ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES, SCHOOL OF PUBLIC HEALTH

ASSESSMENT OF HEPATITIS B SEROPREVALENCE AND ASSOCIATED FACTORS IN KALITY PRISON ADDIS ABEBA ETHIOPIA

BY

ASNAKECH GIRMA

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Examiner

_____ Date_____

Signature_____

Advisor Date_____

Ahmed Ali (Prof.) Signature_____

Chair of the department Date_____

Muluken Gizaw (BSC, MPH) Signature_____

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Acronyms

AOR…….Adjusted Odd Ratio

C I…… Confidence Interval

CLD……. Chronic Liver Disease

COR……. Crude Odd Ratio

DNA……. Deoxyribonucleic Acid

ELISA…….. Enzyme Linked Immunosorbent Assay

HBcAg ……. Hepatitis B Core Antigen

HBsAg…….. .Hepatitis B Surface Antigen

HBV……Hepatitis B Virus

HCC……Hepatocellular Carcinoma

IDU……..Injection Drug Use

IgM ……. Immunoglobulin M

PV……. PValue

List of Tables……...Pages

Abstract

Background; Hepatitis is a general term meaning inflammation of the liver and can be caused by different viruses. Hepatitis B virus (HBV) is DNA virus causing hepatitis in human. The prison setting has been shown to be a high risk environment for blood borne viral infections like hepatitis B virus infections. The aim of this study was to assess the prevalence and associated factors of hepatitis B virus infections among prison inmates in Kality Prison.

Objectives: Determining the prevalence and associated factors of HBV infections among prison inmates at Kality Prison in Addis Ababa, Ethiopia.

Methods: A cross-sectional study was conducted from January 2016 – October 2016 data on socio demographic and HBV risk factors were collected using a semi-structured questionnaire. Two ml of venous blood samples were collected and serum was tested for hepatitis B virus infections using commercially available rapid test kits. Data were analyzed using SPSS version 21.0. Logistic regression analysis was used and a P value < 0.05 was considered statistically significant.

Results: A total of 457 prison inmates, 347 males and 100 females, with a mean age of 37.9 years were participated. Twenty-two participants (4.8%) were positive for hepatitis B surface antigen. Our study revealed that inmates who had an experience of sharing sharp materials were about 2.6 times (AOR =2.59; 95% CI: 1.04-6.43) at higher risk of hepatitis B seropositive, compared to inmate who had no such experience. On the other hand, prison inmates who had history of tooth extraction in the past were also about 2.8 times (AOR = 2.83; 95% CI: 1.11-7.22) at the risk compared to those who had no such experience.

Conclusion: This study found that prison inmates had intermediate prevalence of hepatitis B virus infections. Based on the findings of this study sharing of sharp materials and history of tooth extraction are the most important risk factors for acquiring HBV infection in this prison. Thus, improving the individual education and expanding the HBV vaccination coverage may reduce the rate of infection in this subpopulation.

Key words: Hepatitis B virus , Prison.

1. Introduction

1.1. Background

Hepatitis is a general term, meaning inflammation of the liver and can be caused by different viruses. Hepatitis B virus (HBV) is DNA virus causing hepatitis in humans. Chronic hepatitis B is the single most important risk factor in the development of liver cancer, with 60-80% of the world cases of primary liver cancer (Hepatocellular carcinoma/HCC/) is attributed to chronic hepatitis B (1). Globally about 2 billion people or one-third of the world's population has been infected with HBV, of those an estimated of 360 million people are chronic carriers, and between 500 ,000 and 700, 000 people die annually as a result of hepatitis B virus infection (2). Africa has the second largest number of chronic carriers (6-20%) after Asia and is considered a Region of high endemicity (3). In Kenya and Ethiopia it is estimated that more than 60% of chronic liver diseases and up to 80% of hepatocellular cancers are due to chronic hepatitis B and C viral infections(4). A press report published on March, 28, 2013, claimed that over 10 million Ethiopians are infected with HBV (5).

Variable prevalence of HBV infection has been reported earlier from different part of the country, with nationwide data yet to be complete. These fragmented surveys indicated the importance of focusing on some segment of the population like pregnant mother and military comps (6). Further, there is limited data regarding hepatitis B infection in high risk population of the prison center in Ethiopia. Prisoners are considered to be at high risk infection of hepatitis and other sexually transmitted infections due to the high proportion of risk related behaviors during the permanence within jails, in particular injecting illegal drugs, unprotected sexual relations, common use of hypodermic needles for execution of tattoos or needle sharing(7).

1.2. Statement of the problem

More than 10.2 million people are held in penal institutions throughout the world, and the number is estimated to reach over 112,361 in Ethiopia distributed through different federal and regional prison centers (8) . Epidemiological data from different parts of the world confirm the fact that prevalence of HBV infection in prison is higher than in the general population warranting the need for further attention to control and prevent the diseases in this segment of the population. This might be due to the fact that during incarceration, prisoners may acquire new infections due to poor medical diagnosis and treatment, insufficient infection control, an absence of harm reduction efforts like condom use or needle exchange, and sudden transfer to other facilities or discharge into the community without provisions for ongoing therapy (9). In Ethiopia, there is limited study conducted in estimating the prevalence of HBV infection in prison. One study conducted in Waldiya Prison , Amhara Region, reported seropositive rate of 10.4% for hepatitis B surface antigen (10) . As far as our knowledge is concerned, there is no other report on the prevalence and associated factors of HBV in Kality Prison, the largest Federal Prison.

This study will contribute to identifying HBV infected prisoners that may unknowingly enter the community when they are released indirectly contributing to the control of this deadly pathogen. On the other, the study result will also be used by prison administration authority to design strategy to control the disease in prison setting where the probability of transmission is very high. Further, the results of this study will also be an input for the Ministry of Health to control hepatitis B infection in the larger Ethiopian community.

1.3. Justification of the study

Hepatitis infection is a huge, but largely preventable public health problem among prisoners. To our knowledge, the prevalence and determinant factors of hepatitis infection in prison is not well known in low income countries, where they have poor health service and hepatitis infection is prevalent.

Therefore, this study is intended to fill this gap by assessing the prevalence and associated factors of hepatitis infection among prisoners in Kality Prison. The finding of this study will help the prison administration to develop hepatitis infection prevention and integrate it with the health service, for policy makers and serve as base line for similar studies.

2. Literature review

2.1. Burden of Hepatitis B virus in different parts of the world

According to Schweitzer et al.(11) global level of HBsAg prevalence was 3.61% with highest endemicity in countries of the African Region 8·83% and Western Pacific Region 5·26%. A study conducted in Pakistan from January 2007 to June 2008 by Memon et al. (12) reported that the seroprevalence of HBsAg was 3.17%. According to this study, intra-venous drug user, being prisoners and security personnel were seen at increased risk of acquiring infection. Ten years (2000 through 2010) Study in Bahrain, by Janahi (13) showed that the prevalence of HBsAg was 0.58%. According to this study, dental procedures and surgical operations were the main sources of infection as 37.2% and 35.6% of the patients were probably infected through this route, respectively. Blood transfusions were considered to be the source of infection for about 24.6% of the infected individuals. A cross sectional study conducted in Benue State, Nigeria from January 2011- June 2013 on 1535 individual reported a prevalence of HBsAg of 12% (14). Another study conducted on pregnant women in Northern eastern Nigeria in 2008 by Olokoba et al. (15) found out that the prevalence of Hepatitis B was 8.2% among the study participants. Pregnant women in the age group 25-29 years were seen to be more affected by Hepatitis B infection.

2.2. Burden of Hepatitis B virus in Ethiopia

A community based sero-epidemiological survey that addressed the transmission dynamics and control of hepatitis B virus in Addis Ababa, in 1994 showed HBsAg prevalence of 7.0% from the general population (16). Study conducted in Amhara and Tigray regional states, from December 2002 to February 2003, found out that the prevalence of HBsAg, among blood donors in the blood banks was 6.2%9(17). That Study reported that the prevalence of HBsAg institutionally was 4.7% at Gondar College of Medical Sciences, 6% at Bahirdar Hospital, 3% at Dessie and 14% at Mekele Hospital blood banks. In a retrospective study conducted at Bereka Medical Center, Southeast Ethiopia from Nov 2012 to Nov 2013, the prevalence of HBV was 22.3% among patients with chronic hepatitis (18). And HBV was 52/358 (14.5%) in female and 52/198 (26.3%) in male. A prospective study conducted in Addis Ababa in 3 public hospitals: Tikur Anbessa, St. Paul, and Zewditu Memorial hospitals in Addis Ababa from November 2010 to May 2011 on 120 individuals with chronic liver diseases /CLD/ found out that the overall

prevalence of Hepatitis B was 28.6% (19). A hospital based cross-sectional study conducted at Shashemene General Hospital, South Ethiopia, from November 3, 2008 to December 29, 2008 on 384 voluntary counseling and testing clients reported prevalence of 5.7% for HBsAg (20). According to that study significantly high prevalence of HBsAg was observed among individuals with history of invasive procedures, like tooth extraction, abortion, ear piercing and unsafe injection. A cross-sectional study conducted from April, 2011 to June, 2011 in government health institutions at Gondar Town on medical waste handlers and non-clinical waste handlers reported a prevalence of HBV of 6% and 1% respectively(21). A Cross-sectional study conducted from March-May, 2011 at the University of Gondar Teaching Hospital, Northwest Ethiopia indicated a seroprevalence of HBV of 5.6% (22) . Across-sectional study conducted from February to May, 2015 at Bahar Dar Armed Forces General Hospital in Ethiopia. Showed a Seroprevalence of HBV of 4.2% (23). According to that study significantly high prevalence of HBsAg was observed among individuals within the age group of 40 and above.

