Addis Ababa University

College of Health Sciences

School of Allied Health Sciences

Department of Medical Laboratory Sciences

Magnitude of Hepatitis B Virus among Barbers and their Knowledge, Attitude and Practices in selected Sub Cities of Addis Ababa, Ethiopia.

By: Wolde Shure (Bsc)

Advisors: 1. Kassu Desta (BSc, MSc, PhD Fellow, Assistant Professor)

2. Regassa Diriba (BSc, MSc)

3. Atsbeha G/Egzabixier (BSc, MSc)

A thesis submitted to Department of Medical Laboratory Sciences, College of Health Sciences Addis Ababa University, in partial fulfillment of the requirements for Master of Science in Clinical Laboratory Sciences (Diagnostic and Public Health Microbiology).

March, 2018

Addis Ababa, Ethiopia.

Addis Ababa University College of Health Sciences

School of Allied Health Sciences

Department of Medical Laboratory Sciences

Magnitude of Hepatitis B Virus among Barbers and their Knowledge, Attitude and Practices in selected Sub Cities of Addis Ababa, Ethiopia.

By: Wolde Shure (BSc)

Department of Medical Laboratory Sciences, College of Health sciences, Addis Ababa University.

Approved by the Examining Board

_____ _____

Chairman, Dep. Graduate Committee Signature

_____ _____

Advisor Signature

_____ _____

Advisor Signature

_____ _____

Advisor Signature

_____ _____

External Examiner Signature

_____ _____

Internal Examiner Signature

Acknowledgement

First of all I would like to thank my savior Almighty God for his mercy. Secondly I would like to express my gratitude to my advisors Mr. Kassu Desta (PhD fellow) Mr. Regassa Diriba (BSc, MSc) and Mr. Atsbeha G/Egzabixier (BSc, MSc) for their unreserved support and encouragement during the whole process of the study period. Next I want to thank the Department of Medical laboratory and members of the department for giving this opportunity.

Also I would like to express my appreciation to Ethiopian Public Health Institute (EPHI) Virology department for helping materials, reagents and instruments required for the thesis.

Again I would like to appreciate Abebe Bikila Health Center for providing materials and equipments required for the study.

Lastly, my appreciation goes to study participants for their voluntary participation without whom this study would not have been completed.

Table of Contents

List of Tables

Title of the table Page Number

List of Figures

Title of the figure Page Number

List of abbreviations

AAU: Addis Ababa University

Ab: Antibody

Ag: Antigen

AIDS: Acquired Immunodeficiency Syndrome

cccDNA: Covalently Closed Circular Deoxyribonucleic Acid

CDC: Center for Disease Control

DNA: Deoxyribonucleic Acid

DRERC: Department of Research and Ethical Review Committee

ELISA: Enzyme Linked Immunosorbent Assay

EPHI: Ethiopian Public Health Institute

FMHACA: Food Medicine and Health Administration and Control Authority

HBeAg: Hepatitis B e Antigen

HBsAg: Hepatitis B Surface Antigen

HBV: Hepatitis B Virus

HCV: Hepatitis C Virus

HIV: Human Immunodeficiency Virus

KAP: Knowledge, Attitude and Practice

RPM: Revolution per Minute

SD: Standard Deviation

SOP: Standard Operating Procedures

SPSS: Statistical Package for Social Sciences

US: United States

WHO: World Health Organization

Operational Definitions

Attitude: complex interaction of beliefs, feelings, and values to respond in a manner towards HBV.

Knowledge: information stored in memory assessed in terms of what the participants know about HBV.

Practice: What the respondents actually practicing for prevention and control of HBV

Magnitude: Percentage of a population that is affected with a HBV

Seropositive: The presence of antibody to HBsAg in the participants' serum

Seronegative: The absence of antibody to HBsAg in the serum

Barber: a person whose job is to cut men's hair and to shave them

Barbershop: is a place where a barber works

Good knowledge: barbers who score $\geq$ 8 points on knowledge part of the questionnaires

Poor knowledge: barbers who score < 8 points on knowledge part of the questionnaires

Positive attitude: barbers who can score $\geq$ 4 points on attitude part of the questionnaires

Negative attitude: barbers who can score < 4 points on attitude part of the questionnaires

Good practice: barbers who can score $\geq$7 points on practice part of the questionnaires

Poor practice: barbers who can score < 7 points on practice part of the questionnaires

Abstract

Background: Viral hepatitis is a major health problem worldwide. Hepatitis B virus is hepatotropic virus spread mainly through contaminated blood and blood products. Hepatitis B is very contagious compared to other blood born viruses. For barbers, the use of blades and razors is part of their occupation which can expose them to blood of customers while shaving and hair cutting.

Objective: The objective of this study was to assess the magnitude of HBsAg among barbers and their knowledge, attitude and practice (KAP) towards infection control methods in selected sub cities of Addis Ababa, Ethiopia.

Methods: A work place based cross sectional study was conducted among 400 barbers in selected sub cities of Addis Ababa, Ethiopia. By using multi-stage sampling technique, first, to select sub-cities we used simple random sampling technique and selected 5 sub-cities out of 10 sub-cities in Addis Ababa. Three weredas were selected randomly from each five sub-cities. Study subjects were selected by using convenience sampling method. Data on sociodemographic factors and KAP related data were collected using pretested questionnaires. HBsAg was done using ELISA technique. Data was analyzed by using SPSS version 20.

