ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF ALLIED HEALTH SCIENCES
DEPARTMENT OF NURSING AND MIDWIFERY

THE PREVALENCE OF HEPATITIS B VIRUS INFECTION AND ASSOCIATED FACTORS AMONG HIV POSITIVE ADULTS ATTENDING ART CLINIC AT SELECTED PUBLIC HOSPITALS, ADDIS ABABA, ETHIOPIA.

BY: MULUSHEWA BIRU (BSc)

A RESEARCH THESIS TO BE SUBMITTED TO SCHOOL OF GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCES SCHOOL OF ALLIED HEALTH SCIENCE DEPARTMENT OF NURSING AND MIDWIFERY IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTERS OF SCIENCE IN ADULT HEALTH NURSING.

ADDISABABA, ETHIOPIA
JUNE, 2017

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APPROVED BY THE BOARD OF EXAMINERS

This thesis by Mulushewa Biru (BSc) is accepted in its present form by the board of examiners as satisfying thesis requirement for the degree of Masters of Science in Adult Health Nursing.

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Abstract

Back ground- Liver disease is the single greatest cause of non AIDS related death in patients with HIV disease, accounting for a greater proportion of deaths than non AIDS related cancers. Most liver disease among HIV-infected individuals is secondary to confection with HBV. Many HIV positives might be co-infected with HBV. It might result in cancer, cirrhosis, liver failure and death.

Objective: The aim of this study was to determine prevalence of Hepatitis B Virus Infection and Associated Factors among HIV Positive Adults Attending ART Clinic at Tikur anbessa specialized referral, Zewditu and Alert hospitals, Addis Ababa, Ethiopia March-April, 2017.

Methods: An institution based cross-sectional study was conducted on outpatients at ART clinic from TASH, Zewditu Memorial hospital, and Alert hospital from March-April, 2017. A sample size of 169 participants was selected by using systematic random sampling method. Data was collected using pre-tested interviewer administered structured questionnaires and by reviewing charts for HBsAg that was routinely screened with laboratory technicians of the hospitals. Frequencies distribution, bivariate and multivariate logistic regressions were done. $P < 0.05$ with 95% CI was considered statistically significant.

Results: From 169 HIV positive adults', 165 of them were included in the analysis with a response rate of 97.6%.Majority of the study participants 99(60.0%) were female and the mean age of the participants was 38.9± 9.89 SD years. The prevalence of HBsAg was found to be 12 (7.3%); of whom 3(25%) were females and 9 (75%) were males and multivariate analysis revealed that those who was male 5.7 times more likely contaminated with HBV coinfection than female [AOR 5.726; 95% CI 1.346-24.362]. Those who have previous history of Dental extraction were 6.4 times more likely to be contaminated with HBV than who did not [AOR = 6.4: 95% CI, 1.256-33.097].

Conclusion: the prevalence of HBV infection was found to be intermediate in HIV infected patients in the study area. Regarding Sex distribution, males were frequently infected with HBV than females. Furthermore, in this study it was also observed a greater HBV Prevalence among individuals having a history of multiple sexual practices; opportunistic infection and dental extraction were found statistically associated factors for HBV infection.

Keywords: HIV/AIDS; HBV; Adult patients; Co-morbidity; Associated factors

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Abbreviations and acronyms

AAU – Addis Ababa University

AIDS – acquired immunodeficiency syndrome

AOR – adjusted odd ratio

ART – antiretroviral therapy

CI – confidence interval

HAART – highly active antiretroviral therapy

HBsAg – hepatitis b surface antigen

HBV – hepatitis b virus

HCC – hepatocellular carcinoma

HIV – human immunodeficiency virus

IQR – interquartile range

IVDA – intravenous drug abuse

NGO's – nongovernmental organization

OIs – opportunistic infections

PLHIV – people living with HIV

STI – sexually transmitted infection

TASH – Tikur anbessa specialized hospital

WHO – world health organization

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Chapter 1 Introduction

1.1 Background

Hepatitis is an infection of the liver caused by several viruses, the most common of which are hepatitis A, B and C. Both hepatitis B virus (HBV) and C virus (HCV) are spread mainly through contaminated blood and blood products, sexual contact and contaminated needles(1).

Liver disease is the single greatest cause of non AIDS related death in patients with HIV disease, accounting for a greater proportion of deaths than non AIDS related cancers. In patients co-infected with HIV plus HBV, fibrosis rates are accelerated compared with those infected with HBV alone, leading to faster progression to end-stage liver disease(2).

Human immunodeficiency virus (HIV) is a lenti virus (a member of the retrovirus family) that causes acquired immunodeficiency syndrome (AIDS) and there are two types of HIV namely, HIV 1 and HIV-2. Both types are transmitted by sexual contact, through blood and from mother to child, and they appear to cause clinically indistinguishable AIDS. In addition to this, worldwide the more prevalent virus is HIV-1(3).

Most liver disease among HIV-infected individuals is secondary to confection with HBV. Many HIV positives might be co-infected with HBV. It might result in cancer, cirrhosis, liver failure and death(4).

Antiretroviral therapy (ART) can be very challenging when coinfection is present as HIV-infected Individuals are usually less responsive to treatments for HBV and have raised risk of hepatotoxicity and drug interactions(5).

HIV positive individuals are more likely to be infected with HBV, to be chronic carrier and have a higher HBV replication rate than HIV negative individuals. In addition, it is evident that immuno-suppression brought about by HIV infection may cause re-activation or re-infection in those previously exposed to HBV; further more HIV infection exacerbates liver disease in HBV

co-infected individuals and there is an even greater risk of liver disease when HIV and HBV co-infected patients are treated with HAART(6).

Human immunodeficiency virus (HIV) and hepatitis B virus (HBV) share the same transmission route, HBV/HIV coinfection (defined as positivity of HBsAg for over 6 months and HIV positivity confirmed with western blotting) is commonly observed. Among HIV-infected population, coinfection rate ranges from 6% to 14% in areas with low HBV prevalence(7), while that in areas with high HBV endemicity (developing countries) is 6%–20%(8).

The hepatitis B virus cause chronic viral hepatitis, a major global health problem responsible for 57 % of liver cirrhosis(9)

1.2 Statement of the problem

Viral hepatitis is a disease characterized by inflammation of liver and in many cases permanent damage to liver tissue(10). Common types of hepatitis virus are hepatitis A, B, C, D, E and G. Hepatitis B is the most serious type of viral hepatitis, which can lead to chronic liver disease and put people at high risk of death from cirrhosis of the liver and liver cancer(11).

Hepatitis B virus (HBV) and Human immunodeficiency virus (HIV) infections are posing huge health impact throughout the world and the problem is higher in developing countries, very particularly, in Africa(12).

The impact of co infection is especially important in regions with widespread use of ART. As the use of ART becomes more prevalent in parts of the world with high HBV endemicity and long term survival increases, it is likely that liver disease from chronic hepatitis B in HIV-infected population may emerge as a greater public health problem than before(13).

Hepatitis B virus (HBV) infection is one of the major diseases of mankind that has shown to cause serious public health problem(14)and around 2.2 billion people (over a third of the world population) worldwide have evidence of past or present infection with the viruses, and around

500 million of these are chronically infected, more than ten times those affected by HIV/AIDS(15). Each year, chronic viral hepatitis results in around 1.3 million deaths from chronic and liver disease and hepatocellular carcinoma (HCC)(16).

The global prevalence of HBV infection varies widely; and its endemicity ranges from high (≥8%) to intermediate (2-7%) and low (<2%) (17) and Regions like South East Asia and sub-Saharan Africa are high endemic areas for HBV(6).

According to World Health Organization (WHO) estimates, 22.5 million HIV-infected people lived in sub-Saharan Africa by the end of 2007. When geographical variations in HBV and HIV prevalence are not taken into account, an HBsAg prevalence of 15% would mean that 3.4 million HBV/HIV co-infected people live in this region(18).

In regions as Sub-Saharan Africa and east Asia, with high HBV prevalence, the majority of HBV infections occurs perinatally or during early childhood through household close contact, medical or cultural procedures like scarification or tattoo(19).

The study conducted by Tsega Edemariam on Epidemiology, prevention and treatment of viral hepatitis with emphasis on new developments on 2000 In Ethiopia as part of other sub-saharan Africa countries, the prevalence of HIV and liver disease is high and posing a great public health problem. Apart from its significant prevalence, liver disease contributes approximately 12 % of the hospital admissions and 31 % of the mortality in medical wards of Ethiopian Hospitals(20).

As Human Immunodeficiency Virus and Hepatitis B Virus infections are highly prevalent and they are among the major public health concern in developing countries including Ethiopia, investigating this problem is of paramount benefit. This constitutes an insufficient documentation of the country's burden of HIV/HBV co-infection.

Therefore, this study was conducted to summarize the available information towards answering the key question: what is the prevalence of HIV/HBV co-infection in Addis Ababa public

hospitals, Ethiopia? And what would be the associated factors of HIV/HBV co-infection among adults who follow in ART clinic in Addis Ababa public hospitals?