2.3. Burden of Hepatitis B virus in prison

In Study conducted in Iran between 2009 and 2010, the prevalence of HBsAg infection among high risk population was 1.2 %(24). In the same study, the rate of HBsAg infection in prisoners was 2.1% and also the highest rate of infection (4.2%) was seen among immigrant people A cross-sectional study conducted in Hungary in prisons center on staff and prison inmates reported that the prevalence of HBsAg was 0.4% among the staff and 1.5% among prison inmates (25) . A Study conducted in prison center in Iran reported prevalence of 3.3% among the study participants (26). The study demonstrated that the longer duration of being incarcerated, previous history of being incarcerated and higher frequency of incarcerations were associated with higher prevalence of HBV infection.

A comprehensive cross-sectional study conducted by Adjei et al. (27) from May 2004 to May 2005 in 3 Ghanian prison reported sero-prevalence of HBV infection of 17.4% among prison inmate. Another study conducted in Nigeria Turban State in 2013 in Bali Prison showed that the prevalence of Hepatitis B infection was 18% and being male and age group 20-29 years were significantly associated with hepatitis infection (28). In one study conducted in Woldiya Prison in the Amhara Regional State in Ethiopia, prevalence of HBsAg was reported to be 10.4 % (10).

In this study, factors like duration of stay in prison for 10 years and sharing sharp materials inside prison were risk factors for Hepatitis B virus.

2.4. Transmission and Risk factors

Prenatal transmission from mother to child and household contact with a person infected with HBV are the primary modes of transmission in areas with intermediate- or high-prevalence of HBV such as Asia, the South Pacific, sub-Saharan Africa, and certain populations in the Arctic, South America, and the Middle East (11). Other less common modes of transmission include chronic hemodialysis, certain occupational exposures, blood transfusion, and organ transplant (rare). Tattooing with shared, contaminated needles or needle-like devices in jails and prisons is another potential mode of HBV transmission that specifically affects inmate populations(12). HBV is viable for at least seven days on environmental surfaces and can be transmitted by sharing contaminated household items such as razors and tooth brushes (29).

A study done in Tehran from 2002-2003 by Tavakkoli et al. (30) showed that the most important risk factors of HBV infections in intra venues drug users are imprisonment, male sex, and past history of bisexual relationship. In a cross sectional study conducted in Iran, between 2009 and 2010 by Abdulmajid Khosravani et al.(24) HBV infection was reported to be associated with sex, history of imprisonment, drug abuse, Transfusion, Needle stick ,Thalassemia, Hemophilia, Unprotected sex activities.

A cross-sectional study conducted from January, 2012 to April, 2012 in Woldia, Northern Ethiopia reported that sharing of sharp materials and cumulative total stay in prison in the last 10 years were statistically significant(10). According to that study, prison inmates who had stayed for < 1 year were 3.2 times more likely to be infected with HBV infection than those who stayed more than three years (AOR: 3.234,95%CI: 1.095 – 9.547). Similarly, those having shared any sharp material were 2.8 times more likely to be infected with HBV infection than those who never share sharp materials inside the prison (AOR:2.807, 95%CI: 1.038 – 7.592). Across-sectional study was conducted from March 2013 to April, 2013 at Bahir Dar city, Northwest Ethiopia , reported that Previous history of blood transfusion (AOR = 3.7, 95% CI, 9.02-14.84),

body tattooing (AOR = 5.7, 95% CI, 1.24-26.50), history of surgery (AOR = 11.1, 95% CI, 2.64-46.88) and unsafe injection (AOR = 5.6, 95% CI, 1.44-22.19) were significantly associated with HBV infection (6).

Across-sectional study was conducted from February to May, 2015 at Bahar Dar Armed force General Hospital in Ethiopia, reported that history of nose piercing (COA 5.9; 95 % CI 1.2–29.9) and sexually transmitted infection (COR 4.3; 95 % CI 1.1–16.4) were significantly associated with HBV infections(23).

2.5. Diagnostic mechanisms

Acute HBV infection may be subclinical, symptomatic, but self-limited, or fulminant. Subclinical (asymptomatic) disease usually occurs when HBV is acquired prenatally or in early childhood or in the immune suppressed. Mild to moderate symptoms occur in approximately 30–50% of persons infected as adults, and include fever, jaundice, anorexia, nausea, abdominal pain, and malaise (31). Arthritis, serum sickness, and a nonspecific rash may also occur with acute HBV infection and, when present, are helpful diagnostically. Acute HBV infection is confirmed by the serologic detection of IgM anti-HBcAg and HBsAg. The detection of HBsAg alone is not diagnostic for acute HBV infection, since persons with asymptomatic chronic HBV infection can be newly infected with other pathogens that cause acute hepatitis. IgM anti-HBcAg may persist at detectable levels for up to two years in a small subset of acutely infected persons.

2.6. Prevention and control mechanism

Prevention strategies include primary prevention of new infections (i.e. vaccines and post-exposure prophylaxis), secondary prevention of HBV transmission by appropriate sexual and sanitary practices, and tertiary prevention of the pathological consequences of chronic HBV by anti-viral treatment (29).

2.7. Conceptual frame work

Hepatitis B virus is among the known viral hepatitis which cause acute and chronic hepatitis. Different factors like age, sex other socio demographic factors affect the rate of this viral infection which intern is exacerbated by other factors like sharing of sharp instruments, drug injection and the like. Further, prison related factors increase the risk of infection by this pathogen in prison centers. In general, there is an interweaving relationship between different factors as **shown below** (fig-1) which directly or indirectly affect the infection rate of individual with this virus especially in incarcerated individual.

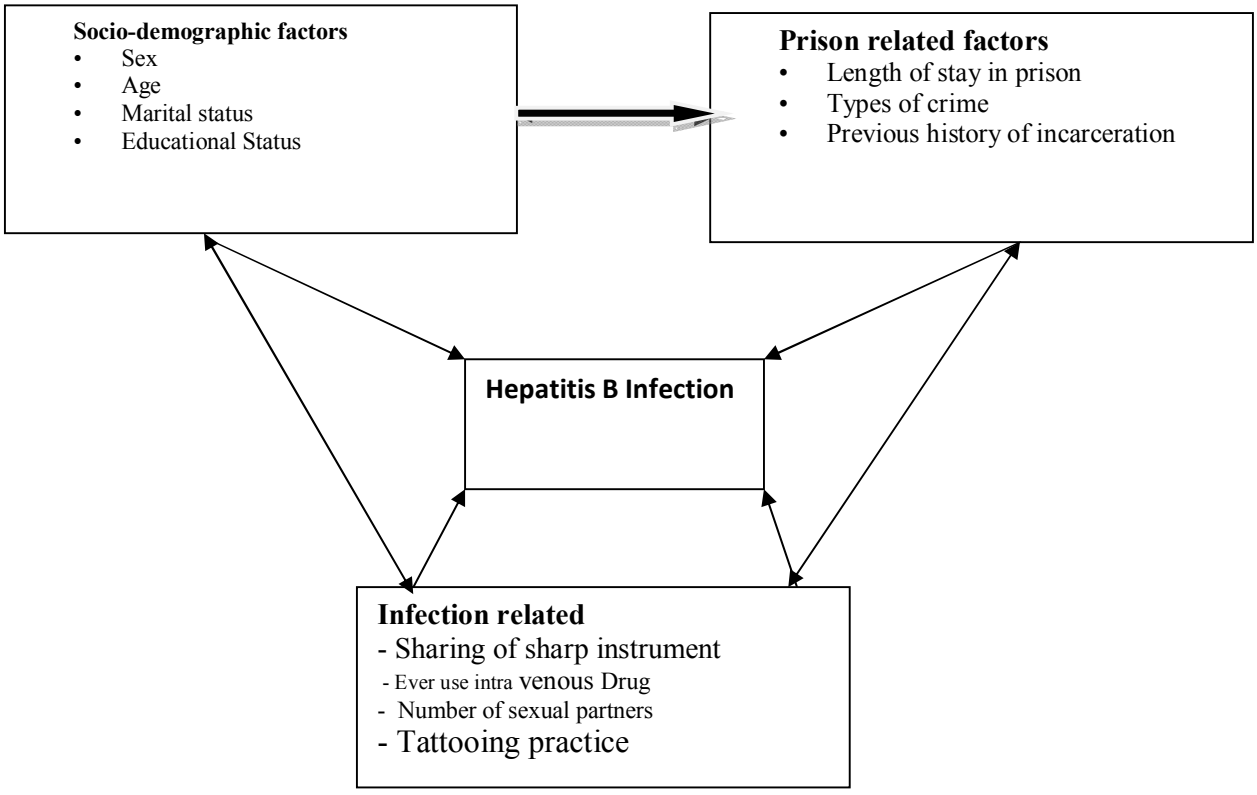

Figure 1:- Conceptual framework of sero prevalence of hepatitis B infection and associated factor in Kality prison constructed from different literatures.

