease and final phase which will increase again"(Boerma and weir ,2005 p-64).* The duration of infectivity will also be shortening by using some treatments.

Since the main objective of the paper is to figure out demographic socioeconomic and cultural variables that determine HIV prevalence in the context of Ethiopia and basing heterosexual sex as a main mode transmission of the epidemic, the above theoretical frame work can be summarized and work as follows based on this two premises:

HIV infection can be caused due to the transfer of blood, semen, vaginal fluids or breast milk from infected to healthier person. The transmission of these body fluids can be determined by two biological determinants: exposure susceptible to infected persons and efficiency of transmission per contact. The proximate deterimnants, aquisition of new sex partner, number of concurrent sexual partner, abstinence, blood transfusion, health care related injection serves to determine the exposure susceptible to infected persons. Similarly , efficiency of transmission is also determined by proximate determinant of :use physical barriers (e.g. condom) ,blood safety practices ,circumcision and STIs. The proximate determinant intrun also affected by underlying determinants.

The underlying determinants determine the risk of exposure, transmission and infection of HIV AIDS through sequential links of proximate and biological determinants as shown in the above schema. Demographic, socioeconomic and cultural variables are included under the underlying determinants that operate with proximate determinants to determine the prevalence of HIV. Socioeconomic factors are usulally related with building of attitudes of individual and creating a healthy enviroment through education and level of income. Education influence the the proximate determinants through raising of the awareness of individuals how protect themselves from different kind of diseases.

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[16]*the amount an concentration of HIV virus which is mainly found in fluids such as semen, genital fluid and blood(see Boerma and weir ,2005 p-64)*

Note: STIs- sexually transmitted diseases.

Education could be used to build awareness of individuals on different issues, by accessing and perceiving different information through reading and experience. For example education may help an individual to In the short and medium run, education will enhance the awareness of people how they can protect themselves from being infected by diseases and practicing of safety methods which are mentioning in the proximate determinants that determine the prevalence of HIV. perceive the nature and characteristics a certain diseases and develop some preventive strategies through browsing different information concern to this specific disease. In the other side, in the long run education will help one's society to eradicate poverty and other related risky factors, through innovation and increasing the level of income of individuals. Level of income is also affecting the prevalence of HIV through experiencing risky behaviours that exposed to the epidemic. Poverty is one of socioeconomic factor which is often associated with low level of income. Low –level of income (poverty) is usually mentioned as a driving force to risky sexual behaviours in the process of searching money that is used for satisfying basic needs. The impact of poverty on the prevalence of HIV ranges from direct causes of constraint of money to buy some protective barriers like (condoms), that can reduce the risk of infection, to lack of balanced diet that can be related to weakening of the immunity of individuals.

Cultures and norms are other factor which affects the prevalence of HIV through practicing of harmful traditions like cutting and tearing of human body parts in a traditional ways. This practices influence the proximate determinant in two different ways. In the first place, these sharp equipments that used for practicing these traditional practices may not be clean and infectious, and in the second place this traditional process may be accompanied by blood transfusion, due to excessive bleeding during this processes, that leads to increasing of the efficiency of the transmission of HIV from infected to healthier person. For example, female circumcision (female genital mutilation) is highly associated with HIV AIDS infection because of the equipments that are not clean and may cause infection , large amount of bleeding during the genital mutilation that may be accompanied by blood transfusions ,or vaginal tearing during sexual intercourse[20]. In the other way some in the cultures of some society, tradition of polygamy is acknowledged widely. These traditions influence the proximate determinant through acquisition of many sexual partners, is the susceptibility of an individual to HIV AIDS.

Demographic factor is associated with proximate determinant of biological susceptibility of individuals and acquisition of new sexual partners together with frequency of sex acts with in each partner that determine the susceptibility of individuals to HIV. The demographic factor, sex of individual are related to biological susceptibility HIV. The biological susceptibility of women to HIV infection is higher than men due to the larger genital tract surface area of women , which can easily expose to HIV infection more easily, than male (Global health reporting ;2010). Concerning, the demographic variables of age and marital status of an individual, the proximate determinant of acquisition new sexual partners is plays a great role in determining the prevalence of HIV. Different studies show that young people (especially women) are at higher risk of HIV infection due to various cultural, biological and social factors. Physiologically and behaviourally youths are rushing to sex and practicing unsafe sex. Therefore many are at higher risk acquiring STIs, which facilitate the transmission of HIV.

Among all the people in the world infected by STIs, Two thirds are youths of age twenty five and below [17]. similarly, due to the fact that youths are more attracted to money , material goods and sex than older age group, they usually exposed to unsafe sex specially if they are

at the low economic level(have economic opportunities) to satisfy their material aspiration **(**Nyblade et al; 2003**).** Marital status of an individual interacts with the proximate determinant, through the acquisition of new sexual partners.

2.1.2 PREVIOUS RESEARCHES

At the early stages of the epidemic of HIV, many researches were focusing only on the sexual behavior (frequency and number of partner and the probability of being infected) to identify the determinant of spread of HIV AIDS in the thought that this variables are the key to determine the prevalence of HIV solely. However, later it is recognized that this sexual behavior cant alone determine the prevalence of HIV AIDS. Therefore, demographic socioeconomic and cultural variables are introduced to determine the spread of HIV potentially.

In Ethiopia, Many researches, which have done so far on the determinant of the prevalence of HIV have been descriptive in nature and focusing only on one of the underlying determinants. Very limited analytical studies have been conducting including all the underling determinants(socio cultural ,demographical and cultural factors) together to asses how each of these underlying determinants can affect the prevalence rate of the epidemic in Ethiopia (e.g. Ethiopian population study 2008).In this subsection some literatures will be reviewed which are written mainly in sub-Saharan African countries on the demographic ,cultural and socioeconomic determinants of HIV.

Demographic factors

Different studies reveal that, in Sub-Saharan Africa countries the incidence and prevalence of HIV is mainly attributed to heterosexual contact. Marriage is one of demographic phenomenon in which heterosexual sex is widely practicing among the couples. Different and distinct views are raising concerning to the association between marriage and HIV prevalence. Scholars are debating on whether the martial relationship is reducing or fuelling the risk of exposure to HIV. Some scholars arguing that marriage will decrease the risk of being infected by HIV by reducing the number of partners (killian et.al 1999, Glyn et al.; 2001) ,and some others supporting the idea of marital relationship (particularly early marriage) or cohabiting couples are more vulnerable to HIV infection (Kinstin et.al 2008, Shelly Cark 2004) and other scholars are not supporting the idea that being married or unmarried/widowed matters, but the way to marriage is risky practices for the incidence and prevalence of HIV AIDS. They argue that when couples are make sure that they will get marriage in the future or staying for a long period of time together as a friend, they dare to make unsafe(bare sex) before marriage with out knowing their serostatus , that leads to the risk of acquiring HIV. Cark et al.,(2009) states that " the desire to marry is associated with the formation of new sexual relation ships or engaged couples engage in risky sexual behavior with each other, the process of finding a suitable spouse could alleviate the process of HIV risks (Clark et al, 2009 p-398).

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[17]*http://www.answers.com/topic/risk-behaviors-hiv-aids-and-its-impact-on-adolescent*

Krisin et.al., (2008) in their study in urban areas of Zambia and Rwanda pointed out that ,most of heterosexual HIV infection is occurred with in marriage or cohabitation . They found that about 55.1 to 92.7% of HIV transmission through heterosexual sex is takes place in serodiscordant couples who are married or cohabitated as compared to non cohabiting couples . They arguing, some cultural factors that supporting extramarital sex for man and limiting the autonomy of women that put a strain not to negotiate on safe sex with their husband are responsible for the high prevalence of HIV in married couples. Clark (2004) on the study of early marriage and HIV risks in urban centres of Kenya and Zambia ,also strengthen the idea of marriage (specifically early marriage) exposed to HIV infection..They arguing that, in this areas marriage will reduce girl's autonomy to negotiate safe with her partner or abstain from sex on the, second position it is found that prevalence of HIV is much higher than husbands as compared to unmarried girls' partner.