1.3 Significance of the study

The result of this study would be benefit at healthcare service setting by incorporating culturally accepted findings of HIV/HBV co-infection. It would help to:

- Community health workers (health extension workers) and health care service provider (Nurses and Doctors), who work ART clinic as a baseline in their counseling/health education session to minimize HIV/HBV co-infection
- Health manager by providing relevant information for future planning and interventions of appropriate strategies to prevent HIV/HBV co-infection.
- It also helps to NGOs and policy makers to give information that help to formulate appropriate implementation tool.
- As a baseline data for those who are interested in carrying out further research with this regard.

Chapter 2 Literature Review

2.1 Prevalence of HIV/HBV CO-infections

The study which was conducted on 2007 about the Prevalence and Risk Factors for Chronic Hepatitis B in HIV Patients Attended at a Sexually Transmitted Disease Clinic in Vitoria, Brazil among 851 HIV patients showed that Median age was 35.0 (interquartile range 30; 42) years and median years of education was 8.0. The prevalence of chronic HBV was 3.8% in HIV patients. Alcohol abuse in 80 (9.4%) cases and past STI in 320 (37.6%) cases(21). The co-infection of HIV-HBV has been well investigated in European countries and several studies have been established that the prevalence of HBV in European countries is lower than others especially African and Asian countries.

Study conducted on occult hepatitis B virus infection in a cohort of HIV positive patients: correlation with hepatitis C virus co-infection, virological and immunological features in 2009 as showed Infection 15.4% (27 cases) out of 175 HIV Positive Italian patients were co-infected with HBV(22).

A study in the Netherlands on Patients co-infected with HIV and hepatitis-B virus (HBV): the favorable effect of lamivudine, as part of combined antiretroviral therapy, on HBV may be dependent upon the number of CD4-cells and which was took place in 2004 identified that 3.6% of HIV-infected patients were HBsAg positive(23).

Also, finding of a study in India 2012 on 874 HIV-infected patients in India indicated that 8.35 percent of them were infected with HBV(24). There was a study on Prevalence of hepatitis B and C viruses in HIV-positive patients in China from August 2012 to September 2014 of 1944 HIV-positive patients, the prevalence of 186 (9.5%) were HIV/HBV co-infected(25). In study that was conducted on Prevalence of HBV in HIV Patients Referred to Imam Khomeini Hospital, Tehran, Iran from 2008-2010, it is indicated that the average prevalence of HBV among HIV infected patients was found 11.3 %(26). Also the study conducted on Hepatitis B and C virus co-infections in human immunodeficiency virus positive North Indian patients from Jan 2003-Dec

2005 the result showed that the rate of HBV co-infection was 5.32% (24 in 451) in HIV positive patients(27).

There were a cross sectional study was conducted in five ART clinics to obtain data from a systematic random sample of PLHIV in the Eastern region of Ghana from March to June 2012 on Prevalence of hepatitis B virus co-infection among HIV-seropositive persons attending antiretroviral clinics in the Eastern Region of Ghana and showed that Three hundred and twenty PLHIV were recruited in all, 232 (72.5%) of whom were females. Their ages ranged from 4 years to 76 years with a median age of 40.0 years and Males were significantly older, with mean age of 43.9 years (±14.3) compared to females with mean age of 39.17 years (±11.7), p=0.01. Twenty eight PLHIV tested positive for HBV, giving an overall HBV-HIV co-infection seroprevalence of 8.8%. PLHIV aged 31 - 40 years reported the highest co-infection prevalence of 4.4% (14/320), whiles none was observed in the 21 - 30 years age group. Study participants from rural areas constituted 58.8% (188/320) of study population, of which 7.9% (15/188; p=0.560) were co-infected(28).

Similar studies also conducted on 2013 in this country on prevalence, co-infection and associated risk factors of hepatitis B virus (HBV) and Human immunodeficiency virus (HIV) in Benue State, A total of 1535 subjects participated in the study, 477 (31.1%) were males while 1058 (68.9%) were females (Mean age 29.2, Age SD 10.3, Range 1 – 78years). HBV positivity was recorded in 184 (12.0%) and HIV was found in 244 (15.9%) subjects and among this Forty two (2.7%) had both HBV and HIV infection which also indicates 17.2% HBV prevalence in HIV positive subjects. HBV prevalence in HIV was higher in automobile accident victims (34.4%) followed by sex workers (21.2%) and also the two viral infections were significantly associated with each other (P=0.006) during this study(29).

In other hand there were a study in 2009 on Prevalence of hepatitis B and C viral co-infections among HIV-1 infected individuals in Nairobi, Kenya among Three hundred (300) HIV patients comprising 129 (43%) males and 171 (57%) females were enrolled in this study and their age ranged between 4–59 years with a mean age of 33.92 (±8.96) years with men 36.0 (±8.7) and 32.6 (±8.97) years for females. There were 48 (16%) co-infections with 18 (56%) HIV/HBV

among those infected. However, males had the highest prevalence rates of HBV infection (55%) and Among those infected, majority of them were aged 25 and 40 years(30).

similarly, cross-sectional study was conducted during the period December 2010 to June 2012 in Khartoum, Sudan on overt and occult hepatitis B virus infection in adult Sudanese HIV patients and a total of 358 HIV-infected patients were enrolled in the study and their mean (± standard deviation) age was 35.2 ± 9.3 years; the male to female ratio was 1.3:1.0 as the prevalence showed Forty-two patients (11.7%) were HBsAg-positive(31).

The study which was conducted on Seroprevalence of multiple sexually transmitted infections among antenatal clinic attendees in Gondar Health Center, northwest Ethiopia, in 2008, Among the 480 ANC attendees, and the study show that the seroprevalence of HBV was 7.3% (32).

The study conducted on Prevalence of hepatitis B surface antigen (HBsAg) and its risk factors among individuals visiting Goba General Hospital, South East Ethiopia, 2012 as show that from the total sample size, 353 were involved making response rate of 91.9%. The majority of the participants 246 (69.7%) were from urban and 203 (57.5%) of them were females. Among the study subjects, 229 (64.9%) were married, 82 (23.2%) were single and 107 (30.3%) of the study subjects belong to 25–34 years of age. Among 353 study participants tested, HBsAg was detected positive in 26 (7.4%) and 21 found to be positive for HIV infection. Among 21 clients who were positive for HIV, 9 (42.8%) were positive for HBsAg and among 322 tested negative for HIV, 17 (5.1%) of them found to be HBsAg positive respectively. Of different risk factors considered in this study, history of invasive procedures accounts about 108 (79.4%) followed by history of multiple partner which accounts about 54 (15.3%). Among subjects reported invasive procedure, 108 (78.3%) reported tooth extraction, 7 (5.1%) reported history of ear piercing (33).

The study which was conduct on Prevalence of Hepatitis B Virus Infection and Associated Factors among HIV Positive Adults Attending ART Clinic at Hawassa Referral Hospital in 2014 as showed that From 358 HIV positive adults contacted, 348 of them were included in the analysis with a response rate of 97.2% and among the Majority, 220 (63.2%) of the respondents were females, age ranged 25 - 34 years old (52.9%) with mean (±SD) age of 33.2 (9.1) years old.

About 92% of them were urban residents. The prevalence of HBsAg was found to be 24 (6.9%); of whom 17(7.7%) were females and 7 (5.5%) were males. similarly, With respect to age, the prevalence of HBsAg was 3 (7.5%) in age category of 18-24, 15 (8.2%) in age category of 25 - 34 and 6 (4.8%) for above 34 years old. All of the participants with HBsAg positive results live in urban areas. Also Concerning to their marital status, the prevalence of HBsAg was 12.3% among singles, 7.2% among married, 2.0% among divorced and 6.2% among widowed participants. Illiterate had a prevalence of 12.8%; while among those with primary and secondary schools the rate was 5.7% and 9.6% respectively(34).

There was the study conducted on Assessment of hepatitis B virus and hepatitis C virus infections and associated risk factors in HIV infected patients at Debretabor hospital in 2012, South Gondar as showed that of the total 395 HIV infected patients participated in the study, HBsAg was detected in 24 (6.1%).also Serological signs of any viral hepatitis (HBsAg) was found in 28 (7.1%) of HIV patients and according to this study the prevalence of HBV infection was found 6.8 % and 5.6 % among male and female patients, respectively. Similarly, was found that prevalence of HBsAg was 10 % in patients with single marital status, 11.5 % in patients with history of opportunistic infections and 20 % in patients with multiple sexual partners(35).

Another study was conducted on Sero-prevalence of HBV and associated risk factors among HIV positive individuals attending ART clinic at Mekelle hospital, Tigray in 2014 and a total of 525 study participants were enrolled and of this 17 were excluded due to incomplete data. The mean (+SD) age of the study participants was 37.8 + 9.6 and most, 485 (95.5 %) were urban resident. Three hundred seventy one (73 %) of the participants were attended at least primary school. Seventy Three (14.4 %) and 106 (20.9 %) were civil servants and housewives respectively of the total HBsAg positive individuals 19 (9.4 %) were males and regarding the marital status,18(6.7%) of the HBsAg positive participants were married also twelve (7.1 %) and 7 (6.6 %) of the participants positive for HBsAg Were attended elementary school and civil servants respectively(36).

similar study also conducted on HBV and HCV seroprevalence and their correlation with CD4 cells and liver enzymes among HIV positive individuals at University of Gondar Teaching

Hospital in 2011 and the study as indicate that Among 400 study participants, 122(30.5%) were males (mean age: 37 ± 9 years) and 278(69.5%) were females (mean age: 32 ±9 years) with male to female ratio of 0.4:1. The lowest and the highest age of the study participants were 18 and 70 years respectively. The median age of the study participants was 32 years. Majority 167 (41.8%) of the study participants were in the age group of 30–39 years old. Among the study groups, 151 (37.7%) were illiterate and the sero-prevalence of HBV were 20(5.6%) in those HIV positive individual(37).