Source:- Berhe H., 2013 [10], Asfaw N. 2011[20], Abdulmajid K., 2012 [24], Nima M., 2013. [33]

3. Objective

3.1. General objective

- ✓ To determine the prevalence and associated determinant factors of HBV infections among prison inmates at Kality Prison.

3.2. Specific objective

- ✓ To determine the prevalence of HBV infections among prisoners in Kality Prison Addis Ababa, Ethiopia.
- ✓ To determine associated determinant factors of HBV infections among prisoners in Kality Prison, Addis Ababa, Ethiopia.

4. Materials and Methods

4.1. Study Design and Period

Institution based cross-sectional study was conducted from January 2016 – October 2016.

4.2. Study Area

The study was conducted at Kality Prison which is one of the largest Federal Prison centers found in Addis-Ababa, Akaki Kality sub city, which is one of the 10 sub cities of Addis Ababa. The Sub city is located in the southern most part of the City, bordered with the sub cities of Nifas silk- Lafto and Bole. It is about 15km far from the center of the city. In this prison, there were about 4000 sentenced prisoners of whom 3400 were males and 600 females. The Prison has its own clinic, the composition of health professionals being 12 health officers, 3 pharmacists, 4 druggists, 18 nurses, 1 lab technologist, and 4 lab technicians. Furthermore, there were visiting medical doctors and specialists. These professionals provide basic active and passive case detection of different health problems which the prisoners face. The clinic also provides basic laboratory services, like detection of infectious diseases, including Hepatitis B virus, whenever the health professionals suspect cases.

4.3. Source and Study Population

4.3.1. Source Population

All female and male prisoners found in Kality Prison.

4.3.2. Study Population

Male and female prisoners who were selected from the source population from whom data were collected

4.4. Inclusion and Exclusion criteria

4.4.1. Inclusion criteria

All prisoners age 18 years and above in Kality Prison and willing to give their blood samples and responded to semi structured questionnaire.

4.4.2. Exclusion criteria

Prisoners who were mentally ill, critically ill Patients.

4.5. *S*ample size and sampling procedures

4.5.1. Sample size determination

Sample size for the first objective is determined using the formula for single population proportion by considering 10.4% prevalence of hepatitis B in Woldiya Prison, Amhara Region (10), 95% level of confidence and 3% margin of error to increase the sample size. Therefore, sample size was determined as follows:

$$n = \frac{(Z\alpha/2)^2 * P(1-P)}{d_2}$$

$$n = (1.96)^{2} * 0.104 (1-0.104) / (0.03)$$

n=397

Sample size for the second objective was determined using double population proportion formula for unmatched case control study by considering the following assumptions taking significant factors from study conducted among Woldiya Prison Amhara Regional State, Ethiopia(10).

Factors	Assumptions	Proportions	Odd ratio	Sample size
Sharing of sharp materials in prison	Power=80% CI= 95% 1:1 Ratio	P1= 13% P2 = 25%	2.807	**380**
Duration of stay in prison (**Categorize as less than 1 year, 1-3 years and greater than 3 years**)	Power=80% CI= 95% 1:1 Ratio	P1 = 41.86% P2 = 21.74%	3.234	186

P1= Exposure among controls, P2 = Exposure among cases

By adding 15% non-response rate to the larger sample size (397), the final sample size was **457**.

4.5.2. Sampling techniques

In Kality Prison there were 4000 prison inmates. Systematic random sampling procedures were applied to select the study participants. Complete list of the prisoners was extracted from the

prison registration center which served as a sampling frame and then sampling interval (K) was calculated based on our sample size. Then, the first individual was selected randomly, where every K was followed to select the remaining sample. Therefore, the overall sample size was 457.

4.6. Variables of the study

4.6.1. Dependent variable:

- Hepatitis B infection

4.6.2. Independent variables

- ✓ Sex
- ✓ Age
- ✓ Ethnicity
- ✓ Religion
- ✓ Educational status
- ✓ Marital status
- ✓ Previous history of incarceration
- ✓ Type of crime
- ✓ Duration of stay in prison
- ✓ Number of sexual partner
- ✓ Dental extraction
- ✓ Sharing of Sharp materials in prison
- ✓ Intravenous Drug Use
- ✓ Tattooing practice
- ✓ History of STI
- ✓ Smoking practice before imprisonment
- ✓ Alcohol consumption history

4.7. Blood collection

After obtaining informed consent from prison inmates, 2 ml of venous blood was drawn under aseptic conditions from all study participants by experienced laboratory personnel and immediately put in vacutainer tubes containing a clot activator. Those tubes were numbered and

processed at the time of collection. The blood samples taken from individuals were centrifuged at 3000 revolutions per minute (RPM) for at least 20 minutes at room temperature serum was separated and placed in eppendorf tubes.

4.8. HBV Laboratory processing:

All serum samples were tested for HBsAg using rapid diagnostic kits which work in the principle of immunochromatography following standard operating procedure of the laboratory. The Quality of test results was maintained using internal quality control of the test kits and by using known negative and positive samples. The sensitivity and specificity of the kits used compared to the standard tests like ELISA (enzyme linked immunosorbent assay) was 100% and 99.8%, respectively.

4.9. Data Quality Assurance

The questionnaire was prepared originally in English and translated to Amharic and back to English by language experts to keep the consistency of the questions. Training of data collectors on the data collection and sampling techniques and pre testing of questionnaire on 23 (5%) prisoners 10 days before the start of actual data collection were done. Investigators made spot-checking and reviewing the completed questionnaires on daily bases to ensure completeness and consistency of the information collected. Privacy of the prisoners was kept while data collection in order to get honest responses. Double data entry was done in to EPI INFO 7 statistical software. Multiple logistic regression analyses were performed by including variables whose P values were ≤ 0.2 in the bivariate analysis. P values < 0.05 were considered statistically significant.

4.10. Operational definitions

Hepatitis B Surface Antigen (HBsAg)- is an antigen on the surface of the virus. Its presence indicates HBV infection.

Hepatitis B surface antigen sero-positivity- the detection of HBsAg in serum or plasma using a diagnostic kit is considered as sero-positivity.

4.11. Ethical considerations

Ethical clearance was obtained from Review Ethical Committee School of Public Health, College of Health Since of the Addis Ababa University. A formal letter was been obtained from the Addis Ababa University, School of Public Health and submitted to the Federal Prison Administration. Permission was obtained from the Federal Prison Administration and Kality Prison administration. Confidentiality of respondents was maintained by using anonymous data collection tool and by training data collectors not to communicate respondent's information disclosed for them. After explaining confidentiality of information, informed consent was obtained from the study participants. Participants had the right to withdraw from the study at any time if they wished to do so. To respect autonomy we gave weight to the considered opinions and choices of individuals, while refraining from obstructing their action.

Though this study was undertaken on prisoners, where they have restricted liberty to make their own decision, no extra pressure/influence was in place for the purpose of achieving data collection in this work. Further all principles stated on article 21 of Federal Democratic Republic of Ethiopia Constitution regarding persons held in custody and convicted prisoners were respected(32). For the sake of this research, there was no harm the researcher or data collector was imposed on participants. Those positive individuals were referred to Federal Prison General Hospital for further consultation, investigation and management.

4.11. Dissemination of results

The final report will be presented on the annual conference of Federal and Regional Prison. Findings of the study will be submitted to Addis Ababa University School of Public health, Federal Prison Disease Prevention Directorate Director and Federal prison General Hospital Directorate Director. The results will also be communicated through Publication on local or international journals to the scientific community.

5. Results

5.1. Socio-demographic characteristics

A total of 457 participants were considered in this study with non-response rate of Zero (0). Majority of participants were male, 357(78.1%) with male to female ratio of 3.57: 1.The mean ± standard deviation of age of the participant was 37.9 ± (16.5). About forty-five (45%) of subjects were between 18-30 years old, 27.4% between 31 to 45 years, 14.2% between 46-60 and the rest were above 61 years old. Of the total participants, about half (49.5%) were married. The majority of the study participants were Orthodox (68.7%), 15.3% were Muslim, and others (15.9%).With regard to the educational status, 53 (11.6%) had never attended formal education, 168 (36.8%) attended primary education and only 236 (51.7%) had an educational level of secondary school and above.

Table - 1. Frequency distribution of Socio demographic characteristics of the study participants, 2016, Kality prison

Sociodemographic Characteristics	Total tested No. (%)
Sex	
Male	357 (78.1 %)
Female	100 (21.9 %)
Age (yrs)	
18-30	204 (45%)
31-45	125(27.4%)
46-60	65(14.2%)
≥61	63(13.8%)
Ethnicity	
Amhara	202(44.2%)
Oromo	111(24.2%)
Tegre	51(11.2%)
Others	93(20.4%)

Marital status	
Married	226(49.5%)
Single	193(42.2%)
Divorce/ Widowed	38(8.4%)
Religion	
Orthodox	314(68.7%)
Muslim	70(15.3%)
Others	73(15.9%)
Educational status	
Secondary and above	236(51.7%)
primary	168(36.8)
Illiterate	5 3(11.6%)

5.2. **Prevalence of Hepatitis B infection**

A total of 22 (4.8%) participants were found to be positive for HBV infection. Seropositive was about 18 (5%) in male and 4(4%) in female (table-2). The sero prevalence was higher among age group of 18-30, 11(5.4%) and 31-45, 7(5.6%). Of those who were married before imprisonment 12 (5.3%) were positive for HBsAg.