In contrast, in Ethiopia the prevalence rate of HIV is high in sexually active unmarried women as compared to married women. Despite the fact that risky marriage including early marriage, marriage by abduction and practices that includes limiting autonomy of women lack of negotiating on safe sex and sexual violence in marriage the prevalence rate of HIV is about two times in unmarried women as compared to the women who got married(EDHS 2005) .

Socio economic factors

Poverty may increase the prevalence of HIV through migration , poor health care ,gender inequality and sexual harassment and poor nutrition . Different researches and studies reveal that poverty has a casual relation ship with the prevalence of HIV in a vicious cycle, particularly in the least developed countries. The cope up capacity individuals or community against HIV is determined by the endowment of both human and capital assets, therefore poverty will undermine the capacity of the protection and cope up capacity of an individual / community against HIV through deterioration of these assets. In the reverse causation, since HIV AIDS is the cause for the loses of human resource through death or severe illness, it will erode the capacity of the socioeconomic system of a country that leads to poverty ,which in turn affect the prevalence of HIV in a vicious circle (Susan 2010). Similarly Following to the wide spread of poverty in Africa, the health status of many individuals is confined to poor diagnosis and treatment of easily curable diseases like STDs which are a cofactor for the prevalence of HIV..It has evidenced by different studies that poverty has been fuelling the prevalence of HIV AIDS (Chen 2010).

On the other hand, some scholars have been focusing on the integrated causes of poverty and migration on the prevalence of HIV AIDS. From the theory of migration ,Unequal regional development may drive many people to migrate from a region of low economic activity and high unemployment rate to better place for job opportunities to satisfy their needs .This migration or mobility mainly included young men and women , since this individuals are far from their home and environment will usually driven for causal and unsafe sex with prostitute due to the parallel increase of commercial sex workers in this new areas that appears following the mobility (Choen 2010; R Bonnel 2000) .

In poor countries , Women are more affected by HIV which brings about due to the prevalence of Poverty than men .Most women heading the poorest household in Africa are

often engaging in commercial sex transaction in occasional basis, to guarantee the survival of her family and her self (Choen 2000). Poverty can also be related to women economic independence that enable to protect the incidence and prevalence of HIV. According to Bonnel (2000) "the *availability of market employment opportunities increase the opportunity cost of prostitution. On one hand it implies that fewer women will become commercial sex worker in order to survive and on the other hand it also leads to more condom use by commercial sex workers (Bonnel 2000, p364).*

In Ethiopia mobility is mainly depend on the kind of profession that an individual engaged in. cross country track drivers ,soldiers , seasonal workers and female prostitutes are highly mobile and forced to stay out of home for some times around their work places. Empirical studies which have conducted in Ethiopia have revealed that the prevalence rate of the epidemic is very high in these groups. In the case study of one of the Ethiopian town (Gonder) [17] reveals that the prevalence rate was 40 percent in the year 1994, and 26.7 percent in 1995 in the trackers[18] which is a very big figure as compared to national and regional prevalence rate in a country .It is consistent with the other sub-Saharan Africa countries, for example the Nigerians track drivers affected adversely by the epidemic (Orubuloye et al.., 1993) and the migrants who are engaged in mining industry in South Africa ahs faced the same problem as compared to other members of the society (Stelios et al.., 2006).

Education is another crucial issue which is often included in the models, which influences the prevalence rate by of HIV by enhancing the awareness of the people as well as economic independence. In the longitudinal study of the socioeconomic determinants of HIV incidence in rural south Africa it is found that educational attainment is significantly reduces the hazard of being infected with HIV(Barnighausen et al, 2007).Consistent to other African countries it is found that . the knowledge of HIV/ AIDS increases with the level of educational level (Ethiopian society of population study (2008) [19]. According to this study the highest level of knowledge concerning to the HIV AIDS is found with people who achieved secondary and higher level of education as compared to the lower level of educational attainment.

Cultural Factors

"*Culture is one of many factors influencing human behaviour; it is a determinant of socially accepted behaviour, value systems, beliefs, and practical knowledge"* (B.Somma and Bodiang 2003). Some kind of cultures and traditions could be important in controlling and reducing the risk of infected HIV infection, in contrast some traditional practices which is categorized as harmful traditional practices and cultures may facilitate the transmission of the epidemic.

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[17] One of the larger city in the country which is situated in northwest of Ethiopia

[18]Source The world bank (2008) ; HIV/AIDS in Ethiopia – an Epidemiological Synthesis

[19] this an analytical research, which is done based one deep analysis of EDHS data on the factors that are fuelling the prevalence of HIV AIDS and contributing for regional variation (2008)

In some societies some harmful traditional practices, which facilitate the spread of HIV AIDS, such as polygamy, early marriage, marriage by abduction female circumcision are legally sanctioned. For example in the case study in one of the region of Ethiopia, Southern Nations Region, the prevalence of female circumcision was still 90 percent (Women Fight 1999). Similarly in Botswana traditional married man are allowed to have concubine other than his wife (S. Macdonald, 1996).

Substantial number of researches and studies shows that these harmful cultural and traditional practices have been fuelling the prevalence of HIV in a given society. M.Yount et al.(2007) in their study of female genital cutting and HIV based on Kenya demographic data sets , revealed that there is no a direct association between HIV and genital cut women however, by following different paths that relates demographic factors(marrying older husband, women early marriage and extra marital sex), which associate the risk of acquiring HIV, with a genital cut women and uncut women to determine the risk of acquiring HIV indirectly. They found that female genital cutting is increasing odds of women infected by HIV (M.Yount et al. 2007).Genital mutilation is still widely practiced in developing countries ,commonly in the sub Saharan African countries. For example in Ethiopia 75% of women aged 15-49 are circumscribed and among this 6% are also infibulated (EDHS 2005) and in the Northern regions of Tanzania the rate of female circumcision (genital mutilation) ranges from 20-73%(Tanzania HIV /AIDS indicator survey 2003/04) .

However, some studies show the association between female circumcision or infibulations and HIV prevalence is not clearly distinguishable. This studies evidenced that in some areas where harmful traditional practices is highly prevalent shows low rate of HIV prevalence rate as compared to other regions where this traditional practices are rarely practiced. B. Hrdy (1987) in the study of cultural practices and HIV AIDS in Africa pointed out that ,In the regions of Arabian peninsula some western and horn of Africa , where infibulations practiced widely shows a low rate of prevalence rate as compared to other countries where female circumcision is not widely practiced such as Burundi ,western Uganda and Zambia.

Religion affiliation is another cultural component which is believed influencing the behaviour of the followers with its main line religions denominations which will in turn affect the prevalence of HIV. For example, Marriage Fidelity and abstinence before marriage, which are preached in the Christian denominations, are some of the factors which are expected to influence the prevalence of HIV infections. Maids et al; (2007) show the correlation between religion and HIV infection by examining age at first intercourse of different religion followers in four African countries(Burkina Faso, Ghana, Malawi, and Uganda). They found that in all of these countries ,except Ghana , Muslim girls are staring sexual intercourse more early than other religion follower girls ,this also reflects the tendency of early marriage of Muslim girls in this regions(Madise et al; 2007). In the contrary , In rural Malawi ,where religious affiliation is wide spread ,it is found that there is no association between religious affiliation , frequency of church attendance or being religiosity and HIV infection among the study groups[21] (S. Muula ,2009).