Results: Out of 400 barbers tested, 15 were positive for HBsAg giving an overall magnitude of 3.75% (15/400). Among unmarried or single participants 11(3.92%) were positive ($\chi 2=0.45$, P=0.93). The overall serological results were not statistically associated with socio demographic characteristics. Among 400 participants, 129 (32.25%) were within the adequate knowledge range whereas 271(67.75%) showed poor knowledge about HBV. Concerning the attitude of barbers majority 323(80.8%) of the participants do not think that they can get HBV.

Conclusion: The seroburden of HBsAg was 3.75%. In this study, most barbers had poor knowledge about the etiology, symptom, transmission and prevention of hepatitis B. Moreover, all of the study participants did not vaccinated due to lack of knowledge about the presence of HBV vaccine. Therefore, health education should be given to barbers on prevention of the transmission of HBV and they should be clearly oriented on the presence and use of HBV vaccine. This study is important and it can gives clue for FMHACA and Addis Ababa Health Bureau to develop safety guideline for barber shops.

Key Words: HBsAg, Magnitude, Knowledge, Attitude, Practice, Barbers.

1. Introduction

1.1. Back ground

Viral hepatitis has emerged as a major health problem worldwide. There are five main types of hepatitis viruses, namely HAV, HBV, HCV, HDV and HEV. Hepatitis B virus (HBV) is of the greatest concern due to its burden of illness and death. HBV can cause both acute and chronic diseases (1, 2).

Hepatitis B virus is a DNA virus, belongs to the family Hepadnaviridae. The virus was first discovered as 'Australian antigen' and later named hepatitis B surface antigen (HBsAg) in the blood of patients. Hepatitis B e antigen (HBeAg) was discovered later as a marker for patients at a high risk for transmission of the disease (3).

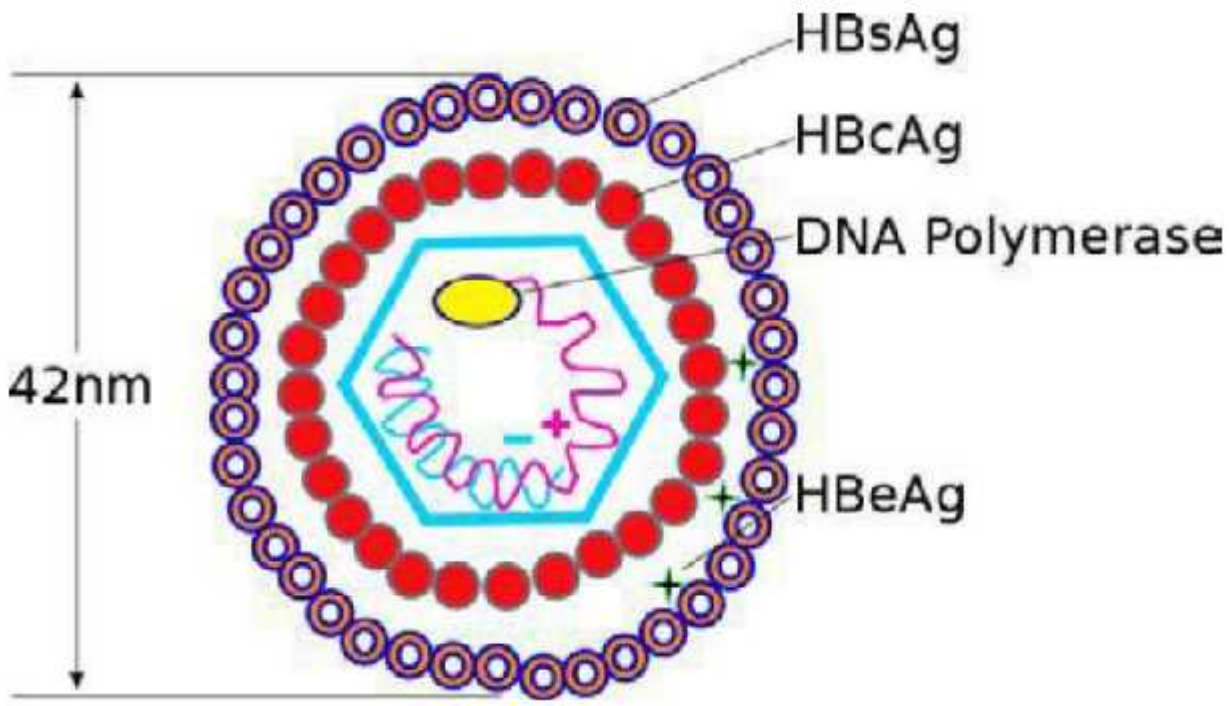

Figure1. The structure of Hepatitis B Virus (Adopted from Chang MH, 2007)

The viral particle is 42 nm in size and consists of an outer lipoprotein coat and hepatitis B surface antigen (HBsAg), which circulates in the blood in two forms: as a viral particle-bound protein form or as a free, noninfectious protein presenting as 22-nm spherical and tubular particles (5). Hepatitis B is a potentially life-threatening liver infection caused by the hepatitis B

virus. It is a major global health problem. It can cause acute and chronic infection and puts people at high risk of death from cirrhosis and liver cancer (2).

Hepatitis B virus is 50–100 times more infectious than human immunodeficiency virus (HIV) and 10 times more infectious than hepatitis C virus (HCV) and an infectious dose is so low that a contaminated razor or blade can easily transmit the infection (6, 7).