2.2 Associated factors of HIV/HBV co-infections

The study conducted on Prevalence and Risk Factors for Chronic Hepatitis B in HIV Patients Attended at a Sexually Transmitted Disease Clinic in Vitoria, Brazil on 2007 there were significant associations between chronic hepatitis-B infection and male gender, STI during the and HIV Diagnosis . Similarly, shows variables identified Found to be independently associated with chronic HBV infection. Male gender, death and STI during HIV diagnosis were significantly associated with HBV infection, but Participant age was not, as it had no independent association with HBV(21).

study also conducted in five ART clinics to obtain data from a systematic random sample of PLHIV in the Eastern region of Ghana from March to June 2012 on Prevalence of hepatitis B virus co-infection among HIV-seropositive persons attending antiretroviral clinics in the Eastern Region of Ghana as showed Factors associated with hepatitis B infection such as lack of knowledge about hepatitis B infection, no previous testing for HBV and vaccination against HBV, scarifications marks or tattoos on body were identified. Four out of 311 (1.3%) reported to have vaccinated against HBV, out of which only 2 (50%) completed the full course. Of 309 study participants, 48/311 (15.4%) reported or had scarification marks and/or tattoos on their bodies(28).

Similarly study which took place in 2014 on Prevalence of Hepatitis B Virus Infection and Associated Factors among HIV Positive Adults Attending ART Clinic at Hawassa Referral

Hospital as Multivariate analysis revealed that those who have previous history of surgical procedure were 4.6 times more likely to be contaminated with HBV than who did not and those with previous opportunistic infection were about 5 times more likely to show HBV surface antigen marker than who did not (34).

According to the study in Debretabor which was conducted in 2012 on Assessment of hepatitis B virus and hepatitis C virus infections and associated risk factors in HIV infected patients , as indicate that none of the sociodemographic variables, experience of ART, hospital admission, surgical history, dental procedures and sharing of sharp materials were significantly associated with HBsAg. Similarly, the result indicated in a multivariate analysis as showed history of opportunistic infections and multiple sexual partners were independently and significantly associated with HBsAg positivity. The odds of study participants with history opportunistic infections (AOR=3.17, 95 % CI=1.3-7.7, P=0.010) and multiple sexual partners (AOR=8.1, 95 % CI=1.8-33.97,P=0.027) were around three and eight times higher for of acquiring HBV infection than those who were not exposed(35).

The study that was mentioned in Mekelle above was indicate that as the bivariate analysis as showed sex, multiple sexual partners, surgical history and CD4 count <200 cells/µl has shown statistically significant association with HBsAg Seropositivity.The significantly associated variables Were entered into multivariate model and: male (AOR = 2.6, 95 % CI 1.2–5.7), multiple sexual partners (AOR = 4.2, 95 % CI 1.3–13.1) and CD4 count <200 cells/µl (AOR = 3.5, 95 % CI 1.1–11.2) were found significantly associated with HBsAg positivity(36).

Study also conducted on HBV and HCV seroprevalence and their correlation with CD4 cells and liver enzymes among HIV positive individuals at University of Gondar Teaching Hospital in 2011as shows that significantly higher prevalence of HIV-HBV co-infection was observed in males 11(9.4%) compared to females 9(3.4%) (X2 = 5.714, P = 0.017). Although statistically non-significant, higher 6(8.3%) (X2 = 3.083, P = 0.379) prevalence of HIV-HBV co-infection was observed in the age group between 40–49 years. Individuals who were widowed 4(9.8%) (X 2 =3.681, P = 0.298) and those who had better educational status (certificate, diploma and above) 4(10.3%) (X 2 = 2.602, P = 0.457) showed nonsignificantly higher HIV-HBV positive rate. The

prevalence of HIV-HBV co-infection in urban and rural residences were 17(5.3%) and 3 (5.0%) respectively(37).

The study which was conducted on Prevalence of Hepatitis B surface antigen (HBsAg) among visitors of Shashemene General Hospital voluntary counseling and testing center in 2011.In this study also significantly high prevalence of HBsAg was observed among individuals with history of invasive procedures, tooth extraction (AOR 7.61; 95% CI, 5.9-27.2 p= 0.006)and ear piercing(38).

Study conducted on the risk of acquiring hepatitis B and C viral infections following tooth extraction in Al Farsha area, south-western Saudi Arabia, in 2015 In this study, tooth extraction was found to be a common risk factor in the transmission of HBV infection(AOR = 2.363, 95% CI: 1.102–5.065,$p<0.05$)(39).

2.3 Conceptual framework

Concepts that are directly and indirectly related to the major variables of the study developed from literature review. Among these: Health related factors, socio-demographic factors, cultural factors expected to affect the dependent variable of the study (27, 28,29,30,31,32,33,34, 35, 36, and 37).

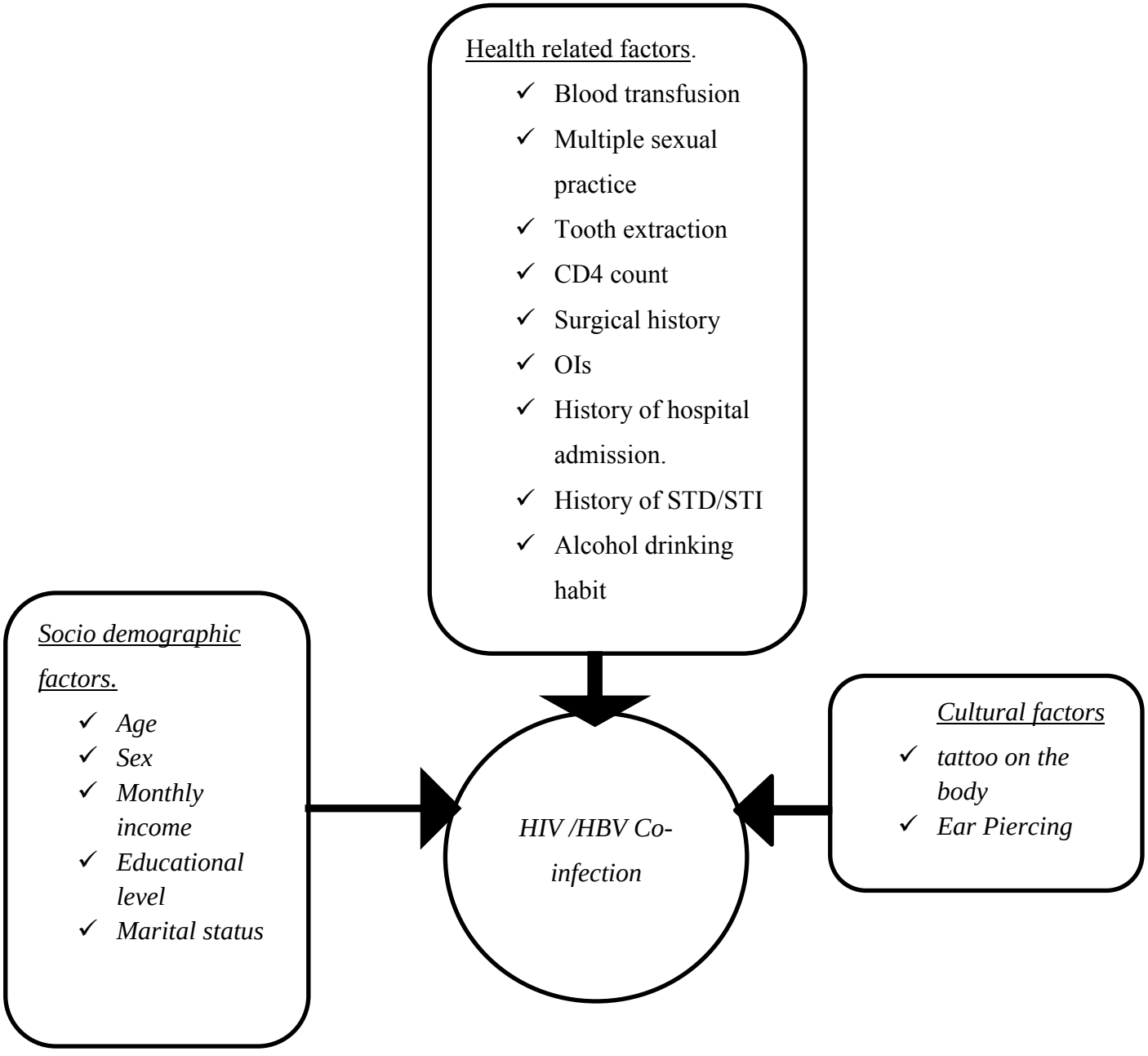

Figure 1 conceptual framework and variable specification developed for study on HIV Positive Adults Attending ART Clinic at Addis Ababa public Hospital, Addis Ababa, Ethiopia 2017.