Tables -2. Prevalence of Hepatitis B infection of Socio demographic characteristics of the study participants, 2016, Kality prison

Sociodemographic Characteristics	Total tested No. (%)	HBV positive No. (%)
Sex		
Male	357 (78.1 %)	18(5%)
Female	100 (21.9 %)	4(4 %)
Age (yrs)		

18-30	204 (44.6%)	11(5.4%)
31-45	125(27.4%)	7(5.6%)
46-60	65(14.2%)	2(3.1%)
≥61	63(13.8%)	2(3.2%)
Ethnicity		
Amhara	202(44.2%)	9(4.5%)
Oromo	111(24.2%)	4(3.6%)
Tegre	51(11.2%)	3(5.9%)
Others	93(20.3%)	6(6.5%)
Marital status		
Married	226 (49.5%)	12 (5.3%)
Single	193 (42.2%)	9 (4.7%)
Divorce/ Widowed	38 (8.4%)	1(2.6%)
Religion		
Orthodox	314 (68.7%)	16(5.1%)
Muslim	70 (15.3%)	4 (5.7%)
Others	73 (15.9%)	2(2.7%)
Educational status		
Secondary and above	236(51.6%)	9 (3.8%)
primary	168 (36.8)	10 (6.0%)
Illiterate	53 (11.6%)	3 (5.7 %)

5.3. **Determinant of Hepatitis B virus infection**

Among 24 (5.5%) of the study participants who had the experience of earlier incarceration, none of them were positive for hepatitis B virus. The inmates were in prison for various reason the most common being were theft 112 (24.5%), Homicide 84 (18.4%), Rape 36(7.9%), corruption 31(6.8%), Drug illicit 3 (0.6 %), Others 191(41.8%). Out of the total study participants 111 (24.8%) had been in prison for less than one year among whom 3 (2.7%) were positive. From those who stayed in prison for 1-5 year, 195 (42.3%) hepatitis B prevalence was 11(5.6%). Highest prevalence 4 (12.5%) was observed among those who stayed longer than 10 years.

Among 39 (8%) who had ever tested for hepatitis B virus 4(10.3%) was seropositive for hepatitis B.

More than half of participants 266(58.6%) reported that as having more than single sexual partner among whom 11(4.1%) were HBV positive. Among 187(39.5%) inmate who had history of tooth extraction because of illness 15 (8.0 %) were sero positive for HBV. From 103 (22.5%) who had history of sharing of sharp materials in side prison among whom 9(8.7%) were HBV positive. Among 8 (1.8%) of the study participants who had a history of intravenous drug use, none of them were positive for hepatitis B virus. Regarding tattooing, from 81(17.7%) participants 6 (7.4%) were positive for HBV. Among 103 (22.5%) those who had a history STI 4(3.9%) were positive for HBV. Of 141 (31.3%) participant who had history of smoking, the prevalence of hepatitis B was 5 (3.5%). Among 238 (51.9%) inmate who had history of alcohol 8(3.4%) were sero positive for HBV (table 3).

Table -3: Distribution of determinants of Hepatitis B virus infection among study participants, 2016, Kality prison.

Characteristics	Total tested No. (%)	HBV positive No. (%)
History of incarceration		
No	433 (94.5 %)	22 (4.8%)
Yes	24 (5.5 %)	0(0%)
Types of crime		
Theft	112(24.5%)	7 (6.3%)
Homicide	84 (18.4%)	4 (4.8%)
Drug illicit	3 (0.6%)	1(33.3%)
Rape	36 (8.0%)	1(2.8%)
Corruption	31(6.7%)	2 (6.5%)
Others	191(41.8)	7 (3.7%)
Duration of stay in prisons		

Less than one year	111(24.8%)	3(2.7%)
1-5 Years	195(42.3%)	11(5.6%)
6-10 years	119(26.4%)	4(3.4%)
Greater than 10 years	32(6.4%)	4(12.5%)
Ever tested for HBV		
No	418(92.0%)	18(4.3%)
Yes	39 (8.0%)	4 (10.3%)
No of sexual partners		
≥ 2	266 (58.6%)	11(4.1%)
One	191(41.4%)	11 (5.8%)
Dental extraction		
No	270 (60.5%)	7 (2.6%)
Yes	187 (39.5%)	15 (8.0%)
Sharing of sharp material		
No	354 (77.5%)	13 (3.7%)
Yes	103 (22.5%)	9 (8.7%)
Intravenous drug use		
No	449 (98.2%)	22 (4.9%)
Yes	8 (1.8%)	0 (0.00%)
Tattooing practice		
No	376(82.3%)	16(4.3%)
Yes	81(17.7%)	6(7.4%)
History of STI		
No	354(77.5%)	18(5.1%)
Yes	103(22.5%)	4(3.9%)
Smoking		
No	316 (68.7%)	17 (5.4%)
Yes	141(31.3%)	5 (3.5%)
Alcohol		
No	219 (47.1%)	14 (6.4%)
Yes	238 (51.9%)	8 (3.4%)

5.4. **Bivariate and Multivariate analysis of HBV determinant factors**

Socio demographic and other determinants in relation to hepatitis B infection of the inmates were evaluate by bivariate and multivariate logistic regression analyses model. In the bivariate models almost all the sociodemographic variables and majority of the assumed risk factors were not significantly associated with hepatitis B virus infection of the inmates. In this model the duration of the stay in the prison, sharing of sharp materials among the inmate and history of the dental extraction by the inmates were the three determinants which were found significantly associated with hepatitis B infection in the bivariate analysis. The three factors were then transferred to the final models to see the effect of each factor on the independent when the effect of each factor is considered independently.

As it is depicted in table - 4. Those prison inmates who had an experience of sharing sharp materials were about 2.6 times (AOR =2.59; 95% CI: 1.04-6.43) at higher risk of hepatitis B seropositive compared to inmate who had no such experience. Further prison inmate who had history of tooth extractions in the past were also about 2.8 time (AOR = 2.83; 95% CI: 1.11-7.22) compared to those who had no such experience. The duration of stay however was not found to be significantly associated with the seropositive of the prison inmates in the final model.

Table: 4: Bivariate and multivariate analysis results of associated factors of Hepatitis B infection in the Kality prison center

Characters	Total (%)	Positive (%)	COR (95%CI)	AOR(95%CI)
Sex				
Male	357(78.1)	18(5)	1.27[0.42, 3.85]	-
Female	100(21.9)	4 (4)	1	
Age (in years)				
18-30	204(44.6)	11(5.4)	1	
31-45	125 (27.4)	7(5.6)	1.04 [0.39-2.76]	-
46-60	65(14.2)	2(3.1)	0.56[0.12-2.58]	
≥61	63(13.8)	2(3.2)	0.57[0.12-2.77]	
Ethnicity				
Amhara	202(44.2)	9(4.5)	1	
Oromo	111(24.2)	4(3.6)	0.80[0.24-2.66]	
Tigre	51(11.2)	3(5.9)	1.34[0.35-5.14]	-
Others	93(20.3)	6(6.5)	1.48[0.51-4.28]	
Education				
Illiterate	53(11.5)	3 (5.7)	1.51[0.39-5.79]	-
Elementary	168 (36.3)	10 (6.6)	1.59[0.63-4.01]	
Secondary and above	236 (52.2)	9 (3.8)	1	
Duration of stay in years				
<1	111 (24.80	3 (2.7)	1	1
1-5	195 (42.4)	11 (5.6)	2.15[0.58-7.88]	1.78[0.47-6.66]
6-10	119 (26.4)	4 (3.4)	1.25[0.27-5.72]	0.90[0.19-4.23]
>10	32 (6.4)	4 (12.5)	5.14[1.08-24.31]	4.00[0.8-20.00]
Sharing sharp materials				
No	357 (89.9)	13 (3.7)	1	
Yes	103(10.1)	9(8.7)	2.51[1.04-6.05]	2.59 [1.04-6.43]
Tattooing Practice				
No	376 (82.8)	16 (4.3)	1	
Yes	81 (17.2)	6 (7.4)	1.8[0.68-4.73]	
History of dental extraction				
No	270 (60.5)	7 (2.6)	1	1
Yes	187 (39.5)	15 (8.0)	3.28[1.31-8.20]	2.83 [1.11-7.22]

6. Discussion

Hepatitis B virus infection is a public health problem and a major cause of morbidity and mortality particularly in developing countries (28). The world can be divided into three areas where the prevalence of chronic HBV infection is: high (>8%), intermediate (2-8%), and low (<2%) (8). Most countries in the world are still considered intermediate to high endemicity for HBV infection (8). In Ethiopia, though there are different community based reports from different parts of the country, there is no comprehensive country wide report in general and data about HBV among prisoners are lacking. Hence, the present study tried to provide the seroprevalence of HBV infection and determinant factors in this segment of the population.

In this institutional based cross-sectional study, we assessed the prevalence of HBV among prisoners. In this study, the overall seropositive status of hepatitis B was found to be 4.8%. This is lower, compared with a study conducted in Woldia Prison in Ethiopia which reported hepatitis B prevalence of 10.4% among prisoners (10). Our report is also lower than the report from some African countries conducted on the same segments of the population; 17.4% in Ghana Prison (27), and 18% in Bali Prison in Nigeria (28). This may be attributed to a possible practice of intravenous drug user (IDU), which is the main risk factor described in the studies which is not the case in our study. Further, the current sero-prevalence of HBV is also lower than the overall prevalence of countries of the African Region 8·83% and Western Pacific Region 5·26%, compiled by Schweitzer et al., (11) and Isfahan, Iran (27.2%) reported by Dana et al., (26).