The hepatitis B virus can survive in the environment for at least 7 days. During this time, the virus can still cause infection if it enters the body of a person who is not protected by the vaccine. It can also spread by percutaneous or mucosal exposure to infected blood and various body fluids, as well as through saliva, menstrual, vaginal, and seminal fluids. Sexual transmission of hepatitis B may occur, particularly in unvaccinated men who have sex with men and heterosexual persons with multiple sex partners or contact with sex workers. Infection in adulthood leads to chronic hepatitis in less than 5 % of cases. Transmission of the virus may also occur through the reuse of needles and syringes either in health-care settings or among persons who inject drugs. In addition, infection can occur during medical, surgical and dental procedures, through tattooing, or through the use of razors and similar objects that are contaminated with infected blood or during barber shop shaving (2).

Razor sharing and shaves from the barbers have been identified as an important risk factors for blood-borne viruses spread as several investigations carried out all over the world demonstrate this facts. In many parts of Africa and Asia, the widespread cultural practice of shaving at a shop or roadside barber is an underestimated route of blood-borne viral disease transmission (8). For barbers, the use of blades and razors is part of their occupation which can expose them to blood of customers while shaving and hair cutting. This exposure can put them at risk of many blood-borne diseases including viral hepatitis (9).

Knowledge, attitude, and practice (KAP) studies are representative of a specific population to collect information on what is known, believed and performed in relation to a particular topic. Knowledge, attitude, and practice are the most frequently used study tools in health-seeking behavior research. Knowledge is usually assessed to evaluate how participants' knowledge corresponds to biomedical concepts. Questions included in knowledge assessment are related to causes, symptoms, transmission and treatment and the management of the disease or infection

condition under investigation (10). Attitude is “a learned predisposition to think, feel and act in a particular way towards a given object or class of objects” Practices in KAP surveys usually inquire about the use of preventive measures or different healthcare options. In certain cases, it permits statements about actual practices as well as yielding information on people’s behaviors or on what they know should be done in a hypothetical scenario. Therefore, measuring KAP is consequently critical to prevent the spread of infection (11).

1.2. Statement of the problem

Hepatitis B virus is a potentially life-threatening cause of liver disease in the world. It causes chronic infection and puts people at high risk of death from cirrhosis and liver cancer. WHO and the U.S Centers for Disease Control (CDC) estimate that over 500 million people are currently living with chronic viral hepatitis and globally around 2 billion people have been infected with hepatitis B virus with around 1 million people die every year due to complications of hepatitis B, including cirrhosis and liver cancer (2,13).

Although HIV has been feared more than Hepatitis B, research evidence shows that Hepatitis B poses more risk than HIV. This is due to the fact that Hepatitis B is 1000 times contagious compared to HIV as in Hepatitis B there are over 100 million viral particles per ml of blood where as in HIV there are only 100 viruses /ml of blood. This is because the life cycle of HBV is complex. HBV uses reverse transcription in its replication process. The partially double stranded viral DNA is then fully double stranded by a viral polymerase and transformed in to covalently closed circular DNA (cccDNA). This cccDNA serves as a template for transcription of four viral mRNAs by host RNA polymerase. This four viral transcripts undergo additional processing and go on to form progeny virions that are released from the cell or returned to the neuclus and recycled to produce even more copies. The risk of transmission of blood borne pathogens appears to be highest from direct percutaneous exposures to infectious material with greater infectivity from pathogens such as HBV, rather than HIV (14).

There is a wide range of HBV prevalence rates in different parts of the world. HBV prevalence varies from 0.1 % up to 20 %. Low prevalence (< 2 %) areas represent 12 % of the global population and include Western Europe, the United States and Canada, Australia and New Zealand. In these regions, the lifetime risk of infection is less than 20 %. Intermediate prevalence is defined as 2 % to 7 %, with a lifetime risk of infection of 20-60 % and includes the Mediterranean countries, Japan, Central Asia, the Middle East, and Latin and South America, representing about 43 % of the global population. High prevalence areas (≥ 8 %) include Southeast Asia, China, and sub-Saharan Africa, where a lifetime likelihood of infection is greater than 60 %. The diverse prevalence rates are probably related to differences in age at infection, which correlates with the risk of chronicity. The progression rate from acute to chronic HBV

infection decreases with age. It is approximately 90 % for an infection acquired prenatal and is 5 % or lower for adults (15).

Chronic hepatitis B virus (HBV) infection continues to be a major public health issue worldwide. The risk of developing chronic HBV infection decreases with age at infection, from about 90% when infected prenatally up to 6 months of age to 20–60% between the ages of 6 months and 5 years. About 25% of people who acquire HBV as children will develop primary liver cancer or cirrhosis as adults. Recent Global Burden of Disease estimates indicate a high morbidity and mortality attributable to chronic HBV, despite decreases over the past decades (16).

In the WHO European Region, approximately 13 million people are chronically infected with HBV, which leads to about 60 000 deaths a year from hepatitis B-related liver cancer and cirrhosis (17). In the United States, an estimated 35,000 new diagnoses of acute HBV infection were established in 2010 (18).

Africa as a whole considered to have a high HBV endemicity. HBV infection is hyper endemic > 8 % of hepatitis B surface antigen (HBsAg) chronic carriers in the general population (19). In Ethiopia, the overall prevalence of HBV varies from 4.7-16.8 % for Hepatitis B surface antigen (HBsAg) (20)**.** In Addis Ababa the prevalence of HBsAg is about 7 % which is higher in males than females (21).

Ethiopia is one of the fast growing economies in Africa with 50 % of its population being under the age of 18, indicating the hidden potential of the country in terms of a future productive work force. However, the risk posed by viral hepatitis could greatly affect the future of this nation. In Kenya and Ethiopia it is estimated that more than 60 % of chronic liver disease and up to 80% of hepatocellular cancers are due to chronic hepatitis B viral infections. A press report published on March 28, 2013 claimed that over 10 million Ethiopians are infected with HBV. Yet the majority of the infected populations are unaware of their disease status (13, 22).