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[21] *The study group was Christian women of age 15 years old and above who are sexually active.*

Handful of researches and studies reveal that male circumcision is associated with the decrease of the risk of HIV infection that may increase the probability of being infected by HIV through the proximate determinant of biological susceptibility of an individual."*There is compelling evidence that male circumcision reduces the risk of heterosexually acquired HIV infection in men by approximately 60%* "(WHO 2010)[22]. Different biological reasons and theories [23] have given related to the association between reducing risk of HIV infection and other STIs and male circumcision .In sub-Saharan Africa where heterosexual sex is the main mode of transmission , male circumcision plays a great role. Empirical studies of meta analysis of 27 sub Saharan countries reveal that male circumcision reduces the relative risk of HIV infection by 0.56 and it reduces by 0.29 in high risk groups(Weiss et al. 2000). In the other way round, some areas where high prevalence rate of HIV is manifested is characterized by low rate of male circumcision practices. For example, among all the regions in Ethiopia, Gambela region is ranked at the first position by HIV prevalence rate. On the other side more than half (53 %) of the male is not circumscribed ,based on this facts Berhane et al.,(2008) articulated that "it is reasonable to assume that the observed high HIV prevalence in Gambela, as compared to other regions in the country, could be largely attributed to the synergistic effect of high levels of risky sexual behaviour with a general lack"(Berhane et al .2008).

3. HYPOTHESIS

In this sub section selected testable hypothesis will be presented based on the theories which have been discussing on the previous section .These hypotheses will be categorize under respective underlying determinants which are presented in Bonerma and Wier ,(2005) proximate- determinant theoretical frame work which are presented in the theoretical back ground section .The hypotheses are mainly focusing on the factors which are appropriate in the context of Ethiopia and expected to be highly associated with the prevalence of the pandemic based on the selected variables of EDHS survey.

- High level of Educational attainment decreases the likelilhood of aquiring HIV.
- Married women experienced a decreased risk of acquiring HIV/ AIDS.
- Economically poor Individuals experienced an increasing risk of acquiring HIV/AIDS.
- Female circumcision expected to increases the likelihood of acquiring HIV.
- Younger individuals experienced an increasing risk of contracting HIV /AIDS as compared to older counterparts.

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- [22]*http://www.who.int/hiv/topics/malecircumcision/en/index.html*
- [23] *see more detail on (Kate Bonner 2001, page 149-151)*

4.DATA

The main data source for this study is Ethiopian Demographic and Health survey which is conducted in the year 2005(EDHS 2005). EDHS is a part of all surveys which have been conducting in more than 85 different countries of the world since the year1984 .EDHS(2005), has conducted for the second time in Ethiopia. The first demographic and health survey was conducted in the year 2000 prior to 5 years before the second (EDHS 2005) conducted. Both of these surveys has designed and implemented to collect data on different demographic and health issues, such as fertility, child and maternal health, Malaria, gender and nutrition on a given country. Unlike EDHS 2000, EDHS 2005 included collections of data on prevalence of HIV AIDS in a country level.

The questioners of the survey are prepared based on specific sociocultural settings of Ethiopia. To maintain the quality of the questionnaire, it is adapted and revised by senior demographers from different institutes after the first draft had prepared .After revision and made some amendments it is presented in English and translated to local languages. Supplementary manuals prepared for each stuffs participating in the survey to guided how the questioners should be filled. The questionnaire was designed to include some basic demographic information such as age of the respondent, name ,sex marital status and so on its first part . The second part of the questionnaire included detailed information on socioeconomic status , cultural and traditional aspects concerning to the experience of the respondents.

The third part which is included in the questioner is designed to collect the data on level of awareness and sexual behaviors of an individuals on HIV AID. An individual who is eligible for HIV questionnaire was first told about the purpose of the survey and the confidentiality of the result of the blood test ,they are asked to give blood samples for hiv testing parallel the to the interview. Then blood samples collected from eligible and willing persons and preserved carefully and sent to Ethiopian Health and research institute of (ENRHI) for testing purpose. The testing process performed by following the procedures and protocols of international standards by trained and senior professionals.

Among the selected and targeted enumeration areas to cover during interview, women had high response rate than men. The response rate was 96% for women and 89% for women. Similarly, out of the selected 540 enumeration areas 535 are successfully covered, and the other 5 were inaccessible due to different reasons .concerning to collecting of blood samples for HIV testing , among all the 535 successfully covered areas of the survey, it is collected successfully in 534 enumeration areas.

Limitation of the data

- Unable to collect all blood samples from the selected eligible respondents in different regions due to refusal.

- due to the sensitivity of some sexual behavior questionnaire ,least reporting bias observed in some areas

- Failure to allocate and interviewing appropriate respondents who are selected for the survey.

- Lack (putting in aggregate form)of some important variables that potentially determine the prevalence of HIV.

5. METHODS

To answer the research questions of this paper some analytical and empirical analysis will be made in the sub sequent sections. To identify the underlying determinants that have a significant effect on the transmission of HIV, statistical model will be employed and the regression for male and female will be run separately at country level. Once the significant factors that affect the transmission of HIV has identified, this variables will be brought forward to figure out the factors that creates discrepancies of the prevalence rate among rural and urban areas by analysing the distribution of this factors among this regions,

5.1 statistical models

Due to the binary nature of the explanatory variable i.e. Being HIV positive or negative, Binary Logistic regression model will be employed for analysis the data . Logistic regression is used to determine or predict the probability of the occurrence of the event of the dependent variable on the bases of explanatory variables by fitting a given data to logit function. Logistic regression model can be classified as binary or multinomial based on the number of category of the dependent variables. Dependent variables which have dichotomy in nature are classified under binary logistic regression where as dependent variables which have more than one are classified in multinomial logistic regression. Although this model shares some common features with Ordinary least square regression(OLS), like logit beta coefficients and pseudo R^2, Unlike OLS logistic regression logistic model does not assume linearity between the dependent and explanatory variables, normality and homoscedasticity of error terms.

General Model:

$$\text{Logit}(p) = \log(p/1-p)= \beta_0 + \beta_1 X_1 + \beta_2 X_2 ..... \beta_k X_k$$

β_0 = the intercept

$\beta_{1....} \beta_k$ =regression coefficient

$X^{'s}$ = explanatory variables

p =The probability of the outcome.

$p/1-p$= Odds=$\frac{\text{probability of presence of the characteristic}}{\text{Probability of the absence of the characteristic}}$

.The regression coefficient tells us the effect of the magnitude of the explanatory variables on the out come of the dependent variable. A positive value of regression indicates that the independent variables increased the probability of the out come where as negative values means that the decrease probability of the out come. The probability of the out come of the dependent variable is influenced by the magnitude of the regression coefficient of the given explanatory variables, i.e. High regression coefficient means the explanatory variables affects the probability of that out come strongly, while smaller regression coefficient has an opposite effect. The explanatory variables that included in the logistic regression model can be any type of data either categorical or continuous. The logit(p) can take any value and the corresponding probability (p) is constrained to lie between 0 and 1.