Despite the fact the prison inmates are at the higher risk of having communicable disease (8), the current report even indicate the lower sero-prevalence of hepatitis B virus infection compared community 7.0% sero-prevalence report from Addis Ababa (16) and 5.7% reported among visitors of Shashemene General Hospital voluntary counseling and testing center (20). Discrepancy of our results relative to these reports might be related to the different in the laboratory techniques employed in the Addis Ababa study while it might be related to difference in the population considered in Shashemane

cases which reported the highest prevalence of HBV in HIV seropositive individuals. Further, the inconsistence of our reports could be explained partly due to the difference in time of study, the place and living standard of study subjects or due to a reflection of the local endemicity and life style of the study area.

On the other hand, our report is higher than the results of studies conducted in different parts of Ethiopia; 3.8% prevalence at Bahir Dar hospital and health centers(6) ,4.2% prevalence at Bahar Dar Armed Force General Hospital in Ethiopia (23) and 1% HBV sero-prevalence among non-clinical waste handlers, at Gondar university (21). Our data also indicate the higher prevalence of hepatitis B infection compared to the results from counties like Pakistan (3.17%) by Memon et al. (12), Bahrain (0.58%) by Janahi (13) , Southwest of Iran (1.2%) by Abdulmajid et al (24) and Hungary (1.5%) by Bálint et al. (25). The inconsistences might be related to the difference in the geographic area, study population considered, study methodology and time when these studies were conducted.

The higher proportion of sero-prevalence of HBV in the age group of 31-45(5.6%) in our study is consistent to earlier reports (10). This might be related to the fact that this age group is the most sexually active, the common route of transmission, which might increase the risk of acquiring this infection.

From the bivariate and multivariable analysis, no sociodemographic variable was significantly associated with HBV infection. Sharing of sharp materials in prison was significantly associated with HBV infection .Those having shared any sharp material were two point Six times more likely to be infected with HBV infection than those who never share sharp materials inside the prison (AOR: (AOR =2.59; 95% CI: 1.04-6.43). Consistent result was also reported earlier from Woldiya prison (10). This may be related the fact that prison inmates have limited access of shopping to purchase materials like nail clip, needle and other which they can use for different activities like for nail clip and sewing. Dental extraction was the other strong predictor of Hepatitis B infection where inmate who had history of dental extraction at increased risk of hepatitis infection [AOR=2.83, 95%CI: 1.11-7.22]. This is supported by bulk of literature as indicated review by Mahboobi etal, (33) and current report by Suliman M. Al Humayed (34) . As it had already mentioned on these study the increased risk of infection in

individual who had the experience of dental extraction might related to the fact that dental procedures often result in bleeding and exposure to infected body fluids that are known vehicles of infectious disease transmission.

7. Conclusion

Prevalence in the present study was lower when compared with some community based studies in Ethiopia but higher than global level of HBsAg prevalence rate. The present study has shown that HBV was intermediately prevalent among prisoners. History of tooth extraction and sharing of sharp materials were found to increase the risk of hepatitis infection. Further, the findings of the present study provided baseline data of hepatitis B and its risk factors in Kality Prison and may also help the health authorities of prison center for the better implementation of any prevention and control strategy in prison setting.

8. Recommendations

We recommend that all individuals who are jailed must be screened to determine their status with regards to HBV infection so that health education will be specifically given to sero-positive individual to halt the transmission. To prevent the spread of HBV, prisoners must be educated about this disease and modes of transmission. Policies must include testing programs in prisons, which should be seen as an opportunity to improve the health status of the infected prison inmates, and prevent further transmission of the infectious agents, within and out sides the prisons. Efforts are also required for introducing free vaccination against HBV to high risk groups. In prisons, implementation of operative guidelines and adequate funding are needed. Further studies must be conducted to determine the potential modes of transmission.

9. **Strength**: The willingness of prisoners to be tested was very high with non-response rate of zero (0). No earlier studies were conducted in this particular prison and this study may serve as at least a base line data. Data collectors were experienced health officers and nurses. Frequent supervision and on spot checking was made by principal investigator during data collection.

10. Limitation: Hepatitis B Surface Antigen becomes undetectable within 4 to 6 months in most adult cases. A major limitation of this study was the lack of detailed information on unprotected sex which is a common risk factor for acquiring HBV infections. The study did not determine whether the inmates acquired the diseases while in prison or carried it with to the prison also them. Data collectors were health officers and nurses who were working in prison center. Cross-sectional study-may not is strong enough to demonstrate direct cause and effect relationship.

11. References

1. Departement for health and aging South Australia. Hepatitus B action plan. 2014.
2. World Health Organization. . Hepatitis B vaccines. 2009. p. 405-20.
3. CF K. Hepatitis B infection in sub-Saharan Africa Vaccine. 1990;8:107-12.
4. Mast EE, Alter MJ, Margolis HS. strategies to prevent and control hepatitis B and C virus infection aglobal perspective. vaccine. 1999;17:1730-3.
5. Abate B, Aravind P, Mahafroz K. Healthcare cost and access to care for viral hepatitis in Ethiopia. International Journal of Innovation and Applied Studies. Dec 2014;9:1718-23.
6. Yohannes Z, Wondemagegn M, Mulat Y, Bayeh A. Sero-prevalence and risk factors of hepatitis B virus and human immunodeficiency virus infection among pregnant women in Bahir Dar city, Northwest Ethiopia: a cross sectional study. BMC Infectious Diseases. 2014;14:118.
7. Giuseppe L, Luca M, Giacomina C, Alice M, Manuela R, Giovanni Gasbarrini, et al. Socio-demographic determinants of coinfections by HIV, hepatitis B and hepatitis C viruses in central Italian prisoners. BMC Infectious Diseases. 2007;7:100.
8. Roy W. World Prison Population List. international center for prison study. 2013.
9. Bick JA. Infection control in jails and prisons. Clin Infect Dis. 2007;45:1047-55.
10. Berhe H, Yismaw G, Addis Z, H/slassie H, Anagaw B, Unakal C. Seroprevalence and Associated Risk Factors of Human Immunodeficiency Virus and Hepatitis B Virus Infections among Prison Inmates. J Pharm Biomed Sci 2013;30:1035-45.
11. Aparna S, Johannes H, Rafael T M, Gérard K, Jördis J Ott. Estimations of worldwide prevalence of chronic hepatitis B virus infection: a systematic review of data published between 1965 and 2013. Lancet. 2015;15.
12. Abdul Rauf M, Kashif Sh, Ashraf M, Agha UD, Mohammad UA R, Salahuddin A. Hepatitis B and C prevalence among the high risk groups of Pakistani population. A cross sectional study. Memon et al Archives of Public Health. 2012; 70:9.
13. Janahi EM. Prevalence and Risk Factors of Hepatitis B Virus Infection in Bahrain, 2000 through 2010. PLoS ONE. 2014 9 (2):1-5.
14. Emmanuel MM, Christian UI, Anthony CI, Godwin Terver AJ. Studies on prevalence, co-infection and associated risk factors of hepatitis B virus (HBV) and Human immunodeficiency virus (HIV) in Benue State, Nigeria. Science Journal of Public Health. 2014;2(6):569-76.
15. AB Olokoba, Fk Salawu, A Danburan, LB Olokoba, JK Midola, LH Badung, et al. Hepatitus B Virus infection amongest Pregnant women in North -Estern Nigeria A call for action. Nigerian Jornal of Clinical Practice. Jan-March 2011;14(1).
16. Abebe A, Nokes D, Dejene A, Enquselassie F, Messele T. Seroepidemiology of hepatitis B virus in Addis Ababa,Ethiopia: transmission patterns and vaccine control. . Epidemiology and infection. 2003;131(1): 757-70.
17. Baye G, Yohannes M. The prevalence of HBV, HCV and malaria parasites among blood donors in Amhara and Tigray regional states EthiopJHealth Dev. 2008;22(1).
18. Solomon T, Abdulkerim A, Mohammed H. Prevalence of hepatitis B and C virus infections among patients with chronic hepatitis at Bereka Medical Center, Southeast Ethiopia: a retrospective study. BMC Research Notes 2014; 7:272.
19. Abel G A, Solomon GS. Prevalence and Risk Factors of Hepatitis B and Hepatitis C Virus Infections among Patients with Chronic Liver Diseases in Public Hospitals in Addis Ababa, Ethiopia. ISRN Tropical Medicine. 2012;2013:7.