The barber shop is a place where there is frequent use of the same blade, trimmers and scissors, often without proper decontamination of equipments. The use of these sharp instruments may result in the spread of blood born virus like hepatitis B since the skin of client’s face and skull can be scratched and broken during shaving, and even while his hair is being shaped. In Ethiopia,

the shared use of blades and trimmers in barber shops is a common practice and accidental scratching due to sharp equipment provides an opportunity for micro-organisms, mainly viral hepatitis and other blood-borne pathogens to enter the body easily and cause serious health problems for the clients (23, 24).

In Ethiopia different studies tried to show prevalence rates of Hepatitis B virus infections in various groups like pregnant women, health care workers, blood donors, medical waste handlers and others (39,40,41). However there is no data in Ethiopia on seroburden of Hepatitis B virus infection among barbers. Therefore this study is designed to determine the seroburden of HBV infection among barbers and their knowledge, attitude and practice in Addis Ababa.

1.3. Significance of the study

Hepatitis B virus infection continues to be a major public health issue worldwide. Considering the HBV infection complications and its impact on quality of life, prevention of the disease is of great importance. In addition to vaccination, additional protective measures should be applied and paths of transmission of the virus must be eliminated. Occupational risks are the most significant factor that increases risk of adult transmission of the virus. One of the occupational groups with high risk of spreading the disease is barbers. Especially, transmission can occur if razors, manicure and pedicure tools contaminated with blood and body fluids are used on other people without sterilizing them and knowing these could help to design appropriate intervention for the target groups.

After conducting this survey, the burden of HBV will be known for particular group of barbers in the study site which will enable us to take intervention measures like developing the safety guideline for barbershops.

Barbers will know their status and this will definitely create an opportunity to take precautions during their work.

The KAP part may also create awareness for barbers and change their knowledge, practice and attitude of barbers towards HBV so that they can prevent the transmission of the virus by following proper decontamination of shaving equipments and towels.

The study will also create awareness about the virus for barbers and if they get awareness about HBV they can decide to get vaccinated for the virus. Depending on the knowledge, attitude and practice of barbers it is possible to develop safety guidelines for barbershops.

2. Literature review

2.1. Prevalence of HBV among barbers

The study done in the district of Sukkur, in Pakistan showed that the prevalence of HBV among barbers was 2.1%. The barbers' knowledge on HBV and its transmission routes was poor. The response to attitude items was good, except that only 35.1% of the participants agreed to have vaccination against HBV. The overall performance on the knowledge and practice scales was poor compared to the attitude scale on which 80% of the barbers performed well (6).

Another cross-sectional seroepidemiological study conducted in the Rabat region of Morocco in 2007 shows among 267 barbers and 529 clients, all men with no history of hepatitis B (HBV) vaccination the overall prevalence of HBV seropositivity was 28.1% in barbers and 25.1% in clients; 1.9% and 1.7% respectively had active HBV (HBsAg positive). The study showed that HBV seropositivity was lower in clean barbershops and those using alum as an antiseptic and Less than 1% of barbers were aware of HBV as causative agents of liver disease or jaundice (27).

A study in Egypt determined the prevalence of hepatitis B and C virus infections among barbers (n = 308) and their clients (n = 308) in Gharbia governorate, and assessed knowledge, attitude and practices during hair-cutting and shaving. HBsAg was detected among 4.2% of barbers and 3.9% of clients (more urban than rural). Anti-HCV antibodies were detected in 12.3% of barbers and 12.7% of clients. HCV-RNA prevalence was 9.1% among both barbers and clients (more rural than urban). Knowledge was high among the majority of participants and good practices during shaving and hair-cutting were observed for the majority of barbers. Barbers appeared to have no job-related risk of acquiring viral hepatitis (28).

In 2015 a work place based cross-sectional study conducted at the Obuasi municipality of Ghana on 200 barbers showed that the prevalence of HBV and HCV among the barbers were 14.5 % and 0.5 % respectively. HBV was highest among barbers within 20–29 years (58.6 %). Majority (90.5 %) of the participants had heard of HBV infection before. The mode of transmission of HBV was unknown by 64.5 % of the participants and 64.0 % did not perceive themselves to be at risk for HBV. Most of the participants had never heard of HCV infection (61.3 %), and unaware of any mode of transmission of HCV (97.0 %). The radio was the major source of information on HBV (57.5 %) and HCV (25.0 %) infections (30).

Study done in Sivas region of Turkey on prevalence of hepatitis B and C virus infection in barbers shows the prevalence of Hepatitis B Virus and Hepatitis C Virus was found to be higher in barbers (39.8 and 2.8%, respectively) than in a comparison group (28.3 and 1.1%, respectively). No significant relationship was found with the duration of occupation. Among the seropositive subjects, it was found that most had been exposed to needle pricks or scissor cuts (31).

2.2. Associated risk factors

While shaving barbers may be accidentally exposed to the blood and bodily fluids of their customers, increasing their risk of contraction of HBV and other communicable diseases (30). Parenteral or percutaneous routes of HBV transmission, such as needle stick injury and mucus membrane splash in healthcare setting tattooing, piercing, sharing razors or toothbrushes, having multiple sex partners are also important in increasing the risk of acquiring the virus (37).

It has been indicated in a number of studies that both customers and employees are under the risk of transmission of certain diseases if the necessary care is not practiced for individual hygiene, decontamination of working equipment, disinfection and sterilization, disposal of waste and the cleanliness of the work area. In developing countries, it is highly important for barbers not to use the same instruments successively for all customers without sterilization, especially in terms of diseases spread through the blood (44).