Interpretation of the logistic regression model can be made in different ways. By considering the original model as it is , we can interpret the regression coefficients in as the same way as the OLS due to the fact that the log-odds take any values($-\infty$ and $+\infty$).Thus, the interpretation ion can be stated as for a unit increase(decrease) in the explanatory variables($X^{'s}$) will increase(decrease) the outcome of the log-odds of success of dependent variable by $\beta^{'s}$ unit. And also the intercept term (β_0) can be interpreted as the value of log-odds of success outcome when all the risk factors ($X^{'s}$) getting zero or controlled. However, most of the time it is not natural to think terms in log-odds, therefore it is reasonable and comparatively easy to interpret and understand the results of the logistic regression by calculating odds-ratio and using it as to interpret the regression. Odds ratio can be easily calculated by using statistical software and unlike to log-odds it lies between 0 and $+\infty$. In this paper SPSS software is employed to calculate the odds ratio and estimation of regression coefficients. Odds ratio can be interpreted as the change of odds when a unit change in the independent variable. The odds ratio greater than 1 indicates that the increase of the occurrence to the out come of success (dependent variable), while odds ratio less 1 indicates the opposite effect. Odds ratio with a value of 1 is a neutral value i.e. both outcomes(success and failure) are likely to occur equally . Here Odds ratio interpretation will be used to interpret the out put of empirical analysis.

5.2 Definition Of Variables

A Set of variables are selected from the EDHS(2005) data sets and categorized accordingly in the main line determinants and included in the model based the theoretical frame work which has set previously.

EDHS 2005 includes a total of 21,103 eligible individuals for the survey, of which 14,070 were female and the rest 6,033 were male respondents. The survey encompasses all region in the country and designed to give a national level estimate by selecting 14,500 households samples at a country level. Sample selection performed by using a two stage sampling procedure methodology. At the first stage 540 enumeration areas have taken from the 1994 Ethiopian population and housing census sampling frame and listing of households made in the selected enumeration areas to identify the number of households in each enumeration areas. After listing of each household completed, 24-32 households selected systematically from each enumeration area at the second stage which are included in the survey. Since enumerations areas had not distributed proportionally in each region, they had weighted

accordingly, to give an estimate at national level. One from each of the two households which have selected for the survey are assigned for blood testing for HIV.

5.2.1 Dependent variables

DHS includes HIV testing of respondents starting from the year 2004. Ethiopia included HIV testing of respondents for the first time in the year 2005.Prior to the collection of the blood samples eligible persons [24] who selected for HIV testing were interviewed about their demographic, cultural, socioeconomic background together with sexual behavior level of awareness HIV . Consequently, blood sample collected from these respondents were tested for the HIV and after the results identified it is merged to the background information of the individuals keeping all the necessary confidentiality. The results coded a in the data sets as value 1 is assigned for HIV positive and 0 for HIV negative. Thus, the HIV serostatus of an individual are used for dependent variable in the model. The frequency summary of the serostatus of eligible individuals is presented below:

SUMMARY OF BLOOD TEST RESULT TOTAL

SEROSTATUS	Frequency	Percent	Valid Percent
HIV negative	10761	98,1	98,1
HIV positive	212	1,9	1,9
Total	10973	100,0	100,0

SUMMARY OF BLOOD TEST RESULT MALE

Serostatus		Frequency	Percent	Valid Percent
Valid	HIV negative	4996	98,6	98,6
	HIV positive	71	1,4	1,4
	Total	5067	100,0	100,0

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[24] *eligible individuals includes women age 15-49 and men age 15-59 who are selected in the survey as a respondent*

SUMMARY OF BLOOD TEST RESULT FEMALE

Serostaus		Frequency	Percent	Valid Percent
Valid	HIV negative	5765	97,6	97,6
	HIV positive	141	2,4	2,4
	Total	5906	100,0	100,0

Table 5.1 summary of frequency of dependent variable of HIV serostatus

5.2.2 Independent variables

The selected independent variables are categorized in to three groups. The first group includes Demographic determinants that are contributing as a risk factor for the prevalence of HIV/ AIDS .As it is trying to discuss in the theoretical background section one of the demographic factor that affect the prevalence of the epidemic is Age of individuals. The EDHS(2005) categorized the age variable in to ten groups . However , it is merged and reduced to 5 age groups for convince and in the aim to perceive the impact of age difference in acquiring HIV at very early young age(15-19) young ages (20-29 and 30-39) and at older ages (>40 and < 59 for male > 40and< 49 for female based on the eligible survey respondents. The same kind of re categorization is made on marital status of an individual too .The EDHS categorized the marital status in detail ,for example the one who had wife/husband previously was further classified as divorced and widowed ,which are merged together in this paper. The same is true for married individuals who are further classified as married ,living together, not living together. Since the aim of this in including the marital status to point out the prevalence of HIV (the risk of acquiring HIV) among never ,married ,married/cohabiting and divorced/widowed, it is categorized in this fashion in two three main groups. The sex of the head of the household, from where the respondents is belongs to is also included as independent variable the demographic determinants. Here we have to note that not the sex the household is not necessarily mean the sex of the respondents. The sex of respondents is not included in this category as independent variable. Since the analysis is made separately for male and male respondents, the sex of respondents serves as a control variable.

. The second group of independent variables is categorized under the socioeconomic determinant category. In this category, Six independent variables for male respondents, and for five independent variables for female respondents have selected separately for analysis. All, except the variable "times away from home for the past 12 months before the survey had conducted " is included only in the analysis of male respondents. This variable was presented in a continuous form in the data the data set. Thus, to change it in to categorical variable it is categorized in to four groups based on the frequency of the respondent staying out of home. This variable can be used as a proxy for some professions (like tracers, soldiers) which required individuals to stay away from home moving from place to place.. The other selected socioeconomic determinants which are common for both female and male respondents

includes wealth index which is used for proxy for the poverty of the respondents it categorized in five levels(poorest ,poorer ,middle, richer, richest). Educational attainment is the other factor which is related to the prevalence of HIV/AIDS. Level of educational attainment expected to influence the awareness of prevention of diseases in one side on the other side it will influence the income of the individuals that will in turn affect the prevention and lack of medical treatments as mentioned on the back ground section. Educational attainment of the respondents has categorized in to 4 levels as : individuals who have no education, completed primary schools, secondary and higher educations. Exposure to media is another factor that is associated enhancing of the awareness of the individuals concerning to the ways of transmission, prevention and controlling of different epidemics. To tackle the influence of this factor frequency of listening to the radio has taken as a proxy variable. The reason that radio has selected as a proxy is due to the availability and accessibility of the radios in each and every households through out the country as compared to other information dissemination Medias. However, the big question is how often this medias are disseminate information concerning to the epidemic. Currently, as discussed in the introduction part of the paper, starting from the near future intervention of the government in mitigating the prevalence of HIV/AIDS is enormous in Ethiopia and due to the fact that radio medias is owned by the government it is expected to use this medias in the campaign of preventing and controlling of the epidemic. Relating to the prevalence of commercial sex workers, drug uses, accessibility of information Place of residence will have its own impact on prevalence of HIV AIDS. residence place of respondents is classified as urban and rural and it as introduced as a dummy variable for analysis.