Chapter 3 objectives

3.1. General Objectives

To assess the Prevalence of Hepatitis B Virus Infection and Associated Factors among HIV Positive Adults Attending ART Clinic at TASH, Zewditu memorial hospital and Alert hospital, Addis Ababa, Ethiopia 2017.

3.2. Specific Objective

1. To determine the Prevalence of Hepatitis B Virus Infection among HIV Positive Adults Attending ART Clinic.
2. To identify factors associated with the Hepatitis B Virus Infection among HIV Positive Adults Attending ART Clinic.

Chapter 4 Methods and Materials

4.1 Study area

This study was conducted in Addis Ababa, public hospitals. Addis Ababa is the capital city of Ethiopia and it has a population size of 3,048,631 of whom 1,595,968 were females and the rest 1,452,663 were males. The city is divided in to 10 sub-cities(40). There are about 13 public hospitals in the city which are distributed throughout ten sub cities (5 federal, 6 under Addis Ababa health bureau, 1 owned by police force and 1 armed force hospital) and among these Tikur Anbessa Specialized Hospital, Zewditu memorial hospital and Alert hospital were selected.

4.2 Study design and period

This institution based cross-sectional study was conducted from March-April 2017.

4.3 source population

All adults living with HIV (age >=18 years old), who were visit as the selected hospitals and attending ART clinic.

4.4 Study Population

All adults living with HIV (age >=18 years old), who were visit Tikur anbessa specialized, Zewditu and Alert hospitals, attending ART clinic during the study period.

4.5. Study units

All adult living with HIV(age >=18 years old), who were visit Tikur anbessa specialized, Zewditu and Alert hospitals, attending ART clinic during the study period and those individual who were selected with systematical random method.

4.6. Inclusion & exclusion criteria

4.6.1 Inclusion criteria

All adults (age >= 18 years old) living with HIV, who were visit ART clinic of Tikur anbessa specialized, Zewditu and Alert hospitals and who were volunteer included in the study**.**

4.6.2 Exclusion criteria

A participant who were seriously ill, unable to communicate during the data collection time and who were not volunteer was excluded**.**

4.7. Sample size determination

The sample size was calculated by using single population proportion formula with the following assumptions;

The prevalence (proportion) for HIV/HBV co infection 6.9%(taken from previous study which was conducted in Hawassa referral Hospital)(34), margin of error 4% and 95% confidence level.

$$\frac{(z_{\alpha/2})^2 p(1-p)}{(d)^2}$$

Where; n=the desired sample size

P= Prevalence of HIV/HBV co infection

Z (α/2) = critical value at 95% confidence level of certainty (1.96).

d= the margin of error between the sample and the population (4%)

$$n = \frac{(z_{\alpha/2})^2 p(1-p)}{(d)^2} = \frac{(1.96)^2\,(0.069(1-0.069)}{(0.04)^2} = 0.246/0.0016 = 154.187 \approx 154$$

n=154

The sample size will be n=154

Therefore by considering 10% non-responses rate the total sample size were 169.

4.8. Sampling procedure

In this study from the total of 13 public hospitals in 10 sub cities, hospitals giving routine HBsAg screening service were included in the sample and the others not giving the service were excluded, therefore among those hospitals that give the service (Tikur anbessa specialized, Zewditu memorial And Alert hospitals) were selected. The participants were selected by using a systematic sampling technique after identifying an initial starting respondent by using a random (lottery) method. The sample sizes was distributed to each hospital proportional to the average number of patient per month of the hospitals. The interval (K) was calculated as K= $(N/n)^{th}$ and every k^{th}participant was interviewed.

These were Tikur anbessa specialized hospital, Zewditu hospital and Alert hospital which provide Routine HBsAg screening service for ART clients of 1000, 3000 and 2000 adults at ART clinic living with HIV those visit every month respectively. Since the number of adult living with HIV who were interviewed at the waiting area (sample size calculated 169) and data collection were take one month, data were collected from Black lion, Zewditu and Alert public hospitals.

Proportionate allocation

Based on proportionate to size allocation this 169 sample size was distributed in to three hospitals.

ni=(n/N)Ni

Where ni =Sample size of the each hospital=?

Ni=the population size of the each hospital, TASH =1000, Zewditu H=3000 and Alert H=2000 every months respectively.

n=n1+n2+n3 is the total sample size =169

N=N1+N2+N3 is the total population size of hospital =6000

Therefore the proportionate allocation would be

Total population (N) =6000and sample size (n) =169

TASH= 28

Zewditu =85

Alert= 56

According to proportionate allocation, the number of adult living with HIV that was selected for sampling in respective hospital was: TASH=28, Zewditu=85and Alert=56.

Then the study participants were selected by systematic random sampling method from each hospital at the waiting area. To get the interval from each hospital the formula is as follow;

K = $(N/n)^{th} = k^{th}$

Where, K =interval of adult living with HIV that were selected in each hospital

n= sample size

N=Number of adult living with HIV in each hospital.

K=$(N/n)^{th} = (6000/169)^{th} = 35.5 \approx 36^{th}$

By using k every 36^{th} participant was selected at the waiting area in each Hospital.

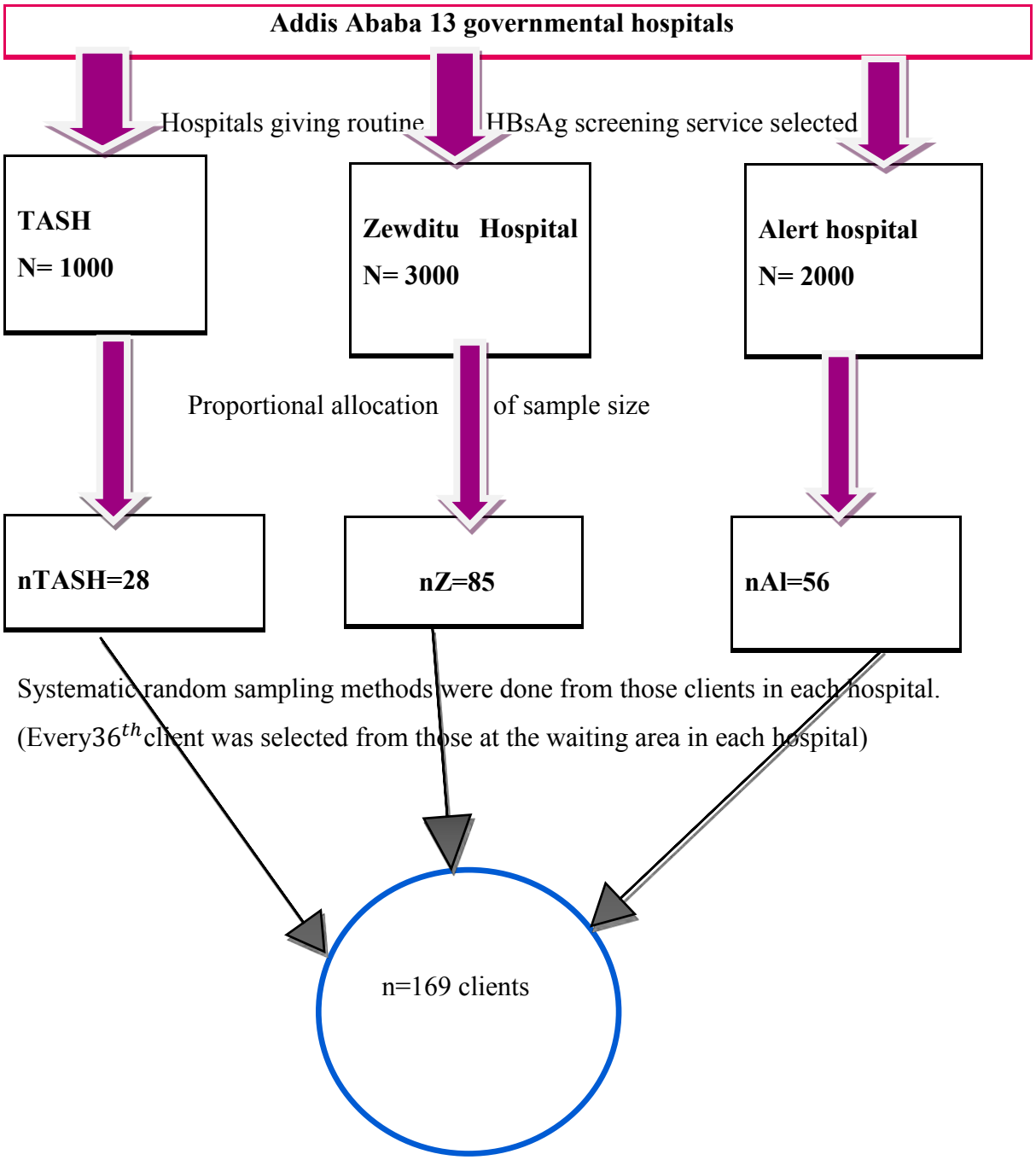

Figure 2. Schematic representation of sampling procedure in Addis Ababa public hospitals, 2017.