Study done in Isfahan Province of Iran revealed the mean age of the individuals was 39.6 ± 11.4 years. Two hundred and thirty-three cases (48.6%) were men and 246 (51.4%) were women. All the subjects were negative for HCV Ab. The seropositivity of HBV was 6.6%. No significant correlation was found between risk factors and being HBV seropositive. Among participants, it was found that most barbers had been exposed to razors or scissor cuts (32).

2.3. Knowledge, attitude and practice towards infection prevention of HBV

Data on assessment of knowledge, attitude and practice of HBV infection are important to plan for appropriate preventive strategies including vaccination. Knowledge, attitude, and practice (KAP) studies are representative of a specific population to collect information on what is known, believed and performed in relation to sign, symptom, transmission and prevention methods of HBV (10).

A cross-sectional survey of barbers in Hyderabad city, Pakistan in 2007 to establish their knowledge and attitudes to the risk of HBV and HCV transmission and their working patterns revealed that 96.2% washed razors with antiseptic after each client and 95.7% used a new blade with new clients. However, knowledge about the diseases and modes of transmission were poor and only 36.6% knew that hepatitis can be transmitted via shaving instruments. Only 3.2% of 186 barbers were vaccinated against HBV (9).

Study done in 2015 on Knowledge, attitudes and practices of Hepatitis B and C among barbers of urban and rural areas of Rawalpindi and Islamabad in Pakistan revealed that knowledge about hepatitis B & C was good in urban areas (92%) as compared to those working in the rural areas (68%). Using new blade for every customer was seen in urban (100%) and rural (93%) area. However barbers knowledge about symptoms of the disease (urban 81% & rural 93%) and vaccination trend of Hepatitis B was low (25).

Study done to assess the KAP towards HBV in two rural areas of the Anglophone regions in Cameroon from the May 2014 to January 2015 shows the response rate of 612 (87.4%). This study revealed that mean (SD) KAP was 14.4(3.7%), 4.7(1.1%) and 3.8(1.2%) respectively. Thus majority of the respondents had low knowledge 354(57.9%), high positive attitude 334(54.6%) and low poor practice 149(24.3%) regarding HBV. Excellent knowledge was expressed only by 38(6.2%) respondents. A univariate analysis of Knowledge, showed a significant difference ($p<0.05$) in place, sex, age group, occupation, level of education and monthly income while for attitude a significant difference ($p<0.05$) was seen only in place and for practices a significant difference ($p<0.05$) was seen in the place, marital status, occupation, level of education and monthly income. A linear correlation revealed a non significant positive correlation between knowledge and attitude ($r=-0.003$, $p = 0.12$), a significantly positive correlation between knowledge and practice ($r =0.28$, $p = 0.00$) and a significantly positive correlation in attitude and Practice ($r =0.27$, $p = 0.00$ (26).

A descriptive cross-sectional study conducted using a structured questionnaire and a check list on 120 certified barbers working in the Kumasi metropolis of Ghana indicates that 40.8% of the barbers were aware that HBV and HCV are transmitted by their profession. The level of awareness among the Certified Barbers working as their profession serving as a vehicle for Hepatitis B and C transmission with respect to age ($p=0.002$), educational status ($p=0.017$) and work experience ($p=0.013$) were statistically significant. Pearson's correlation coefficient of $r = 0.968$, $p<0.05$ and a regression coefficient of .937 (93.7%) for educational status and knowledge levels of the barbers on HBV and HCV transmission by their profession were found. Sterilizing razor before use was practiced by a higher percentage of literate (98.9%) than illiterate barbers, while illiterate barbers were more likely to change the blade for each client ($p= 0.001$) than the literate barbers (96.6%) (29).

A Cross Sectional Study done in Khartoum State on Knowledge and Practice of HBV, HCV and HIV among barbers and Women Hairdressers revealed that about half of the participants did not possess the basic knowledge about HBV and only (19%) had it in case of HCV, whereas most of them (83%) possess the basic knowledge about HIV. Only (10%) regularly sterilize/disinfect the instruments between customers and (4.2%) reuse razors on other customer. Significantly, men are better in knowledge but women are better in practice, also Ethiopians were the worst in knowledge and practice (33).

In Ethiopia, there are studies done in different group of peoples like a cross sectional study on 493 pregnant women in 2005 in Jimma and a cross sectional study in 2013 in Bahir Dar City on 318 pregnant women, the prevalence were 3.7% and 3.8% respectively (38, 39). On the other hand another cross sectional study done in Addis Ababa in 2012 among 292 clients attending the voluntary counseling and testing center and antiretroviral therapy clinic of St Paul's General Specialized Hospital and a cross sectional study on 252 medical waste handlers and non medical waste handlers in Addis Ababa in 2011 indicated the prevalence of 5.7% and 6.3% respectively (40, 41). Moreover there is no single related study done in the country on barbers. Therefore, since the virus is very contagious and one of occupational diseases and also very prevalent among different group of people, this study is very important to give clue on the transmission of the virus among barbers.

2.4. Conceptual frame work

The conceptual framework of this study is based on the relationships between the independent variables (Socio demographic characteristics of barbers like: age, sex, educational status, experience, number of customers per day) and the outcome or dependent variable (KAP barbers about HBV and work related factors). Figure 2 illustrates this relationship between independent variables and the dependent variables.