The third group of variables that have included in the analysis is referred as cultural determinants of HIV/ AIDS. The variables listed in this category are diverse and interrelated effect in the prevalence of the epidemic. Sexual behavior of an individual that will facilitate the transmission of HIV/ AIDS one of the components of cultural determinant. The number of sexual partners/ wives , age at first marriage or sexual intercourse, experience for paid sex are some of the variables which have included in cultural determinant which are supposed to increase the susceptibility of an individual to HIV infection. Due to high correlation between the explanatory variables age at first marriage and age at first intercourse for female respondents, age at first intercourse is not included in the model which used for analyze prevalence rate of HIV among women respondents, Where as both variables are included in the model used for analysis of male respondents. Paid sex is introduced as a proxy for higher-risk sexual encounter due to the reason that paid sex is often taking place in commercial sex workers environment. The number of other wives or sexual partner of a female respondent's husband is included also in the model as risk factor to increase the likelihood of infected by HIV . Religion is the other factor which is included in studies of determinant of HIV/ AIDS. Religions are in general supposed to influence their followers by their denominations concerning to sexual behavior of an individuals, thus it is introduced here whether religion has an impact in the prevalence of HIV/ AIDS in Ethiopia by categorizes the religions in two three groups ,Christian which includes orthodox Christian, protestant and Catholics in it coded as 1 ,Muslim coded as 2 and traditional and other religions coded as 3. Due to biological reasons and relating to neatness of the materials used for circumcision is assumed to influence the transmission of HIV /AIDS. Therefore, both male and female circumcision are separately introduced in the models, to figure out how this variable affect the prevalence rate of individual in the context of Ethiopia. Autonomy of women is another factor which is assumed to be related with the prevalence of HIV/ AIDS through negotiating to safe sex , protecting themselves from sexual abuses or violence which are exposing them for HIV/AIDS. Independent variable which has included in the model. A person who decide how

to spend money serves as a proximate variable for women autonomy. It is classified full right to determine alone, together with her husband/partner, or her husband/partner/other persons to are responsible to determine the how to spend the money that the respondent are supposed using. Marriage by abduction is also included in the model in the aim to capture the effect of some harmful traditions on the prevalence of HIV/AIDS in Ethiopia.

Note : due to the some sensitive questionnaire in cultural variables many missing values are appeared in the data sets .

Some variables which will have a significant effect in the prevalence of the epidemic will be re analyzed to figure out the main factors that contribute in the discrepancies between rural and urban areas of the country. The logistic model will be used to figure out the distribution of these selected variables among these regions. Here type of place of residence will be taken as an independent variable and all the variables which will affect the prevalence of HIV / AIDS significantly used as independent variables.

All the explanatory variables which are discussed are summarized below under their respective categories:

LIST OF VARIABLES	***levels/categories***	***No Of Observations***	
		male	***female***
DEMOGRAPHIC VARS.			
AgeGroup			
	15-19	*1073*	*1384*
	20-29	*1574*	*2182*
	30-39	*1170*	*1393*
	40-49	*775*	*947*
	50-59	*475*	
	total	***5067***	***5906***
Currentmarital status	*Never married*	*2021*	*1746*
	Married/cohabiting	*2852*	*3693*
	widowed/divorced separated	*194*	*667*
	total	***5067***	***5906***
Sex of head of household			
	Male	*4395*	*4435*
	Female	*672*	*1471*
	total	***5067***	***5906***

SOCIOECONOMIC VARIABLES				
	Wealth index	*Poorest*	*1010*	*1207*
		Poorer	*854*	*940*
		Middle	*812*	*921*
		Richer	*817*	*872*
		Richest	*1557*	*1957*
		total	***5050***	***5897***
	Times away from home in last 12 months	*0-10*	*4899*	
		11-19	*82*	
		21-40	*59*	
		41-60	*10*	
		total	***5050***	***5897***
	Highest educational level	*No education*	*2090*	*3600*
		Primary	*1703*	*1312*
		Secondary	*1084*	*849*
		Higher	*173*	*136*
		total	***5050***	***5897***
	Frequency of listening to radio	*Not at all*	*1658*	*3195*
		sometimes	*1862*	*1554*
		frequently	*1530*	*1148*
		total	***5050***	***5897***
	Respondent currently working	*No*	*787*	*4174*
		Yes	*4263*	*1723*
		total	***5050***	***5897***
	Type of place of residence			
		Urban	*1144*	*1617*
		Rural	*3906*	*4280*
		total	***5050***	***5897***
CULTURAL VARIABLES				
	Age at first marriage	*15-19*	*420*	*1868*
		20-29	*1066*	*951*
		30-39	*176*	*20*
		40-49	*26*	*1*
		50-59	*3*	
		TOTAL	*1691*	*2840*
	Age at first intercourse	*7-19*	*384*	

	20-35	*1304*	
	35-64	*3*	
		1691	
Religion	*christian*	*1188*	*1713*
	moslem	*455*	*1058*
	traditional / others	*48*	*69*
	TOTAL	*1691*	*2840*
Respondent circumcised	*No*	*110*	*579*
	Yes	*1581*	*2261*
	TOTAL	*1691*	*2840*
Ever paid for sex	*No*	*1669*	
	Yes	*22*	
Number of wives, partners	*one wife*	*1591*	
	2 and more wives	*100*	
	TOTAL	*1691*	*2840*
Number of other wives	*No other wives*		*2467*
	one other wife		*249*
	two or more other wives		*124*
	TOTAL		*2840*
Respondent married by abduction	*No*		*2489*
	Yes		*351*
	TOTAL		*2840*

Table 5.2 List of independent variables and number of observation for each category.

5.3Statistical Modeling

So far the variables that are associated with the prevalence of HIV AIDS for male and female respondents have identified from the data sets. Based on the classification of variables which has made previously, three models will be build separately for each category of variables (demographic, socioeconomic and cultural variables).Additionally, due to the discrepancies between prevalence of HIV/ AIDS among men and women, and the nature of some independent variables, like marriage by abduction and autonomy of women in a household which only associated with the prevalence of HIV of women, the analysis will be made separately by building models for male and female respondents.

Model (1): Demographic Model

Model 1a) For male

HIV SEROSTATUS=(*AGE GROUP*, *MARIITAL STAUS* , *SEX OF HEAD OF A HOUSE* HOLD)

HIV= (HIV SEROSTATUS=(*AGE GROUP, MARIITAL STAUS , SEX OF HEAD OF A HOUSE* HOLD)

- Model(2):Socioeconomic Model

Model 2a) For male

HIV SEROSTATUS=(WEALTH ,PLACE OF RESIDENCE, TIMES AWAY FROM HOME IN A YEAR, HIGHEST EDUCATIONAL ATTINMNET,EXPOSURE TO MEDIA ,CURRENT EMPLOYNENT STATUS,

Model 2b) For Female

, HIV SEROSTATUS=(WEALTH ,PLACE OF RESIDENCE, TIMES AWAY FROM HOME IN A YEAR, HIGHEST EDUCATIONAL ATTINMNET,EXPOSURE TO MEDIA ,CURRENT EMPLOYNENT STATUS,

- Model(3):CULTURAL MODEL

Model 3a) For male

HIV SEROSTATUS=(AGE AT FIRST MARRIAGE, AGE AT FIRST SEXUAL INTERCOURSE ,CIRCUMSCTION, PAID SEX EXPERIENCE, NUMBER OF WIVES/ PARTNERS, RELIGION)

Model 3b) For Female

HIV SEROSTATUS=(AGE AT FIRST MARRIAGE, ,CIRCUMSCTION,NUMBER OF OTHER WIVES OF RESPONDENTS' HUSBAND , RELIGION, MARRIAGE BY ABDUCTION, WOMEN AUTONOMY IN A HOUSE HOLD)

6.EMPERICAL ANALYSIS

6.1 Statistical Analysis

The out put from logistic regression will be presented in this subsection for male and female respondents separately. All selected explanatory variables are included in the model and odds ratio is calculated for each level of category by taking the first level as reference point. Demographic ,socioeconomic and cultural models are presented consecutively and the discussion on the out put of each models will be followed. 5% level of significance level will be used for measuring the significant of the explanatory variables. Variables which are. Factors that have significant contribution in the prevalence of HIV/AIDS will be brought forward to analyze the discrepancies of the prevalence rate among urban and rural areas of Ethiopia. These analysis will be made taking by reanalyzing the distribution of these identified significant explanatory variables among this regions(urban and rural). Further more some factors related to the prevalence of HIV also will be included in this model and place of residence will be taken as dependent variables and the empirical analysis will be made by using logistic regression.