4.9 Data collection instrument (tools)

Interviewer structured questionnaire were used to collect data from participants during the study period and by reviewing charts for HBsAg that was routinely screened with laboratory technicians of the hospitals and the associated factors questions were adapted and modified on the basis of peer review journals with three peers, who have masters(41) in order to have valid and reliable questionnaire. The structured questionnaire was originally prepared in English then it was translated into local language Amharic and back translated into English to check for its conceptual equivalence.

The data collection instrument was consists three sections

- Sociodemographic variables
- Questions about associated factors
- Chart reviewing parts

4.10 Data collection procedures and quality assurance

4.10.1 Data collection procedures

Data were collected by interviewing adults living with HIV,who were attend at ART clinic in selected Addis Ababa public hospitals (Tikur anbessa specialized, Zewditu and Alert hospitals) using structured questionnaire and by reviewing charts for HBsAg that was routinely screened with laboratory technicians of the hospitals. Pretest in 5 % of the sample was done by the principal investigator in Adama referral hospital.

Three nurse staff and one supervisor who have experience of data collection were recruited to collect data and the principal investigator were also make continuous follow up and supervision throughout the data collection period. The data collectors were responsible for the distribution of the interviewer structured questionnaire to all participants meeting the selection criteria and willing to participate in the study after briefly presenting the study purpose and consenting the individual participant in the study area. The participants were encouraged to respond to all items

in the questionnaire within the time they devoted as much as possible to minimize large non-response rate.

4.10.2 Data quality control

In order to assure data quality, high emphasis was given to minimize errors using the following strategies:

- Structure questionnaire were translated to local language and then back to English by two people for consistency.
- The questionnaire was pretested in 5 % (9) adults living with HIV from Adama referral hospital to assess the content and approach of the questionnaire and subsequent correction and modification were done.
- One supervisor was recruited and the training was given to the data collectors and supervisor for two days deeply on the objective, relevance of the study, confidentiality of information, participant's right, about pre-test, informed consent and techniques of interview with the investigator and discuss deeply.
- The collected data were reviewed and checked for completeness every day and before data entry.

4.11. Variables

4.11.1Dependent variables

HIV/HBV coinfection

4.11.2 Independent variables

Socio-demographic variable: age, sex, occupation, marital status, monthly income and educational level.

Health related variables: blood transfusion, opportunistic infections, surgical history, tooth extraction, multiple sexual practice, CD4 count, history Hospital admission, history of STD/STI and alcohol drinking habit.

Cultural factors: tattoo on the body and Ear Piercing.

4.12 Standard and Operational definitions

- HBV/HIV co infection: the presence of both viruses/ co- morbid in an individual.

- Opportunistic infection: an infection caused by pathogens (bacteria, viruses, fungi or protozoa) that take advantage of an opportunity not normally available, e.g. a host with a weakened immune system.

- Tattoo on the body: mark (a part of the body) with an indelible design by inserting pigment in to puncture in the skin and a participants were considered as have a tattoo when he was respond Yes for the question says “Have you ever practice” Tattoo?
- Multiple sexual practices: participants having more than one sexual partner.
- Ear piercing: Participants who practice of making holes in the lobes or edges of the ear parts to allow the wearing of earings.
- Dental extraction: participants having removal of tooth from dental alveolus, (socket) in the alveolar bone.

4.13 Data management and Data analysis

The collected data were entered using EPi-info version 3.5.3, and transferred to SPSS version 21, for further cleaning and analysis. Frequencies and cross tabulation were used to summarize descriptive statistics of the data. Bivariate logistic regression analyses were carried out to identify candidate variables for the multivariate logistic regression models. Multivariate logistic regression analyses were used to identify significant predictors of the outcome variables. Odds ratio and 95% confidence interval will be computed along with the corresponding p-value to assess the level of association and statistical significance.

4.14 Ethical considerations

Ethical clearance and official letter were obtained from institutional review board of Addis Ababa University, college of health sciences, department of nursing and midwifery research and ethics Committee to Tikur anbessa specialized hospital, Zewditu memorial hospital and Alert hospital. Permission were obtained from Addis Ababa city administration health bureau, Tikur anbessa specialized hospital and Alert hospital.

In addition informed consent was obtained from study participants to confirm willingness to participate after explaining the purpose of the study. The confidentiality of the response of study participant was also ensured throughout the research process. The study was conducted to treat equality of the study participant. The respondents were also notifying that they have the right to refuse or terminate at any point of the interview.

4. 15. Dissemination of results

After data analysis, conclusion and recommendation were drawn from the results and 2 copies will be submitted to Nursing and midwifery Department, AAU to make final thesis defense. The copies will be also submitted to A.A health bureau and to each hospital administration office. Attempts will be made for the publication in scientific journals

Chapter 5 results

5.1. Part I. Sociodemographic characteristic of the respondents

From 169 HIV positive adults', 165 of them were participated in the study with a response rate of 97.6%.more than half of the study participants 99(60.0%) were female and the mean age of the participants were 38.9± 9.89 SD years. More than half of the participants 87 (52.7 %) were married, 32 (19.4%) were single, 29 (17.6%) and 17(10.3%) were divorced and widowed respectively. Data on educational status showed that 67 (40.6%) were secondary school, 43 (26.1%) were above twelve, 55 (33.43%) had elementary school.

Concerning their occupation 74(44.8%) were employed and 91(55.2%) were unemployed, (table1).

Table 1 Socio-demographic characteristics of HIV positive adults attending ART clinics at TASH, Zewditu memorial hospital and Alert Hospital, Addis Ababa, Ethiopia, 2017.

Variables	category	frequency	percent
Sex			
	Male	66	40
	Female	99	60
Age			
	18-27	9	5.5
	28-37	49	29.7
	38-47	55	33.3
	>=48	52	31.5
Occupation			
	Employed	74	44.8
	Unemployed	91	55.2
Marital status			
	Married	87	52.7
	Single	32	19.4
	Divorced	29	17.6
	widowed	17	10.3
Educational level			
	1-8	55	33.3
	9-12	67	40.6
	Above 12	43	26.1
Monthly income			
	0-1000	77	46.7
	1001-2000	34	20.6
	2001-3000	14	8.5
	3001-4000	14	8.5
	>=4001	26	15.8

5.2. Part II. Health related, cultural characteristics of the study subject and prevalence of HBV infections among different risk factors.

In this study, the majority of study participants had history of ear piercing 99 (60 %) followed by multiple(more than one)sexual practice 85(51.5%), dental extraction 76 (46.1 %), 71 (43 %) participants had history of hospital admission, 57(34.5%) of them had history of opportunistic infection, similarly 57(34.5%) had history of alcohol consumption, 51(30.9%) had history of STI, those who had history of tattooing on their body 45(27.3%), while 39(23.6%) had history of surgical procedures and 24 (14.5 %) had history of blood transfusion.

Among 165 study participants, HBsAg was detected positive in 12 (7.3%). Regarding CD4 count among <200 cells/µl, 65(39.4%) were reported followed by >=500 cells/µl which were 50(30.3%) while 35(21.2%) among CD4 count ranges 351-499 cells/µl and 15(9.1%) accounts from 200-350 cells/µl. Of different risk factors considered in this study, history of ear piercing accounts about 99 (60%) followed by history of multiple sexual practice which accounts about 85 (51.5%), dental extraction 76 (46.1%) ,history of hospital admission 71(43%) reported, opportunistic infection 57(34.5%),the same as with history of frequent alcohol drinking habit 57(34.5%) reported, history of STI 51(30.9%), tattooing on the body accounts 45(27.3%),while history of surgical procedure 39(23.6%) and history of blood transfusion accounts 24(14.5%)

Table 2 health related , cultural characteristics and their HBsAg status of HIV positive adults attending ART clinics at TASH, Zewditu memorial hospital and Alert Hospital, Addis Ababa, Ethiopia,2017.

Variables	category	frequency	percent	HBV Positive (%)
History of STI				
	No	114	69.1	7(6.1)
	Yes	51	30.9	5(9.8)
Multiple sexual practice				
	No	80	48.5	2(2.5)
	Yes	85	51.5	10(11.8)
Blood transfusion				
	No	141	85.5	11(7.8)
	Yes	24	14.5	1(4.2)
Dental extraction				
	No	89	53.9	2(2.2)
	Yes	76	46.1	10(13.2)
Hospital admission				
	No	94	57	8(8.5)
	Yes	71	43	4(5.6)
Surgical history				
	No	126	76.4	11(8.7)
	Yes	39	23.6	1(2.6)
Ear piercing				
	No	66	40	8(12.1)
	Yes	99	60	4(4)
Tattooing on body				
	No	120	72.7	8(6.7)
	Yes	45	27.3	4(8.9)
History of OIs				
	No	108	65.5	4(3.7)

Continued…			
Yes	57	34.5	8(14)
Frequent alcohol drinking habit			
No	108	65.5	5(4.6)
Yes	57	34.5	7(12.3)
CD4 count			
<2000	65	39.4	7(10.8)
200-350	15	9.1	2(13.3)
351-499	35	21.2	2(5.7)
>=500	50	30.3	1(2)

Seven percent (7.3%) of study participants of this study had positive hepatitis B surface antigen result (see fig 3.)