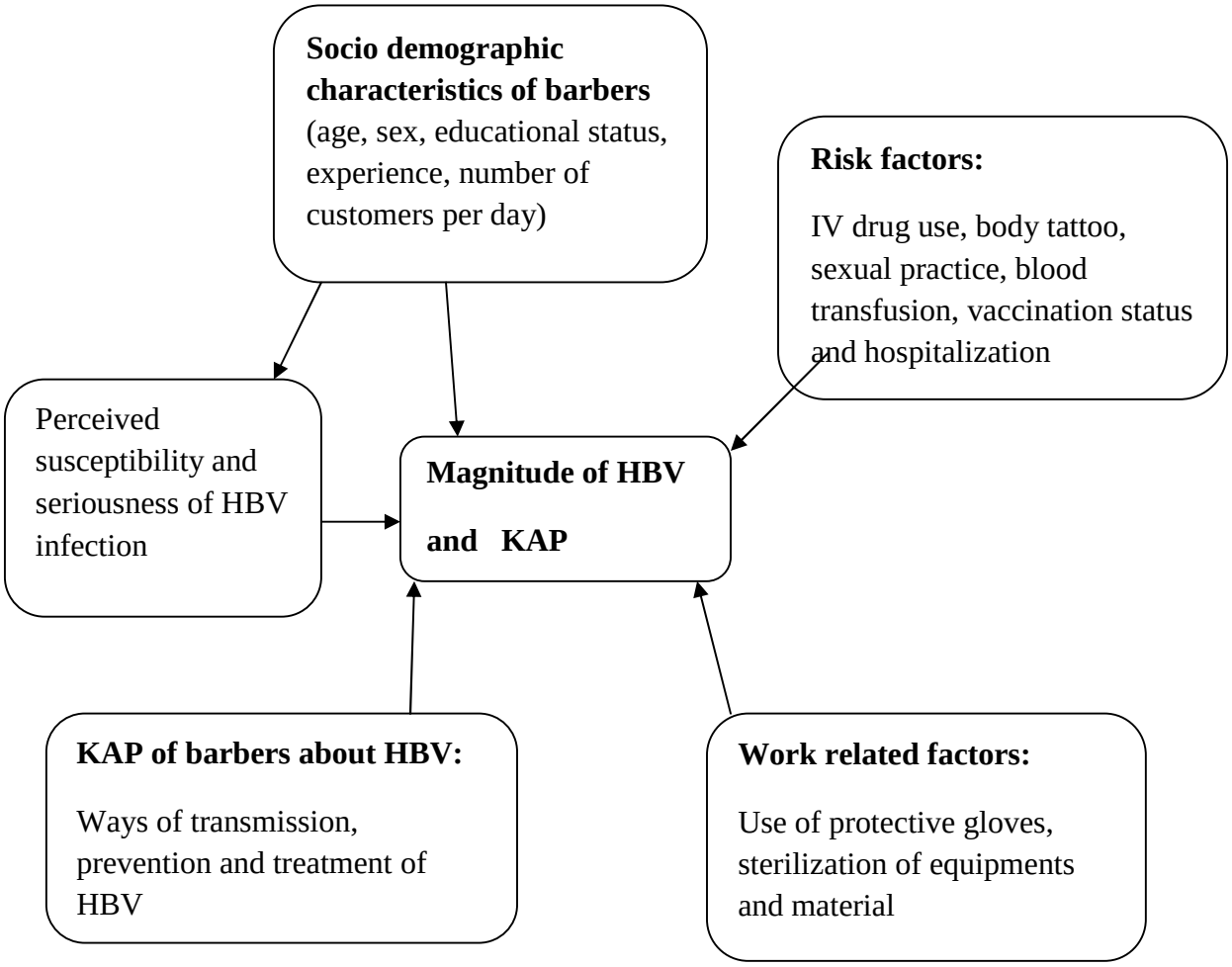

Figure 2: Conceptual framework adopted from social cognitive theory (Bandura A, 1998)

3. Objective of the study

3.1 General objective

- To assess the magnitude of Hepatitis B virus among barbers and their knowledge, attitude and practices in selected Sub cities of Addis Ababa, Ethiopia.

3.2. Specific Objectives

- To determine the magnitude of Hepatitis B virus among barbers in selected Sub cities of Addis Ababa Ethiopia
- To assess the knowledge of barbers regarding Hepatitis B virus in selected Sub cities of Addis Ababa Ethiopia.
- To determine the attitude of barbers regarding HBV in selected Sub cities of Addis Ababa Ethiopia.
- To assess the practice of barbers regarding HBV in selected Sub cities of Addis Ababa Ethiopia.

4. Hypothesis

The magnitude of Hepatitis B Virus and Knowledge, Attitude and Practices towards the virus among barbers is similar with study done in other African Countries.

4. Materials and Method

4.1. Study Area

The study was conducted in selected Sub cities in Addis Ababa. Addis Ababa is the capital city of Ethiopia. It is geographically located at the center of the country. The altitude of the city ranges between 2000 and 3000 meters above sea level with total area of 540 Square Km. Based on the 2007 population census Addis Ababa has the population of 3,384,569 with annual growth rate of 3.8%. The city is divided into 10 sub cities and 116 weredas. In Addis barbershops are estimated to be above 3000 (Unpublished data from FMHACA). The minimum and maximum numbers of barbers in the barber shops were one and four respectively with an average of two barbers in each barber shop.

4.2. Study Period

The study was conducted from February 23 to May 2017.

4.3. Study design

- A work place based cross-sectional study design was used to determine the magnitude of Hepatitis B virus among barbers and their KAP in selected Sub cities of Addis Ababa Ethiopia.

4.4. Population

4.4.1. Source population

The source population is all barbers in Addis Ababa.

4.4.2. Study Population

All barbers who are giving service in selected Sub cities of Addis Ababa during the study period and involved in this study by fulfilling the inclusion criteria.