Demographic model		male			female		
varibles	category	B	Sig.	Exp(B)	B	Sig.	Exp(B)
age							
	15-19	0.000		1.000	0.000		1.000
	20-29	2,61	0,012*	13,601	0,96	0,003*	2,61
	30-39	3,213	0,003*	24,863	0,87	0,015*	2,388
	40-49	2,637	0,016*	13,966	0,188	0,639	1,207
	50-59	1,957	0,095	7,076			
sex of hh head	Male	0.000		1.000	0.000		1.000
	female	-0,101	0,809	0,904	0,724	0.001*	2,064
marital status	never married	0.000		1.000	1.000		1.000
	married/ cohabiting	0,099	0,793	1,104	0,127	0,658	1,136
	divorced/widowed/separated	1,211	0,011*	3,356	1,191	0,000*	3,292

* Significant relationship at 5% level of significance.

Table 6.1 parameter estimates of logistic regression for HIV prevalence of demographic variables

The logistic regression of demographic explanatory variables has a significant effect on the prevalence Of HIV in Ethiopia. As it shown in table 6.2 Both male and females individuals is significantly affected in their middle ages male(20-49) and female ((15-19) as compared to the compared to very young ages(15-19).the odds of infected by the epidemic getting decreased and insignificant at the older ages in both sexes. The sex of the household has a significant effect on the risk of increasing the risk of acquiring HIV only on female members

of the household including the head of the household. The odds of acquiring HIV of women in a household headed by female is increased by 2.064 as compared to the house headed by male individual. The odds of acquiring HIV is significantly high in the groups in the groups who had under marriage in the past as compared to the individuals who have never been in t marriage relationship. married/ cohabiting individuals reveals insignificant effect in acquiring the epidemic.

		male			Female		
Socioecnomic model		B	Sig.	Exp(B)	B	Sig.	Exp(B)
Wealth index	Poorest	0.000		1.000	0.000		1.000
	Poorer	-0,909	0,13	0,403	0,076	0,884	1,079
	Middle	-0,139	0,771	0,87	0,286	0,56	1,331
	Richer	-0,448	0,376	0,639	0,123	0,809	1,131
	Richest	-0,619	0,28	0,539	1,127	0,019*	3,085
Times away from home in last 12 months	0-10	0.000		1.000			
	11-20	0,157	0,832	1,17			
	21-40	0,166	0,824	1,181			
	41-60	-17,686	0,999	0.000			
Highest educational level	No education	0.000		1.000	0.000		1.000
	Primary	0,179	0,24	1,196	0,073	0,759	1,076
	Secondary	0,774	3,624	2,168	-0,067	0,793	0,936
	Higher	0,326	0,29	1,385	-1,639	0,028*	0,194
Frequency of listening to radio	Not at all	0.000		1.000	0.000		1.000
	sometimes	0,456	0,264	1,578	0,437	0,304	1,548
	frequently	0,986	0,018*	2,681	0,496	0,072	1,643
Respondent currently working	No	0.000		1.000	0.000		1.000
	Yes	2,128	0.000*	8,396	0,136	0,452	1,146
Type of place of residence	Urban	0.000		1.000	0.000		1.000
	Rural	-1,147	0,012*	0,317	-1,022	0,001*	0,36

* Significant relationship at 5% level of significance.

Table 6.3 parameter estimates of logistic regression for HIV prevalence of socioeconomic variables

In the Socioeconomic model, the explanatory variables have different effects among male and female individuals, except the variables of place of residence. The regression out pus shows that residents living in rural areas has significantly decreased risk of acquiring HIV as compared to urban dwellers. Employment of male has a significant effect on the increasing of prevalence of HIV /AIDS. The odds of acquiring HIV of male individuals who has a job currently is 8.396 higher than male individuals who have not working currently. Concerning to media exposure men who are frequently exposure to the media experienced a significant low risk of acquiring HIV than individuals who have not exposed to media information. Unlike to men , women who attained higher educations are in the are experiencing significant low risk of contracting HIV than women who has not any education at all. Significant relation ship is also manifested female wealth and being infected by HIV. The odds of being positive of richest women are 3.08 higher than poorest women.

		Male			Female		
Cultural model		B	Sig.	Exp(B)	B	Sig.	Exp(B)
Age at first marriage	15-19	0.000		1.000	0.000		1.000
	20-29	0,517	0,239	1,678	0,009	0,976	1,009
	30-39	1,017	0,075	2,765	1,007	0,337	2,738
	40-49	1,247	0,26	3,479	-17,652	1.000	0.000
	50-59	-16,982	0,999	0.000			
Age at first intercourse	7-19	0.000		1.000			
	20-35	-0,815	0,025	0,443			
	35-64	17,598	0,999	0.000			
Religion	christian	0.000		1.000	0.000		1.000
	moslem	-0,897	0,069	0,408	-1,579	0.000*	0,206
	traditional / others	-17,978	0,997	0.000	-17,594	0,997	0.000
Respondent circumcised	No	0.000		1.000	0.000		1.000
	Yes	-1,228	0,006*	0,293	-0,314	0,509	0,73
Ever paid for sex	No	0.000		1.000			
	Yes		0,727	1,458			
Number of wives, partners	one wife	0.000		1.000			
	2 and more wives	0,613	0,276	1,847			
Number of other wives	No other wives				0.000		1.000
A husband had	one other wife				-0,014	0,979	0,986

	two or more other wives				-0,752	0,464	0,471
Respondent married by abduction	No				0.000		1.000
	Yes				-0,314	0,509	0,73

* Significant relationship at 5% level of significance.

Table 6.4 parameter estimates of logistic regression for HIV prevalence of cultural variables

Male circumcision and religion has a significant effect on the prevalence of HIV/AIDS among men and female individuals respectively. A man who circumscribed has 29% lower risk of acquiring HIV/AIDS .Muslim women experience a low risk of acquiring of the epidemic HIV as compared to Christian women.

So far all the significant factors associated with the prevalence of HIV has identified at the country level separately for male and female individuals. Now all the significant explanatory variables are brought forward and re analyzed the distribution of this variables among urban and rural areas as shown in the table 6.5 below. Logistic regression has employed taking place of residence as a dependent variable to figure

		male			female		
		B	Sig.	Exp(B)	B	Sig.	Exp(B)
age	15-19						1.000
	20-29	0,769	0.000*	2,159	0,464	0,004*	1,738
	30-39	1,287	0.000*	3,622	0,553	0,005*	2,852
	40-49	1,571	0.000*	4,809	1,076	0.000**	2,934
	50-59	1,387	0.000*	4,003			
sex of hh head	male						
	female				0,797	0.000*	2,218
marital status	never married		0.000*			0.000*	
	married/ cohabiting	-1,556	0.000*	0,211	-0,864	0.000*	0,422
	divorced/widowed/separated	-0,255	0,217	0,775	-0,125	0,546*	0,883
Wealth index	Poorest						
	Poorer				1,555	0,018*	4,735
	Middle				2,428	0.000*	11,331
	Richer				3,168	0.000*	23,76
	Richest				6,737	0.000*	843,393

Highest educational level	No education						
	Primary				0,498	0.000*	1,645
	Secondary				2,044	0.000*	7,723
	Higher				1,622	0.000*	5,064
Frequency of listening to radio	Not at all						
	sometimes	1,495	0.000*	4,459			
	frequently	2,548	0.000*	12,788			
Respondent currently working	No						
	Yes	-1,253	0.000*	0,286	0,436	0.000*	1,546
Religion	christian					0.000*	
	moslem				0,442	0.000*	1,556
	traditional / others				-1,523	0,051*	0,218
Respondent circumcised	No						
	Yes	1,417	0.000*	4,126			

* Significant relationship at 5% level of significance.