20. Asfaw N, Zufan S, Girmay M. Prevalence of Hepatitis B surface antigen (HBsAg) among visitors of Shashemene General Hospital voluntary counseling and testing center. BMC Research Notes 2011.
21. Anagaw B, Shiferaw Y, Anagaw B, Belyhun Y, Erku W, Biadgelegn F, et al. Seroprevalence of hepatitis B and C viruses among medical waste handlers at Gondar town Health institutions, Northwest Ethiopia. . BMC Research Notes. 2012;5:55.
22. Yitayih W, Meseret A, Fanaye A, Yeshambel B. HBV and HCV seroprevalence and their correlation with CD4 cells and liver enzymes among HIV positive individuals at University of Gondar Teaching Hospital, Northwest Ethiopia. Virology Journal. 2013;10:171.
23. Tigist B, Baye G, Feleke M, Abate A. Prevalence of hepatitis B and C viruses infection among military personnel at Bahir Dar Armed Forces General Hospital, Ethiopia. BMC Research Notes 2015;8:737.
24. Abdolmajid K, Bahador S, Halimeh N, Asghar SH, Mehdi A, Owrang E. Hepatitis B Infection among high risk population: a seroepidemiological survey in Southwest of Iran. BMC Infectious Diseases BMC Infectious Diseases 2012, 12:378;12:378.
25. Bálint T, Erzsébet B, Anna T, Gergely H, Ágnes D, Andrea H, et al. Prevalence and Correlates of HCV, HVB, and HIV Infection among Prison Inmates and Staff, Hungar. Journal of Urban Health: Bulletin of the New York Academy of Medicine, Vol 89, No 1. 2011;89(1).
26. Daneshmand D, Nokhodian Z, Adibi P, Ataei B. Risk Prison and Hepatitis B Virus Infection among Inmates with History of Drug Injection in Isfahan, Iran. The ScientificWorld Journal. 2013;2013:1-4.
27. Andrew A A, Henry B A, Foster G, William K A, Isaac K E Q, Ian FA H, et al. Prevalence of human immunodeficiency virus, hepatitis B virus, hepatitis C virus and syphilis among prison inmates and officers at Nsawam and Accra, Ghana. Journal of Medical Microbiology. 2006;55:593-7.
28. Monday I E, Francis james I. A Survey for Hepatitis 'B' Infection among Prison Inmates in Bali Prison, Taraba State, Nigeria. IOSR Journal of Pharmacy and Biological Sciences (IOSR-JPBS). 2014;9(1):134-7.
29. Elizabeth WH, Ramsey C. Global Epidemiology of Hepatitis B Virus (HBV) Infection. North American Journal of Medicine and Science 2011;4(17).
30. H. Tavakkoli, M.M.Mir-Nasseri, H. Poustchi et al. Prevalence
and risk factors of hepatitis B infection in injection drug users,. Hepatitis Monthly. 2001-2003;8:29-33.
31. Foundation for liver research. Hepatitis B: out of the shadow's : a report in to the impact of hepatitis on the nation's health. 2004.
32. Constitution Of The Federal Democratic Republic Of Ethiopia.
33. Nima M, Stephen R P, Peter K, Alavian S-M. Dental Treatment as a Risk Factor for Hepatitis B and C Viral Infection. A Review of the Recent Literature. J Gastrointestin Liver Dis. 2013; 22 (1):79-86.
34. Humayed SMA. The risk of acquiring hepatitis B and C viral infections following tooth extraction in Al Farsha area, south-western Saudi Arabia. The Saudi Journal for Dental Research. 2016 7: 127–31.

ASSURANCE OF PRINCIPAL INVESTIGATOR

The undersigned agrees to accept responsibility for the scientific ethical and technical Conduct of the research project and for provision of required progress reports as Per terms and conditions of the Research Publications Office in effect at the time of Grant is forwarded as the result of this application.

Name of the student: _____

Date._____ Signature _____

Approval of the primary Advisor

Name of the primary advisor:_____

Date._____ Signature _____

12. Annex

12.1. English version of Patient information sheet

Title of the study: **Assessment of Hepatitis B infection and associated factors in Kality Prison Addis Ababa Ethiopia**

Principal investigator: **Asnakech Girma**

1. Back ground of the study

Hepatitis is a general term meaning inflammation of the liver and can be caused by a variety of different viruses. From those, Hepatitis B virus is a potential life threatening liver infection. It is a major health problem worldwide and causes acute and/or chronic hepatitis which can lead to the development of extensive liver scarring (cirrhosis), liver failure, and liver cancer. In Ethiopia, like in any other part of the world, reports from different parts of the country indicate variable magnitudes of the disease. Hepatitis B is transmitted from human to human by unsafe sexual practice, mother to child during pregnancy, from Unsafe tattooing, sharing contaminated injecting equipment, other sharp instruments, Blood-to blood contact. It is also becoming public health concern with increased number of cases.

2. Significance of the study

The study will determine the prevalence of Hepatitis B and associated determinant factors in high risk population. Therefore, it will be used as an input for prison management to design appropriate intervention system. Furthermore, it will help policy makers to take their own action when national control strategy is designed.

3. Aim of the study

You are being invited to participate in a research study entitled "**Study of Hepatitis B infection and associated determinant factors in Kality Prison Addis Ababa Ethiopia from** January 2016 – October 2016. The purpose of this study is to determine the prevalence and associated risk factors of HBV infections among prison inmates at Kality Prison.

4. Study procedures

You will be approached by the study team member(s) who will explain the details of the study to you and ask for your consent to participate in the study. If you are willing to participate in this study, you will be asked to sign on a consent form. Health professionals will then ask you some questions to capture relevant socio-epidemiological information, and which will be filled on the prepared questionnaire. And Two ml of Venus blood sample will be collected to determine your sero status for Hepatitis B virus.

5. Voluntary participation

Only volunteers will participate in the study; deciding not to participate and/or withdrawal at any time point will not have any effect on you. If you decide to withdraw from the study the sample and data collected from you will be discarded. However, once your data is analyzed and published we have very limited access to do so.

6. Risk and discomfort

There would be slight pain and minor bleeding during blood drowing. Since the blood will be collected by experienced health personnel using single use disposable syringes these conditions will be minimized.

7. Benefits

There would be no direct monitory payment for participation on this study. However, if you are found to be positive by the laboratory examination you will be linked to the prison health facility where you can get counseling and supportive treatment. In additions, your participation will help us to investigate whether there is Hepatitis B virus transmission in your area.

8. Confidentiality

The results of the study and related information will only be used for the purpose of this study. Your name will not be used on the sample questionnaire and/or any report that might result from the study. We will use codes specific to the study and only the PI can access the link of the code with the participant's name.

9. Autonomy

An autonomous person is one who is capable of deliberation about personal goals and of acting in the direction of such deliberation. To respect autonomy is therefore to give weight to the considered opinions and choices of the individual while refraining from obstructing his/her action.

Though this study is going to be undertaken on prisoners where they have restricted liberty to make their own decision, no extra pressure/influence will be in place for the purpose of achieving data collection in this work. Further all principles stated on article 21 of Federal Democratic Republic of Ethiopia Constitution regarding persons held in custody and convicted prisoners will be respected.

10. Malfeasance

For the sake of this research, there is no harm the researcher or data collector will impose on you

11. Freedom to ask question or raise concerns

If you have any question(s) or concern(s) regarding the study; you can forward them with the address indicated below any time at:

PI **Asnakech Girma** mobile 0941960925 ፣ email: girmaasni_@gmail.com,

Ethical review committee (AAUERC) secretariat phone: …….

12.2. Amharic version of Patient information sheet

ለተሳታፊዎች መረጃ ገፅ

የጥናቱ አርዕስት ፡ የሄፓታይስ ቢ ኢንፌክሽን እና አጋላጭ ምክንያቶች በቃሊቲ ማረሚያ ቤት

ዋናተመራማሪ፡ አስናቀች ግርማ

1.**የጥናቱ መነሻ**

ሄፓታይተስ ማለት የጉበት መቁሰል ማለት ሲሆን የሚከሰተውም በተለያዩ ተህዋሳት ነው፡፡ከነዚህም ውስጥ ሄፓ ታይተስ ቢ የተባለው ተህዋስ ከፍተኛ የጉበት ቁስለት እና ህይወትን ለአደጋ ያጋልጣል፡፡በወቅቱ ተመርምሮ ተገቢውን ህክምና ካላገኘ ለህይወት አደጋ ነው፡፡የአለም አቀፍ ጤና ችግር ሲሆን ግዚያዊ እና ቋሚ የጉበት መቁሰል አስከትሎ በጉበት ላይ ጠባሳ እና የጉበት ካንሰር ያስከትላል፡፡ በኢትዮጲያ ውስጥም እንደማንኛውም የአለም አቀፍ ሪፖርት ከተለያዩ የሀገሪቱ ክፍሎች የተለያዩ ስርጭቶች ይታያሉ፡፡ በሽታው ከሰው ወደ ሰው የሚተላለፈው ልቅ በሆነ የግብረስጋ ግንኙነት፣በእርግዝና ወቅት ከእናት ወደ ልጅ፣ ጥንቃቄበጎደለውንቅሳት፣የተበከሉ መርፌዎችን በጋራ መጠቀም ፣ በሌሎች ስለታማ ነገሮች ና፣ በደም ንክኪ ነው፡፡ ይህ በሽታ የማህበረሰብ የጤና ችግር እየሆነ ና የበሽተኞችም ቁጥር በጨመር ላይ ይገኛል፡፡

2.**የጥናቱ አላማ**

የሄፓታይስ ቢ ኢንፌክሽን እና ተዛማጅ ችግሮች በቃሊቲ ማረሚያ ቤት በሚለው ጥናት ውስጥ እንዲሳተፉ እንጋብዞታለን፡፡ የጥናቱ አላማም የሄፓታይስ ቢ ቨይረስ ኢንፌክሽን እና ተዛማጅ ችግሮች በቃሊቲ ማረሚያ ቤት ውስጥ ለመመርመር ነው፡፡