4.5. Inclusion and Exclusion criteria

4.5.1. Inclusion criteria

- All barbers who have been working continuously for six months and above in selected sub cities of Addis Ababa during the study period.

4.5.2. Exclusion Criteria

- Barbers who were less than 18 years of age.
- Barbers who were not volunteered.

4.6. Study variables

4.6.1. Dependent variables

The magnitude of HBV and knowledge, attitude and practice towards infection prevention of HBV.

4.6.2. Independent variables

Socio demographic variables: Age, sex, marital status, work experience, educational status, vaccination status, sexual practice and work load per day.

4.7. Measurement and Data collection method

4.7.1. Sample Size and Sampling Technique

A single population proportion with a proportion of 50% since there is no previous study conducted in Addis Ababa and to get a sample size, a margin of error of 5% and non-response rate of 10% and with a 95% confidence interval. The sample size was calculated as follows:

$n = \frac{z^2 p(1-p)}{d^2}$) where; n: estimated sample size

Z: desired 95% CI=1.96,

P: 50%=0.5

d: margin of error (0.05)

$= \frac{(1.96)2\ [0.5(1-0.5)]}{(0.05)2}$ = 384.16~384 barbers. Adding a 10% for non-response rate, the total number was estimated to be 422.

Therefore since Addis Ababa city has large surface area and it was impossible to cover all sub cities with in short time of the study period and limited budget, we selected some of the sub-cities in Addis Ababa. So, multi-stage sampling technique was used. First, to select sub-cities we used simple random sampling technique and selected 5 sub-cities out of 10 sub-cities in Addis Ababa. Second to select weredas from each five sub-cities again simple random sampling technique was used. Third, barbers were selected by convenient sampling techniques until we got 400, a minimum of two barbers were selected conveniently from each barbershop. (Figure 3 below).

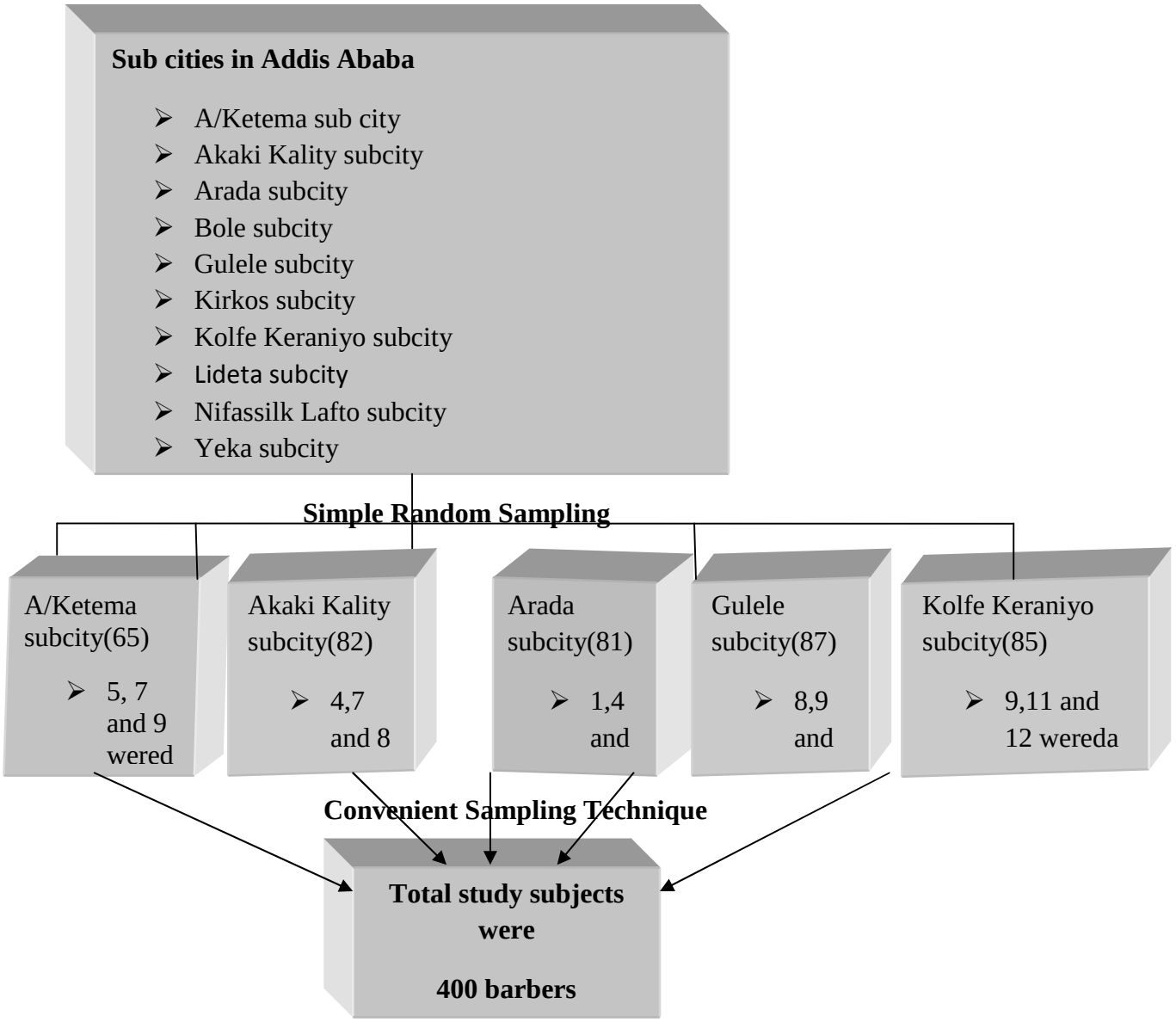

Figure 3. Schematic presentation of study setting and participants.