Table 6.5 estimate of distribution of selected significant explanatory variables for the prevalence of HIV among rural and urban areas from logistic regression

Out which factors are significantly affect prevalence rate of HIV in urban areas from the selected significant variables.

As it shown in the regression out put (table 6.5) individuals who are in the age group, which is in a high risk of acquiring the epidemic, is residing in urban regions predominately. And, related to the house holds headed by females are predominately presented in urban areas than rural areas. However, in the contrary divorced, widowed or separated individuals who are at a higher risk of acquiring HIV than individuals who have never been in marriage relation ship are residing in rural areas. The odds of the number of richest women (richness of women significantly related with the prevalence of HIV) residing in urban areas is significantly high. In the contrary, women who has attained higher educational level are significantly found in urban areas.. Significant number of male individuals who are working currently (have a job)are living in urban areas than rural areas.

In short many of the risk factors associated to prevalence of HIV is significantly found in the urban areas than that of rural.

7.DISSCUSSION

In this chapter all the explanatory variables which have been indentifying as a significant effect n the prevalence of HIV AIDS at country level as well as factors related to urban prevalence rate will be discussed. As it is thoroughly discussed in the previous chapters the explanatory variables have categorized in three groups and analyzed separately. And many significant relations between prevalence of HIV/AIDS and explanatory variables have been identifying in each group of interest.

Demographic variables of individuals were introduced in this paper in examining their relation with the spread of HIV/AIDS in Ethiopia context. This category has included three variables: age of individual, sex of head of a house hold and marital status based on the theoretical frame work of Bonerma and Wier (2005).The analysis have been made separately for male and female individuals. The empirical out put shows that there is significant relationship between these variables and the prevalence of HIV/AIDS. Age of an individual has found that it has a significant effect on the spread of HIV/AIDS.As it was trying to mention on the theoretical background of this paper young people are expected rushing to sex due to some biological and economical reasons. Parallel to the theory and the hypothesis, the logistic regression revealed that some young and Middle age individuals of both sexes have experience a significant higher risk of acquiring HIV. However, unlike to the expectation, very young age groups (15-19) found less affected by HIV as compared to young and middle age individuals.

As it was discussed previously, in Africa, a family headed by the women often characterized by low income (EDHS 2005).Thus, many women head the family engaged in occasional unsafe sex practices to generate money for themselves and their families survival, that potentially exposed them to HIV, (Choen 2000). Similar to this mostly the literacy level women is usually lower as compared to men (WHO, 2010) that will affect the opportunity of getting information about HIV AIDS .Other factors such as physical ,sexual and emotional violence against women will increase the susceptibility of women for HIV infection Analogous to theses assertions, a significant positive relation ship has found in female individuals who are headed by women and prevalence of HIV/AIDS.

Researchers reflecting different ideas concerning to the association between Marital status and HIV/ AIDS. Some arguing that marriage has associated with decreasing risk of acquiring HIV through reduction of sexual partners (Glyn et al.; 2001). and the others oppose this argument and they associated marriage with risky institution of acquiring HIV through unsafe sex . However, there is a consent that marriage is associated with reduction of sexual partners..It is a potential institution in reducing the number of sexual partners as compared to single persons experience.From logistic regression it is found that, the odds of being HIV positive are significantly higher in divorced widowed or separated individuals than individuals who have never been in marital relationship .Being engaged has insignificant association with acquiring HIV in the context of Ethiopia.

The socioeconomic variables were the other factors that have attributed to the prevalence of HIV.Many socioeconomic variables that are assumed to influence the spread of HIV has introduced in the analysis and different results have found. Level of Education, wealth, , type

of occupation , women empowerment , exposure to the media and employment status are variables which are categorized under this category that have considered to affect the prevalence of HIV AIDS. This socioeconomic determinant operate with proximate variables to determine the exposure of an individual to HIV AIDS Poverty was one of the main variables which have given a strong attention in the background section by the assumption that it has a great influence in the context of Ethiopia. Wealth index has taken as a proxy variable for level poverty, and it has classified in to five levels as poorest, poorer, middle richer and richest. Unlike to the expectation of the hypothesis , poverty has found to have insignificant effect in the prevalence of HIV/ AIDS for male and female individuals. In contrast to the expectation, a significant positive relationship has found between richest women and spread of HIV from the analysis logistic regression. Similarly, individuals who are working are supposed to have a better income and exposure to many sexual partners due to contacting of different individuals at the work place. In the regression out put current working status of male individuals found to have a significant relationship in the prevalence of HIV. It is found that the likelihood of being positive is higher in males who are working currently as compared to individuals who have no work currently.

Educational attainment of individuals are expected to have an association with the prevalence of HIV AIDS through building the capacity and awareness of individuals in preventing and controlling of the epidemic of HIV AIDS. A significant relationship between level of education and the prevalence of HIV AIDS of females is found. However, level of education found to have insignificant relation to the prevalence of HIV of males. Concerning to the exposure to media, the spread of HIV on male individuals are found to have a significant relation to the frequency of exposed to media.

As it has been describing in the back ground section of this paper place of residence (urban and rural) have wide discrepancies and disparities has been shown regarding to socioeconomic and cultural variables. Almost all rural areas in Ethiopia are characterized by chronic poverty and luck of health and other important infrastructures. Further more harmful traditional experiences like marriage by abduction, early marriage and females circumcision, is predominately practiced in the rural areas. However the relation between this harmful traditional practices and prevalence of HIV/ AIDS has found insignificant. On the other side many other significant factors which are widely practiced in urban areas are found to have a significant effect on the prevalence of HIV. Thus a higher prevalence rate of HIV AIDS is revealed in urban areas where the prevalence of commercial sex workers and its associated factor is highly manifested.

. The third underlying determinant in that have mentioned in the proximate theoretical frame work for HIV AIDS is the socio cultural or simply cultural determinant . it includes religion, marriage types (like early marriage ,abduction marriage) ,female circumcision and other related norms that are exercising in a given society. Some Cultural variables are different features in different societies and people due to different norms and customs of each society .for example marriage through abduction is considered as norms in one society and it has considered as taboo in other society. Religion is one of the cultural variable, which operate through proximate determinants that plays a significant role in preventing for HIV AIDS especially through fidelity type denominations will affect the proximate determinant of abstinence , which lead some body to protect him/ her self from HIV which has brought due to unsafe sexual contact.. In this paper it is found that religion is significantly affecting the prevalence of HIV only among women. Unlike to the hypothesis and the theory given in

the background section of the paper female circumcision (genital mutilation) shows a negative relation ship with the prevalence of HIV AIDS. This contradiction is may be the result of low HIV prevalence rate of rural areas of Ethiopia that predominantly this tradition has practiced. As it is trying to mention in the back ground section, female circumcision is prevalent in rural areas where the prevalence rate is low. This low prevalence rate will undermine the rate of transmission of HIV form infected to healthier person through this practices. However, it needs some study to why this is the reason, I suggest that It will be a potential future study for researchers.

8.CONCLUSION

To answer the research questions which have been setting in the paper many variables associated with the prevalence of HIV AIDS are selected from the EDHS data set analyzed accordingly for male and female respondents respectively. The analysis encompasses individuals in the age groups (15-49) of female and (15-64) of male. The variables were classified as demographic, socioeconomic cultural and analyzed by using logistic regression separately based on the settings of Ethiopia and different results has found.