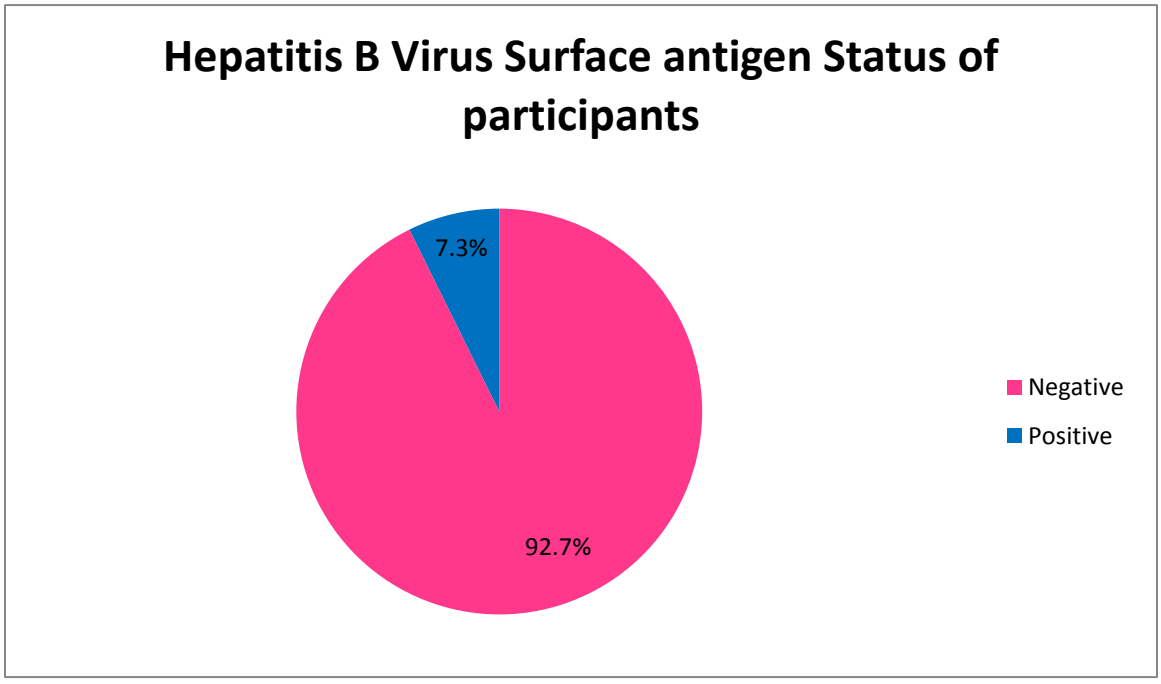

Figure 3; Hepatitis B surface antigen prevalence among HIV positive adults at TASH, Zewditu Memorial hospital and Alert Hospital, Addis Ababa, Ethiopia, 2017.

5.3. Part III. Risk factor analysis for hepatitis virus coinfection

Bivariate logistic regression analysis was done to identify factors for the multiple logistic regressions based on their significance p-<0.2. In the analysis, gender, ethnicity, educational level, monthly income, multiple sexual practice, dental extraction, opportunistic infections, ear piercing, CD4 count and frequent alcohol drinking habit were selected for the multiple logistic regression analysis based on their significance value. And bivariate logistic regression analysis showed that male gender more likely exposed than female (COR 5.053; 95 % CI 1.314–19.434, p = 0.018), among educational category participants who were above 12(COR; 7.105,95% CI 0.798-63.283) were 7.1 times more likely exposed than 9-12 (COR; 5.311, 95% CI 0.620-45.527).

Participant who were having monthly income >=4001(ETB) (COR 6.818; 95 % CI ,1.17–38.735, p = 0.033), 6.818 times more exposed than who were having 2001-3000 ETB (COR 6.250; 95% CI 0.803-48.671,p= 0.080) followed by , 1001-2000 ETB (COR 3.629; 95% CI 0.578-22.793, p= 0.169) though not significantly associated, history of multiple sexual practice 5.2 times more exposed (COR 5.20; 95 % CI 1.103–24.522.4, p = 0.037) than who did not, History of dental extraction 6.591 times more likely exposed than who did not (COR 6.591; 95% CI 1.397-31.100, p= 0.017) , ear piercing (COR0.305; 95%CI 0.088-1.059, p=0.062) 0.305 less likely exposed than who didn't, history of frequent alcohol drinking habit (COR 2.884; 95% CI 0.872-9.540, p= 0.083) 2.884 times more likely exposed than who did not , history of opportunistic infections (COR 4.245; 95% CI 1,219-14.777,p= 0.023) were 4.245 times more likely exposed than who did not. Participants who have CD4 count 200-350 cells/ µl were show that (COR 1.275; 95% CI 0.237-6.858) and 1.2 times more exposed than CD4 count 351-499 cells/ µl (COR; 0.502, 95% CI 0.099-2.559) followed by CD4 count >= 500 cells/ µl (COR; 0.169, 95% CI 0.020-1.422). However, study variables such as age, occupation, marital status, history of STI, history of surgical procedure, history of hospital admission, tattooing, history of blood transfusion, not associated with infection caused by these hepatitis viruses.

The significantly associated variables were entered into multivariate model and: male (AOR 5.726; 95% CI 1.346-24.362, p= 0.018), history of dental extraction (AOR 6.448; 95% CI 1.256-

33.097, p= 0.026), history of multiple sexual practice (AOR 5.524; 95% CI 1.070-28.525, p= 0.041) and history of opportunistic infection (AOR 4.019; 95% CI 1.030-15.681, p= 0.045) were found significantly associated with HBsAg positivity(table 3) and multivariate analysis revealed that those who was male 5.7 times more likely contaminated with HBV coinfection than female[AOR 5.726; 95% CI 1.346-24.362].

those who have previous history of Dental extraction were 6.4 times more likely to be contaminated with HBV than who did not [AOR = 6.4: 95% CI, 1.256-33.097] , those with previous history of opportunistic infection were about 4 times more likely to show HBV coinfection than who did not[AOR = 4.019; 95% CI, 1.030-15.681] and those who have previous history of multiple sexual practice were about 5.5 times more likely to show HBV coinfection than who did not [AOR 5.524; 95% CI, 1.070-28.525](table 3).

Table 3 Risk factors associated with Hepatitis B surface antigen from binary and multiple logistic regression analysis, among HIV Positive adults attending ART clinic at TASH, Zewditu hospital and Alert hospital, 2017.

Variables	HBV		COR(95% CI)	AOR(95%CI)
	Yes	No		
Sex				
Male	9(13.6)	57(86.4)	**5.053(1.314,19.434)**	**5.726(1.346-24.362)***
Female	3(3.0)	96(97.0)	1	1
Educational level				
Above 12	5(11.6)	38(88.4)	7.105(0.798-63.283)	
9-12	6(9)	61(91)	**5.311(0.620-45.527)**	
1-8	1(1.8)	54(98.2)	1	
Monthly income				
>=4001	4(15.4)	22(84.6)	**6.818(1.170-38.735)**	
3001-4000	1(7.1)	13(92.9)	2.885(0.244-34.158)	
2001-3000	2(14.3)	12(85.7)	**6.250(0.803-48.671)**	
1001-2000	3(8.8)	31(91.2)	**3.629(0.578-22.793)**	
0-1000	2(2.6)	75(97.4)	1	
Multiple sexual practice				
Yes	10(11.8)	75(88.2)	**5.200(1.103,24.522)**	**5.524(1.070-28.525)***
No	2(2.5)	78(97.5)	1	1
Dental extraction				
Yes	10(13.2)	66(86.8)	**6.591(1.397,31.100)**	**6.448(1.256-33.097)***
No	2(2.2)	87(97.8)	1	1
Ear piercing				
Yes	4(4)	95(96)	0.305(0.088,1.059)	
No	8(12.1)	58(61.2)	1	
Hx Opportunistic infections				
Yes	8(14)	49(86)	**4.245(1.219,14.777)**	**4.019(1.030-15.681)***
No	4(3.7)	104(96.3)	1	1
Frequent alcohol drinking habit				

Continued…

Yes	7(12.3)	50(87.7)	**2.884(0.872,9.540)**
No	5(4.6)	103(95.4)	1
CD4 count			
≥ 500	1(2)	49(98)	**0.169(0.020-1.422)**
351-499	2(5.7)	33(94.3)	0.502(0.099-2.559)
200-350	2(13.3)	13(86.7)	1.275(0.237-6.858)
<200	7(10.8)	58(89.2)	1

AOR, adjusted odd ratio,*Statistically Significant p< 0.05.