3.**የጥናቱ ሂደት**

ስለጥናቱ ዝርዝር ሁኔታ በጥናቱ ቡድን አባል(ላት) ገለፃ ያደርግሎታል ፡፡ በጥናቱ ውስጥ ለመሳተፍ ፍቃደኝነቶን ይጠየቃሉ፡፡ ፈቃደኛ ከሆኑም በስምምነት ቅፁ ላይ እንዲፈርሙ ይደረጋል ፡፡ ስለስነህዝባዊ እና ማህበራዊ እንዲሁም ለሄፓታይተስ ቢ ምርመራ የሚጠቅሙ ጥያቄዎችን የጤና ባለሙያዎች ይጠይቆታል፡፡ ለጥያቄዎቹም የሚሰጡት ምላሽ በተዘጋጀው መጠይቅ ላይ ይሞላል፡፡ በምርመራውም በሽታው እንዳለቦት ለማወቅ 2ሲሲ የደም ጠብታ የሚሆን ናሙና ይሰጣሉ ፡

4.**የተሳታፊነት በጎ ፈቃደኝነት**

በጥናቱ ውስጥ ያሎት ተሳትፎ በበጎ ፈቃደኝነት ላይ የተመሰረተ ነው፡፡በጥናቱ ውስጥ ያለመሳተፍም ሆነ ተሳታፊነቶትን የማቋረጥ መብቶት የተጠበቀ ነው፡፡ላለመሳተፍም ሆነተሳታፊነቶትን ለማቋረጥ ከወሰኑ ውሳኔዎት በየትኛውም ጊዜ የሚያመጣቦት ተፅኖ አይኖርም፡፡ከእርሶ የተገኘው መረጃ እና ናሙናው እንዲወገድ ይደረጋል ፡፡

ነገር ግን ከእርሶ የተገኘው መረጃ እና የናሙናው ውጤት ከተተነተነ እና ለህትመት ከበቃ በኃላ የማስወገድ አቅማችን ውስን ነው፡፡

5. **የጎንዮሽ ጉዳቶች እና አለመመቸት**

የደም ናሙና በሚወሰድሎት ወቅት ጥቂት የህመም ስሜት እና መድማት ሊያጋጥም ይችላል ። ሆኖም ናሙናውን የሚወስዱሎት ልምድ ያላቸው ባለሙያዎች ስለሚሆኑ እነዚህን አለመመቸቶች በቀላሉ መቀነስ ይቻላል።

6. **የጥናቱ ጥቅሞች**

በዚህ ጥናት ውስጥ ስለተሳተፉ በቀጥታ የሚያገኙት ጥቅም የለም ። ነገር ግን በላብራቶሪ ምርመራው መሰረት በሽታው እንዳለቦት ከታወቀ ተገቢውን ምክር እና ህክምና ወደሚያገኙበት የህክምና ክፍል እናገናኛታለን ። በተጨማሪም የእርሶ ተሳትፎ በማረሚያ ቤቱ ውሰጥ ለምናካሂደው ምርምር ተጨማሪ መረጃን በመስጠት ሊከሰት የሚችለውን የሄፓታይተስ ቢ ኢንፌክሽን ለማቆም ያግዘናል።

7. **ሚስጥራዊነት**

ከዚህ ጥናት የሚገኘው ውጤት ለጥናቱ አላማ ብቻ እንደሚውል እናረጋግጥሎታለን ። በመጠይቁ ፣ በናሙናው እና ከጥናቱ በሚገኘው ማንኛውም ውጤት ላይ ስምዎት አይጠቀስም ።ለጥናቱ ብቻ የሚውል ልዩ መለያ ቁጥር እንጠቀማለን። ይህ መለያ ቁጥር ከስሞትጋር ማገናኘት የሚችለው ዋና ተመራማሪው ብቻ ይሆናል።

8. **በራስ የመወሰን**

በራስ የሚወስን ሰው የራሱ የሆነ ግብ ያለውና በዛ መሰረት የሚመራ ነው ። በራስ መወሰንን ማክበር ማለት ለግለሰቦች ሀሳብ ሙሉ ነፃነት መስጠት እና ያሰበውን እንዲፈፅም ምንም አይነት ክልከላ ያለማድረግ

ይህ ጥናት በማረሚያ ቤት በታራሚዎች ላይ የሚሰራ ቢሆንም በህግ ጥላ ስር ያሉ እና ሙሉ በሙሉ በራስ የመወሰን ስልጣናቸው የተገደበ እንደሆነ ስለሚታወቅ ለጥናቱን ለማስፈፅ ካለው ጉጉት እና ናሙና መልቀም ሂደት ውስጥ ምንም አይነት በተራሚው ላይ የሚደረግ በራስ የመወሰን ክልከላ አይኖርም። በተጨማሪም በኢትዮጲያ የህገመንግስት አንቀፅ 21 ስር የተዘረዘረውን በህግ ጥላ ስር እና ፍርደኞችን የተመለከተ መብቶች ሁሉ ለማክበር አስፈላጊው ጥንቃቄ ይደረጋል።

9. ያላስፈላጊ ጫና

ለዚህ ጥናት ስኬት ተብሎ በተመራማሪው ይሁን በናሙና ለቃሚዎች አንዳችም አይነት ያላስፈላጊ ጫና እንደማይደርስቦት አረጋግጣለሁ።

10. ጥያቄዎችን የመጠየቅ ነጻነት

ጥናቱን በተመለከተ ጥያቄ ካላችሁ፤ በማናንኛውም ጊዜ ና ሁኔታ ዋና ተመራማሪውን ወይም የስነ-ምግባር ኮሚቴ ፅህፈት ቤት በሚመለከተው አድራሻ ማግኘት ይችላሉ።

ዋናተመራማሪ፡አስናቀችግርማ፡ ተንቀሳቃሽ ስልክ ቁጥር 0941960925

email: girmaasni_@gmail.com,

አዲስ አበባ ዩኒቨርሲቲ የስነ-ምግባር ኮሚቴ ፅህፈት ቤት ስልክ ቁጥር …….

12.3. Consent

I ---------- the under signed agree to participate in the research project entitled **"Study of Hepatitis B infection and Associated factors in Kality Prison Addis Ababa Ethiopia"** conducted by Asnakech Girma The following points are explained to me.

- I understand that the socio-epidemiological and clinical data will be recorded on the specified questionnaire.
- I understand that **Hepatitis B infection and Associated factors.** I will give 2ml of blood which will be used for **Hepatitis B infection** laboratory examination
- I understand that if my laboratory examination indicates that I have Hepatitis B infection I will be linked to the prison health facility where I can get appropriate counseling and supportive treatment.
- I understand that I can withdraw from participating in this study at any time point during the study; and my withdrawal will have no effect on me.

I have decided to participate in the study and confirm my consent by my signature here under.

Participant Name ----------Signature ---------- Date ---/-----/---

Witness name _____Signature _____Date __/___/__

PI Name----------Signature ----------Date ----------

12.4. Amharic version of consent

የስምምነት ቅፅ

እኔ _____ በዚህ የስምምነት ቅፅ ላይ በመፈረም " የሄፓታይስ ቢ ቫይረስ ኢንፌክሽን እና አጋላጭ ምክንያቶች በቃሊቲ ማረሚያ ቤት" የሚለው እና በአስናቀች ግርማ በሚካሄደው ጥናት ውስጥ ለመሳተፍ ተስማምቻለሁ፡፡ የሚከተሉትም ነጥቦች ተብራርተውልኛል ፡፡

- የስነህዝብ እና የሄፓታይስ ቢ ምርመራ መረጃዬ ለጥናቱ በተዘጋጀው መጠይቅ ላይ እንደሚሞላ ተረድቻለሁ፡፡
- የሄፓታይስ ቢቫይረስ ኢንፌክሽን አና አጋላጭ ምክንያቶች ተረድቻለሁ ፡ለሄፓታይስ ቢ ኢንፌክሽን ምርመራ የሚጠቅም 2 ሲሲ ደም ለላቦራቶሪ ምርመራ እሰጣለሁ፡፡
- የላብራቶሪ ምርመራ ውጤት የሄፓታይስ ቢ ቫይረስ ኢንፌክሽን እነዳለብኝ የሚጠቁም ከሆነ በማረሚያ ቤቱ ህክምና ተቋም ተገቢውን ምክር እና የድጋፍ ህክምና እንደሚደረግልኝ ተነግሮኛል፡፡
- ከጥናቱ በማንኛውም ጊዜ ተሳታፊነቴን ማቋረጥ እንደምችል እና ተሳታፊነቴን በማቋረጤም ምንም አይነት ተጽኖ እንደሌለው ተነግሮኛል፡፡

በመሆኑም በጥናቱ ውስጥ ለመሳተፍ መስማማቴን በፊርማዬ አረጋግጣለሁ

የተሳታፊስም:_____ፊርማ: _____ቀን: __/__/____

የገለልተኛምስክርስም:_____ፊርማ: _____ቀን: ___/____/__

የተመራማሪውስም _____ፊርማ: _____ቀን: __/____/___

12.5. English version of Questionnerrie

S.N	Question	Chose	ID NO ……
Part 1. Socio Demographic information			
101	Age	…….Years	
102	Sex	Male	
		Femle	
103	Ethnicity	1, Amhara	
		2, Oromo	
		3, Tegre	
		4, Others	
104	Marital status	1, Single	
		2, Married	
		3, Divorse	
		4, Widowed	
105	Religion	1, Orthodox	
		2, Muslim	
		3, protestant	
		4, others	
106	Educational status	1, Illiterate	
		2, Read and write	
		3. Elementary	
		4. Secondary	
		5. Territory	
Part II 2.Prisoner Related information			
201	Previous history of incarceration	1.Yes 2. No	
202	Types of crime	1, Homicide	
		2, Theft	
		3, Drug Illicit	
		4, Rape	