The selected Demographic variables have found a significant effect in the prevalence of HIV AIDS in Ethiopia. All the demographic variables: Age, Sex of head of household and marital status are significantly affect the prevalence of HIV AIDS of female individuals. And, except sex of a head of household both age and marital status of male individuals is significantly associated with the prevalence of HIV AIDS. The findings show the odds of being HIV positive is higher in the age groups 20-39, women head of household and among the groups of divorced/ widowed or separated individuals. Relating to the spread of HIV among men the odds of being HIV positive is higher in male individuals who found in the age group 20-49 and the one who had in marital relationship previously, but not now.

Concerning to socioeconomic factors, surprisingly poverty has found to have insignificant effect on the prevalence of HIV of Ethiopia both among male and female individuals. In contrast, female richness has significantly and positively associated with the prevalence of HIV among females. Similarly, significant relations has found in the level of education of women and HIV prevalence rate. Concerning to exposure to media and currently working men ,the odds of being HIV positive is higher. place of residence also has found that it has a significant effect on the prevalence of HIV. The results show that the odds of being HIV positive are higher in urban areas than that of rural.

Among many cultural variables only two of them are found to have significant effect. Being male and circumscribed reduced the risk of acquiring HIV. Religion has found a significant effect on reducing the prevalence of HIV among females,

In conclusion, demographic variables has found highly related to the prevalence of HIV in Ethiopia in both male and female individuals. And Some socioeconomic and very limited socioeconomic variables also reveals significant association with the prevalence of HIV AIDS. Further more ,t he main factors that have associated with the prevalence of HIV found to be different among male and female individuals.

REFERECE LISTS

Adamson S.Muula(2009) "*Marriage not religion, is associated with HIV infection Among Women in Rural Malawi"* springer science+ business media,LLC 2009.

David H. Shinn(2001)*"HIV/AIDS in Ethiopia: The Silence Is Broken; the Stigma Is Not"* Africa Program Center for Strategic and International Studies

Daniel B. Hrdy *Cultural Practices Contributing to the Transmission of Human (*1987)*Immunodeficiency Virus in Africa Reviews of Infectious Diseases*, Vol. 9, No. 6, pp. 1109-1119 : The University of Chicago Press.

Daniel Jordan Smith (2004) *"Youth, Sin and Sex in Nigeria: Christianity and HIV/AIDS-Related Beliefs and Behaviour among Rural-Urban Migrants"* Culture, Health & Sexuality, Vol. 6, No. 5, pp. 425-437

Emmanuel Monjok, E. James Essien and Laurens Holmes Jr(2007)."*Female Genital Mutilation: Potential for HIV Transmission in Sub-Saharan Africa and Prospect for Epidemiologic Investigation and Intervention***"** African Journal of Reproductive Health Vol. 11, No. 1, pp. 33-42

Ethiopia HIV/AIDS Prevention & Control Office (HAPCO) and Global AIDS Monitoring & Evaluation Team (GAMET). " *HIV / AIDS IN ETHIOPIA -AN EPIDEMIOLOGICAL SYNTHESIS*" World Bank Global HIV/AIDS Program April 2008

Helmut Kloos, Damen Haile Mariam, Bernt Lindtjørn(*2007).* **"***The AIDS Epidemic in a Low-Income Country: Ethiopia"* :Human Ecology Review, Vol. 14, No. 1

Helmut Kloos, Damen Haile Mariam (2004)**"***HIV/AIDS in Ethiopia: An Overview*" Northeast African Studies 7.1 (2000) 13-40

I. O. Orubuloye, Pat Caldwell and John C. Caldwell (1993)"*The Role of High-Risk Occupations in the Spread of AIDS: Truck Drivers and Itinerant Market Women in Nigeria***";** International Family Planning Perspectives, *Vol. 19, No. 2, pp. 43-48+71*

Kate Bonner(2001)" *Male Circumcision as an HIV Control Strategy: Not a 'Natural Condom" Reproductive Health Matters*, Vol. 9, No. 18, Images of Sexuality and Services: Meeting Women's Needs, pp. 143-155.

Kathryn M. Yount and Bisrat K. Abraham2 (2007)." *Female Genital Cutting and HIV/AIDS among Kenyan Women* " *:*Studies in Family Planning, Vol. 38, No., pp. 73-88

Laura Nyblade,Rohini Pande,Sanyukta Mathur,Kerry MacQuarrie,Ross Kidd,Hailom Banteyerga,Aklilu KidanuGad KilonzoJessie Mbwambo Virginia Bond (2003) *"Disentangling HIV and AIDSSTIGMA in Ethiopia, Tanzania and Zambia"* International Center for Research on Women (ICRW).

Janet W. McGrath, Debra A. Schumann, Jonnie Pearson-Marks, Charles B. Rwabukwali, Rebecca Mukasa; **"***Cultural Determinants of Sexual Risk Behavior for AIDS among Baganda Women* "medical anthropology quarterly : Vol. 6, No. 2 (Jun., 1992), pp. 153-161

Jennifer G. Cooke (2004)."*Battling HIV/AIDS in Ethiopia"* U.S. Approach Needs Nuance, Flexibility: A Report of the CSIS HIV/AIDS Delegation to Ethiopia: Center for Strategic and International Studies.

Joint United Nations Programme on HIV/AIDS (UNAIDS) and World Health Organization (WHO) 2009 *" AIDS epidemic update09"* WHO Library Cataloguing-in-Publication Data.

Manju Rani, Sekhar Bonu and Nafissatou Diop-Sidibe (2004*) "An Empirical Investigation of Attitudes towards Wife-Beating among Men and Women in Seven Sub-Saharan African Countries"* African Journal of Reproductive Health Reproductive, Vol. 8, No. 3, pp. 116-136 Women's Health and Action Research Centre (WHARC*)*

Mehret Yerdaw, Teshome Nedi and Fikre Enquoselassie (2002) **"***Assessment of Awareness of HIV/AIDS among Selected Target Groups in and around Addis Ababa, Ethiopia";*African Journal of Reproductive Health Vol. 6, No. 2, pp. 30-38.

Orubuloye, I.O., Caldwell, P., Caldwell, J.C.,(1993). "*The role of high risk occupation in the spread of AIDS: Truck drivers and itinerant market women in Nigeria*."

Seth F. Berkley, Roslaw Widy-Wirski, Samuel I. Okware, Robert Downing, Michael J. Linnan, Karen E. W... (1989) "*Risk Factors Associated with HIV Infection in Uganda "* ;The Journal of Infectious Diseases, Vol. 160, No. 1 (Jul., 1989), pp. 22-30

Shelley Clark, Judith Bruce and Annie Dude (2006)." *Protecting Young Women from HIV/AIDS: The Case against Child and Adolescent Marriage"* International Family Planning Perspectives,: Vol. 32, No. 2, pp. 79-88.

Shelley Clark(2004), " *Early Marriage and HIV Risks in Sub-Saharan Africa* **"** Studies in Family Planning, Vol. 35, No. 3, pp. 149-160

Stelios H. Zanakis ,, Cecilia Alvarez b, Vivian Li c (2004) *;"Socio-economic determinants of HIV/AIDS pandemic and nations efficiencies"* European Journal of Operational Research 176 (2007) 1811–1838.

W Hladik, I Shabbir, A Jelaludin, A Woldu, M Tsehaynesh, and W Tadesse(2006)*"HIV/AIDS in Ethiopia: where is the epidemic heading?"* Sex Transm Infect. 2006 April; 82(Suppl 1): i32–i35. doi: 10.1136/sti.2005.016592.

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WEBS

http://www.itacaddis.org/italy/index.cfm?fuseaction=basic_pages.basic_page&page_name=52

http://www.unicef.org/infobycountry/ethiopia_30783.html

http://www.icaso.org/publications/gender_EN_3.pdf