6. Discussion

In this study, the prevalence of HBV coinfection was 7.3 %, was similar with the study that was conducted among antenatal clinic attendees in Gondar 7.3% (32) and Goba general hospital 7.4% (33), this finding was consistent with studies reported in Hawassa referral hospital 6.9 % (34) and Debretabor 6.1 %, Ethiopia (35). Other similar studies conducted among HIV positive individuals showed that HBV/HIV co-infection prevalence of 8.35 in India(24) and 8.8 in Ghana(28) which was also consistent with the findings of this study . This could be due to the shared transmission route of both HBV and HIV infection.

On other hand, HBsAg prevalence from this study was relatively higher as compared with studies conducted in Brazil 3.8% (21) and Netherlands 3.6 (23). Possible reasons could be the level of knowledge of the HBV and HIV transmission between the communities. Similarly, previous studies conducted among HIV positive adults in Ethiopia, the prevalence of HBV/HIV coinfection at Tigray Mekelle hospital 5.9% (36)and Gondar teaching hospital 5.6% (37) .

On the contrary, the studies conducted in Italian 15.4%(22), china 9.5%(25), Tehran, Iran 11.3%(26), Nigeria 17.2%(29), Nairobi, Kenya 16% (30) and Khartoum, Sudan 11.7% (31), were significantly higher HBV prevalence and this might be due to the diagnostic tools that the

laboratory technicians used in country, the HBV DNA RT –PCR and HBsAg ELISA assay in country and it also could be due to sociodemographic characteristics. The lower rate of HBsAg prevalence in this study might also be partly due to the effect of some HIV drugs like lamivudine to eliminate HBsAg(6).

The questionnaire used in the present study entailed inquiring the interviewed person regarding the history of tooth extraction, history of multiple sexual practice and history of opportunistic infection. Such an incident is not subject to recall bias since tooth extraction, multiple sexual practices and having history o0f OIs is difficult to forget.

In the present study significant association has been found between HBsAg positivity and gender like other studies done in the country from ART centers and general population, where male were found to have high HBsAg positivity and study revealed that males were 5.726 times more likely to expose with HBV than females. Similarly, those with history of having multiple sexual partners were about 5.5 times more likely to show HBV coinfection than who did not and was significantly more frequent among males (13.6 %) Than females (3 %) (Table 2).The possible explanation could be, in developing countries, like Ethiopia because of their job nature, males travel more frequently than females. This was comparable with studies conducted in Mekelle hospital(36), Gondar teaching hospital(37), Ethiopia and brazil (21).

Those with previous history of opportunistic infection were about 4 times more likely to be positive for HBV surface antigen marker than who did not. This result is also in agreement with the previous study at Hawassa referral hospital (34) and Debretabor Hospital (35). The association might be due to the fact that HIV/HBV co-infected individuals have weak immunity Than those with HIV mono-infected individuals which will make them more prone to opportunistic infection(6).

In this study also significantly high prevalence of HBsAg was observed among individuals with history of dental extraction, 6.4 times more likely to be contaminated with HBV than who did not. Regarding HBV infection, even though, studies from Debretabor hospital(35), Mekelle

hospital (36), showed no significant association between invasive dental procedures including tooth extraction and ear piercing with HBV infection. A recent study from Shashemene General Hospital in 2011 (38) and from Abha, Saudi Arabia (AOR = 2.363, 95% CI: 1.102–5.065) (39)concluded in their studies that dental extraction acts as a risk factor for acquiring HBV and documented a relation between invasive dental procedures and HBV infection.

Socio-demographic characteristics like age, occupation, marital status, religion, ethnicity, education and monthly income were not significantly associated to HBsAg positivity. Likewise, of the risk factors history of STI/STD, blood transfusion, CD4 count, ear piercing, history of surgery, tattooing and having a history of frequent alcohol drinking habit did not show statistically significant association with HBV Infection and this was consistent with studies done in Mekelle hospital, Ethiopia(36).

7. Strength and limitation

Strength

- The strengths of this study also a significant contribution to the body of knowledge in the prevalence of HBV and HIV/AIDS coinfection in general and more specifically for TASH, Zewditu memorial hospital, Alert hospital and the patients themself.
- Additionally, rather than having to rely on self report, I was able to use information from patients' medical chart to gather information about current CD4 count.

Limitation

- This study is not without limitations. My finding was based on rapid test kit for HBsAg screening test which was done by laboratory technicians in the study area, might have underestimated the true prevalence which could have been obtained if they were able to use radioimmunoassay antigen test or enzyme linked immuno sorbent assay. This suggests the importance of further study to establish the strength of the reported associations with these risk factors.

8. Conclusion and recommendation

Conclusion

In conclusion, the prevalence of HBV infection was found to be intermediate in HIV infected patients in the study area. These indicate a high burden for HIV patients since complications related with these viruses (HBV) and HIV coinfection is high.

Regarding Sex distribution, males were frequently infected with HBV than females. Furthermore, in this study it was also observed a greater HBV Prevalence among individuals having a history of multiple sexual practices, individual who had history of opportunistic infection and who had history of dental extraction were found statistically associated factors for HBV infection.

Recommendation

- This highlights the need to strengthen and integrate HBV Screening and treatment with the existing HIV/AIDS Prevention and Control Policies.
- In addition to this, I recommend that the Federal Ministry of Health needs to incorporate routine HBV screening in the ART treatment guideline.
- Moreover, Health institutions giving HIV related services should provide appropriate message for HIV patients on risk factors such as multiple sexual partners, dental extraction and having opportunistic infections for the transmission of HBV.
- To dental health care workers in the selected set up should strictly use aseptic techniques which really help in prevention of the infection.
- To health care service provider who work at ART clinic should have counseling/ teaching Session to HIV positive clients that they should aware of not to have multiple sexual partners in order to prevent the transmission of this infection.

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Annex

Annex I: Information sheet and informed consent

Interviewer: Name_____Father's name_____

Respondent's code number_____

1. Information sheet

Hello Dear!!

Good morning/afternoon/evening dear respondent, I am _____who is the data collector for a research to be conducted by Mulushewa Biru a Mastes's student at Addis Ababa University, Department of Nursing and Midwifery. Today, I am here to collect information on "Prevalence of Hepatitis B Virus Infection and Associated Factors among HIV Positive Adults Attending ART Clinic at Addis Ababa public Hospital, Addis Ababa, Ethiopia," If you take part in the study it would not be took us more than 30 minutes. I would like to assure you that everything from your information and records would be completely confidential to the research and the data are stored without your name and only used for the purpose of this study.

None of this would affect the care you receive from this Hospital, but will help in future planning for the hospital. No identifying names or characteristics will go into my report, so you may share your thoughts openly. Additionally, taking part in this study is completely voluntary. It is your choice whether to participate or not. You may skip any questions that you do not want to answer.

Please ask me to stop as we go through the information and I will take time to explain. The results of the study will hopefully serve as an important input for policy and intervention programs that aim at addressing prevalence and associated factors of HIV-HBV co-infection.

Do you have any questions that you need to be clarified more?

If you have any question you can contact the principal investigator at any time convenient for you using the following address: Cell phone: +251-910900415/+251-927197325

E-mail:muler_88@yahoo.com/ muller2488@gmail.com

Interview: _____date_____month_____year

Are you willing to participate in the study?

If yes please proceed to the consent form on the next.

2. **Consent form**.

I have been briefly informed about the study and I clearly understood the objective. Since it doesn'taffect my personal life, I agreed to take part in the study. Consequently, I here approve my consent totake part in the study as an interviewee with my signature.

Participant's signature: _____date: _____

Thank You for willingness to participate!!

Annex II

English version questionnaire

ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF ALLIED HEALTH SCIENCES
DEPARTMENT OF NURSING AND MIDWIFERYA

Department of nursing and midwifery.

Questionnaire on prevalence of HBsAg and associated factors on HIV positive adult.

(Will be translated to Amharic)

Part I: socio- demographic characteristics of respondents.

Interviewer: Name_____ Father's name_____

Respondent's code _____

INSTURCTION: For each question please put a cross sign (X) clearly inside one box don't worry if you make a mistake; simply cross out the mistake and put a cross in the correct box.

1. Identification

1.1. Code_____

1.2. Sex A. Male ☐ B. Female ☐

1.3. Age_____

2. Back ground information

2.1. Current occupational status

A. Self-employed ☐ B. student ☐ C. House wife ☐

D. Driver ☐E. others (specify) _____

2.2. Marital status

A. Married ☐ B. Single ☐

C. Divorced ☐ D. Widowed☐

2.3. Educational level

A. Illiterate ☐ B. Read and write only ☐

C. 1- 8 ☐ D. 9 -12 ☐ E. > 12 and above ☐

2.4. Monthly income_____(birr)

Part II: Questions concerning about "hepatitis B virus"

Have you have or ever practiced the following?