		5, corruption	
		6, others	
203	Duration of stay in prison	1, less than 1 year	
		2, 1 to 5 Years	
		3, 6 to 10 Years	
		4, above 10 years	
Part 3 Hepatitis B virus infection related determinant factors			
301	No of sexual partner	1.1 2. 2 3. More than 2	
302	Dental extraction	1. Yes 2. No	
303	Sharing sharp materials in prison	1.Yes 2. No	
304	Ever use intra Venus Drug	1.Yes 2.No	
305	Did you practice tattooing	1.Yes 2. No	
306	Do you have history of STI	1.Yes 2. No	
307	Did you have smoking practice before imprisonment	1.Yes 2. No	
308	Alcohol consumption history	1.Yes 2. No	

12.6. Amharic version of Questionnerrie

ተ.ቁ	ጥያቄ	ምርጫ	ኮድ ……
ክፍል 1. የስነህዝብ እና ማህበራዊ መረጃዎች			
101	እድሜ	…….Years	
102	ፆታ	1.ወንድ	
		2. ሴት	
103	ቤሄር	1, አማራ	
		2, ኦሮሞ	
		3, ትግሬ	
		4, ሌሎች	
104	የጋብቻሁኔታ	1,ያላገባ/ች	
		2,ያገባ/ች	
		3,አግብቶ የፈታ/ች	
		4,አግብቶ/ታ የሞተበት/ች	
105	ሀይማኖት	1, ኦርተዶክስ	
		2, ሙስሊም	
		3, ፕሮቴስታንት	
		4, ሌሎች	
106	የትምህርትሁኔታ	1, ያልተማረ	
		2,ማንበብ እና መፃፍ የሚችል/የምትችል	
		3. አንደኛደረጃ	
		4.ሁለተኛ ደረጃ	
		5.ኮሌጅ እናከዚያበላይ	
ክፍል II 2. ታራሚውንየተመለከተመረጃ			
201	ከዚህበፊትታስረውያውቃሉ	1.አዎ 2.አላውቅም	
202	የወንጀልአይነት	1, ኑብስ	
		2,ስርቆት	

		3, እፅማዘዋወር	
		4, አስገድዶመድፈር	
		5, ሙስና	
		6, ሌሎች	
203	በማረሚያቤቱውስጥየቆዩበትጊዜ	1, , ከ1 አመትበታች	
		2, ከ1 እስከ 5 አመት	
		3, ከ6 እስከ 5 አመት	
		4, ከ 10 አመትበላይ	
ክፍል3 ሄፓታይተስ ቢ ቫይረስ እና ተያያዥ ነገሮች			
301	ዖታዊ ግንኙነት ከስንት ሰው ጋር አድርገዋል	1.1 2.2 3.ከ 2 በላይ	
302	ጥርስዎን ተነቅለው ያውቃሉ	1. አዎ 2.አላውቅም	
303	በማረሚያ ቤት ውስጥ ስለታማ ነገሮችን በጋራ ተጠቅመው ያውቃሉ	1. አዎ 2.አላውቅም	
304	በደም ስር የሚሰጡ አደንዛዥ እፆችን ተጠቅመው ያውቃሉ	1. አዎ 2.አላውቅም	
305	ንቅሳት ተነቅሰው ያውቃሉ	1. አዎ 2.አላውቅም	
306	የአባላዘር በሽታ ይዞት ያቃል	1. አዎ 2.አያውቅም	
307	ማረሚያ ቤት ከመግባትዎ በፊት ያጨሱ ነበር	1. አዎ 2.አላውቅም	
308	አልኮል ይጠጡ ነበር	1.አዎ 2. አላውቅም	

CURRICULUM VITAE

PERSONAL DETAILS:

Asnakech Girma Wondimu(BSc, clinical nursing and Diploma in Pschiatry nursing)

Personal data: Borne in April 1984 in Arsi Zone (Eteya)

Ethiopian; Female; Married

Language: English: - speak, write, listen

Afan Oromo- speak, write, and listen

Amharic- speaks, write, and listen

Address: Federal Prison

P. o. box 2237

Addis Ababa, Ethiopia

Mobile phone-251-941-960925/915532579

Email- girmaasni@Gmail.com

EDUCATION:

1. 2008-2011 GC---- BSc degree in Clinical Nursing awarded with very great distinction (cGPA 3.87/4.00). Kea-Med University College.
2. 2006-2007GC------ Diploma in Pschiatry Nursing. Amanuel Specialized Hospital.
3. 2002-2004GC------Diploma in Clinical Nursing awarded with distinction (cGPA 3.47/4.00). Addis Ababa University
4. 1998-2002GC--- ESLCE Certificate awarded.

SHORT TERM TRAININGS:

1. Certificate of Successful completion of **A short course on scientific writing and communication January** 11-15, 2016, Addis Ababa, School of public Health College of health science Addis Ababa University.

2. Certificate of Successful completion of **Training on Mental Health Gap Action Program Training for supervisors February** 10-13, 2015, Addis Ababa, Federal prison Administration in collaboration with St. Amanuel Specialized Mental Hospital
3. Certificate of Successful completion of **Training on Health in detention** September 8-12, 2014, Basel , Switzerland, Swiss Tropical and public Health Institute in Collaboration with International committee of Red Cross
4. Certificate of Successful completion of **Training of Trainers on National Comprehensive HIV care and treatment** August 11-21, 2014, Addis Ababa, Federal prison Administration in collaboration with University of California San Diego-Ethiopia(UCSD-E)
5. Certificate of Successful completion of **Regional training of Masters Trainers on HIV in prisons** March 26-30, 2012, Pretoria, South Africa, United nations office on drugs and crime
6. Certificate of Successful completion of **National comprehensive HIV care/anti-retroviral therapy/ART/** July 9-12, 2012 and August 27- September 8, 2012, Adama, Federal prison Administration in collaboration with University of California San Diego-Ethiopia(UCSD-E)
7. Certificate of Successful completion of **Nutrition** July 21-24, 2012, Adama, Federal prison Administration in collaboration with University of California San Diego-Ethiopia(UCSD-E)
8. Certificate of Successful completion of **Syndromic case management of STI's** April 10-12, 2009, Addis Ababa, Federal prison Administration in collaboration with University of California San Diego-Ethiopia (UCSD-E).
9. Certificate of Successful completion of **VCT training for nurses** March 19-29, 2007, Addis Ababa, University of California San Diego-Ethiopia(UCSD-E) in collaboration with HIV/ADIS prevention and control office(HAPCO)
10. Certificate of Successful completion of **HIV/ADIS program Coordinators training** May 13-June 2011, Adama, Federal prison Administration in collaboration with University of California San Diego-Ethiopia(UCSD-E)

11. Certificate of Successful completion of **TB/HIV Co-management** August 28-30 2009, Addis Ababa, Federal prison Administration in collaboration with University of California San Diego-Ethiopia(UCSD-E)
12. Certificate of Successful completion of **Comprehensive PMTCT and HIV rapid test training** June 8-17, 2009, Addis Ababa, Federal prison Administration in collaboration with University of California San Diego-Ethiopia(UCSD-E)
13. Certificate of Successful completion of **PITC** May1-3, 2009, Addis Ababa, Federal prison Administration in collaboration with University of California San Diego-Ethiopia(UCSD-E)

SENIOR SEMINAR AND PROJECTS

Assessment of knowledge attitude and practices of nurses towards VCT in Gandhi memorial hospital

WORK EXPERIENCE

- Team leader of Disease prevention and health Service at kality prison (2010-to date)
- Head of Clinic Nurse in Zeway Federal prison Clinic (2005-2007)
- Clinical and psychiatry Nurse in Addis Ababa federal prison Commission Clinical(2008-2015)
- Clinical nursing practice in Tikur Ambessa, Ras-Desta,Zewditu memorial hospital,St Amanuel specializd Hospital
- Clinical rural field practice at Sendafa health Center
- Pschiatry practice at St.Paulos Psychiatry Unit, Amanuel specialized hospital, Gefersa mentally ill people rehabilitation center, Kuyera Hospital psychiatry unit

AWARD OBTAINED:

1. Certificate of 2nd grade praise winner due to the hard work, sincere and diligent service at Zeway prison(2006)
2. Certificate for Very Great Distinction graduate of 2011, Kea-Med University (undergraduate).

3. Certificate of recognition for being a female outstanding graduate of 2004, Addis Ababa University

COMPUTER SKILL

Ms-dos, Ms-window, Ms-word, Ms- excel, Ms-access, internet exploration, Epi- Enfo,Epi –Dat ,spss,

REFERENCES

1. **Dr. Lemma Tefera** (MD, MPH)
   Mobile-251-911406138
   Email-lemmaaug@yahoo.com
2. **Dr. Alemu Asgedom** (MD, Psychiastrist)
   Mobil-251-911400461
   Email-alemuasgedom22@yahoo.com

I declare that the above information are complete and correct to the best of my knowledge. I am conscious that the provision of incomplete or misleading information may lead to relocation of any decision made in respect to this application.

Asnakech Girma