3.1 History of STD/STI	A. yes ☐	B. No ☐
3.2 Multiple sexual practice	A. yes ☐	B. No ☐
3.3. Blood transfusion	A. yes ☐	B. No ☐
3.4. Dental extraction at health facility	A. yes ☐	B. No ☐
3.5. History of Hospital admission	A. yes ☐	B. No ☐
3.6. Surgical procedure	A. yes ☐	B. No ☐
3.7. Ear piercing	A. yes ☐	B. No ☐
3.8. Tattooing on body	A. yes ☐	B. No ☐
3. 9. Opportunistic infections	A. yes ☐	B. No ☐
3.10. Frequent alcohol consumption	A. yes ☐	B. No ☐

Part III: patient's Chart reviewing

4.1. Current CD4 count_____

4.2. Status of HBsAg

A. Positive ☐ B. Negative ☐

Annex III

Amharic version questionnaire

የአማርኛ መጠይቅ

የመረጃና የስምምነት ቅፅ

የመረጃ ሰብሳቢው

ስም_____

የአባት ስም_____

የተጠያቂው መለያ ቁጥር_____

በአዋቂ ተመላላሽ የ"ኤችአይቪ" ህመማን ታካሚዎች የሄፓታይተስ "ቢ" (የጉበትቫይረስ) ስርጭት ያለውን እና ተዛማጅነት ያላቸውን ችግሮችን ለማጥናት የተዘጋጀ ቃለ መጠይቃዊ ጥያቄ፡፡

ሀ. የጥናቱ መረጃ፡-

ጤና ይስጥልኝ ፤እንደምን አደሩ፣እንደምን ዋሉ፣እንደምን አመሹ (እንደ አስፈላጊነቱ በመረጃ ሰብሳቢው)፡፡

ስሜ_____**ይባላል፡፡የመጣሁት ከአዲስ አበባ ዩኒቨርሲቲ ነርስንግና ሚድዋይፈሪ ጤና ሳይንስ ኮሌጅ የሁለተኛ ድግሪ ተማሪ በሆነው በተማሪ ሙሉሸዋ ብሩ እየተሰራ ባለው ጥናታዊ ፅሁፍ ዙሪያ በመረጃ ሰብሳቢነት ሲሆን በዛሬው ዕለት እዚህ የተገኘሁት ከ "ኤች አይ ቪ"ህመም ጋር ተያይዞ በተጓዳኝነት የሚከሰተውን የጉበት ቫይረስ (ሄፓታይተስ "ቢ") እና ተያያዥነት ያላቸውን ምክንያቶች በሚመለከት በሚደረገው ጥናት ዙሪያ መረጃ ለመሰብሰብ ነው፡፡ ይህ ጥያቄ የተዘጋጀው ለጥናት ስራ ሲሆን በአዲስ አበባ ዩኒቨርስቲ በጥናትና ምርምር ኮሚቴ ተገምግሞ እንዳስፈሊጊነቱ ግድፈት ካለበት እርማትይደረግበታል፡፡**

በዚህ ጥናት በመሳተፍዎ ሚያገኙት ቀጥተኛ የሆነ ጥቅም የሌለ ቢሆንም ከዚህ ጥናት የሚገኘው ውጤት በቀጥታ ማህበረሰቡን የሚጠቅም ሲሆን ለእርስዎ ደግሞ እርካታን እንዲሚሰጥዎት ተስፋ አደርጋለሁ፡፡ ለዚህ ቃለመጠይቅ የተመረጡት በዕጣ ወይም በዕድል ነው፡፡ከጥናቱ የሚገኘው መረጃ ከላይ ከተጠቀሰው ዓላማ ውጭ ለሌላ ተግባር የማይውል ሲሆን መረጃው በሙሉ በሚስጥር የሚጠበቅ መሆኑን ቃል እገባለሁ ለወደፊቱም ለሚፈልጉት የጤና አገልግሎት በርስዎም ሆነ በቤተሰብዎ ላይ ምንም ዓይነት ተጽእኖ እንደሌለው ልገልፅልዎት እወዳለሁ፡፡ ይህንንም ለማድረግ ከእኔጋር ወደግማሽ ሰዓት እንቆያለን፡፡ይህ ጊዜዎትን የሚይዝ

ቢሆንም መላውን የ"ኤች አይ ቪ" ህመማንን ሊጠቅም የሚችል የአገልግሎት ጥራት ማሻሻያ ለማድረግ የሚያግዝ በመሆኑ እንዲተባበሩኝ እጠይቅዎታለሁ ። ለዚህ ጥናት መሳካት እርሰዎ የሚሰጡት መረጃ ጉልህ አስተዋፅኦ አለው።

የተወሰኑ ደቂቃዎች ባነጋግርዎ ፈቃደኛ ነዎት?

ፈቃደኛ ከሆኑ እባክዎ ወደ ሚቀጥለው የፍቃደኝነት ማረጋገጫ ቅጽ ይመልከቱ።

ለ. የፈቃደኝነት ማረጋገጫ ቅጽ

የጥናቱ ክፍል የሆኑ መረጃዎችና ሂደቶች ተብራርተውልኛል። እኔም በተብራራልኝ መንገድ ተረድቻለሁ።ጥናቱ ምንም አደጋ የማያስከትል መሆኑን እና ለሚደረገው ተሳትፎ ክፍያ አለመኖሩንም አውቄ አለው። ስለዚህ በዚህ ጥናት ላይ ለመሳተፍ ፈቃደኛ መሆኔን በፊርማዬ አረጋግጣለሁ።

ፊርማ_____

ቀን _____

አዲስአበባዩኒቨርስቲ

ጤና ሳይንስ ኮሌጅ

የነርሲንግና ሚድዋይፊሪ ትምህርት ክፍል

መመሪያ፡- ጥያቄዉን ከጠየቃችሁ በኃላ መልሱን በተሰጠው ሳጥን ውስጥ ከተሰጡት አማራጮች አንዱን የኤክስ (x) ምልክትይጻፉ።

1. ጠቅላላ ጥያቄ

ክፍል አንድ፡-ማህበራዊና ስነህዝባዊ መረጃዎችን በተመለከተ የተዘጋጀ ቃለ መጠይቅ

1.1. ኮድ_____

1.2. ፆታ ሀ) ወንድ□ ለ) ሴት□

1.3. እድሜ_____

1.4. ሥራሀ) የግል □ ለ) ሹፌር □ ሐ) የቤት እመቤት □

መ)ተማሪ □ ሠ) የመንግስት □ ረ) ሌላ(ይገለጽ)_____

1.5. የጋብቻሁኔታ ሀ)ያገባ /ች □ ለ)ያላገ ባ /ች □

ሐ) የፊ ታ /ች ☐ መ)የሞተ በት /ባት☐

ሠ) ሌላ (ይገለጽ)_____

1.6. የትምህርት ደረጃ

ሀ) ያልተማረ ☐ ለ)መፃፍና ማንበብ የሚችል ☐

ሐ) ከ 1ኛ እስከ 8ኛ ☐ መ) ከ 9ኛ እስከ 12 ኛ ☐ ሠ) ከ 12 በላይ☐

1.7 የወር ገቢ _____(ብር)

ክፍል ሁለት፡- የጉበት "ቫይረስ"/ሄፓታይተስ "ቢ" በተመለከተ ጥያቄዎች

ከዚህ በታች ያሉትን በህይወት ህ/ሽ አጋጥ ሞ/አድርገ ህ/ሽ ታውቃ ለህ/ቂያለሽ ?

2.1 ያባለዘር በሽታ ሀ)አዎ ☐ ለ)አይደልም ☐

2.2 ከአንድ በላይ የተቃራኒ ፆታ ግብረስጋ ግንኙነት ማድረግ ሀ) አዎ☐ ለ)አይደልም☐

2.3 ደም መቀበል ሀ) አዎ☐ ለ)አይደልም☐

2.4 ጤና ድርጅት ጥርስ ማስነቀል ሀ) አዎ☐ ለ)አይደልም☐

2.5 ሆስፒታልመተኛት ሀ) አዎ☐ (ለምን?) _____ለ) አይደልም☐

2.6 ማንኛዉም አይነት ቀዶ ጥገና ሀ) አዎ☐ ለ) አይደልም☐

2.7 ጆሮ መበሳት ሀ) አዎ☐ ለ)አይደልም☐

2.8 ሰዉነት መነቀስ ሀ) አዎ☐ ለ) አይደልም☐

2.9 ተጓዳኝ በሽታዎች ሀ) አዎ☐ ለ)አይደለም☐

2.10. አዘውትሮ መጠጥ መጠጣት ሀ) አዎ☐ ለ)አይደልም☐

ክፍል ሦስት፡- የህሙማንን ካርድ በመመልከት

2.11. ወቅታዊ የ" ሲዲ ፎር" መጠን_____

2.12. የሄፓታይተስ "ቢ" ሰርፌስ አንቲጅን ሀ) አለው☐ ለ) የለውም☐

Annex IV

Declaration

The researcher, undersigned, declare that this is my original work and has not been presented in this or any other University and all sources of materials used for this research have been fully acknowledged.

Name: Mulushewa Biru

Signature: _____

Date: _____

Place: Addis Ababa University, College of Health Sciences, School of allied Health sciences, Department of Nursing and midwifery.

This proposal will be submitted for examination with our approval as University advisors

Mr. Mesfin Abebe (BSc, MSc/RH, PhD Fellow)

Signature: _____

Date: _____

Mrs. Hawenni (BSc, MScN)

Signature: _____

Date: _____

Examiner: _____

Signature: _____

Date: _____