4.7.2. Data collection procedures

Socio demographic and KAP data were collected using a standard structured questionnaire. Objective of the study was explained and consent was obtained from the participants using a standard consent form designed for this study and interviewed using a questionnaire. The knowledge, attitude and practices of barbers were collected using 16 questions related to knowledge part, 8 questions for attitude and 14 questions were related to practices of barbers on prevention of HBV.

4.7.2.1. Specimen collection and Transportation

About 5 ml of venous blood was drawn under aseptic conditions in disposable EDTA vacutainer tubes. Those tubes were labeled and transported to Health Center for sample separation and storage. The blood samples taken from the participants were centrifuged at 3000 revolution per minute (RPM) for at least 10 minutes. The separated sera were stored at -20 degree Celsius at Abebe Bikila Health Center until transported to EPHI Virology Laboratory by cold box for sample processing.

4.7.3. Laboratory testing

All the serum samples were tested for HBsAg by using ELISA method following standard operating procedures; samples reactive for HBV were confirmed by similar method. Samples repeatedly positive were considered as positive.

4.7.3.1. Principle of the test for HBsAg ELISA method

In the Murex HBsAg version 3 (Abbott Diagnostics, UK) the sample is pre-incubated in microwells coated with a mixture of mouse monoclonal specific for different epitopes on the determinant of HBsAg. Affinity purified goat antibody to HBsAg conjugated to horseradish proxidase is then added to the sample in the well. During the two incubations steps any HBsAg present in the sample is bound to the well in an antibody –antigen-antibody-enzyme complex. In the absence of HBsAg no conjugate will be bound. After washing to remove sample and unbound conjugate, a solution containing 3, 3’, 5, 5’-tetramethylbendzidine (TMB) and hydrogen peroxide is added to the wells. Wells that contain HBsAg and hence bound conjugate develop a purple color which is converted to orange when the enzyme reaction is terminated with 0.5M to 2M (1N) concentration of sulphuric acid. The amount of color can be determined spectrophotometrically and is directly proportional to the amount of conjugate bound and hence

the concentration of HBsAg in the sample. Samples with absorbance less than cut-off value (NC mean + 0.05) are non-reactive for HBsAg and may be considered as negative and samples with absorbance greater than or equal to the cut-off value (NC mean + 0.05) are considered initially reactive for HBsAg and considered as positive. But samples should be retested in duplicate before final interpretation as positive (34).

4.8. Data Quality Assurance

The questionnaire was prepared in English and translated to Amharic, translated back to English to ensure consistency of the questions. 5% the questionnaire were pre- tested prior to the study. The clarity and flow of each question and the time to fill the questionnaire was assessed. All the collected data were checked for completeness by the principal investigator on daily bases. All the data were double entered to ensure the data quality. Quality control of serological test, known positive and negative controls were done in parallel with test samples. All laboratory procedures were carried out following standard operating procedures (SOPs). The quality assurances of pre-analytical, analytical and post-analytical stages were applied. All positive sera were retested.

4.9. Data Analysis and Interpretation

Microsoft office Excel was used to enter data and SPSS version 20 software was used for data analysis. Chi square and 95% confidence intervals was calculated to assess the presence and degree of association between independent and outcome variables. P values less than 0.05 was taken as statistically significant. For each item of the scale, score of 1 was considered as a positive response and 0 represented as a negative response. Finally, the proportions for aggregate scores were calculated for items of knowledge, attitude and practices scales separately. Good knowledge represents barbers who score $\geq$ 8 points on knowledge part of the questionnaires and poor knowledge for barbers who score < 8 points on knowledge part of the questionnaires. Positive attitude for barbers who can score $\geq$ 4 points on attitude part of the questionnaires and negative attitude for those barbers who can score < 4 points on attitude part of the questionnaires and finally good practice stands for barbers who can score $\geq$7 points on practice part of the questionnaires and poor practice for barbers who can score < 7 points on practice part of the questionnaires.

4.10. Ethical Consideration

The study was conducted after getting ethical clearance from the Department of Research and ethical review committee (DRERC) of Addis Ababa University, College of Health Science Department of Medical Laboratory Science. Official permission letter was obtained from EPHI and Addis Ababa health bureau. Again permission letters also gained from FMHACA of the five Sub cities and a written informed consent was obtained from all study participants. Study participants that were identified as positive were referred to health facilities for the management and further investigations and follow-up. Information obtained at any course of the study was kept confidential.

4.11. Result Dissemination

Finally, the results of this study will be submitted to Addis Ababa University Department of Medical Laboratory Sciences and presentation of the thesis will be done. Also the finding of the thesis will be submitted to EPHI, Addis Ababa Health Bureau and other concerned bodies. The manuscript will be submitted to peer review journals for publication.

5. Results

5.1. Socio-demographic characteristics

A total of 400 barbers were screened for HBsAg and asked about their knowledge, attitude and practices towards Hepatitis B virus infection prevention methods. This result in a response rate of 94.7 % (400/422 target sample size). About 82(20.5%), 85(21.25%), 81 (20.25%), 87(21.75%) and 65(16.25%) barbers were from A/kalitiy, Kolfe, Arada, Gulelle and A/Ketema sub cities respectively. The majority 162 (40.5%) of the participants were found between 25-29 years of age, followed by 20-24 with 113(28.25%), with a mean age and SD of 27.13± 6.06 years and the minimum and maximum ages were 18 and 59 years respectively.

The majority of the participants were single 281(70.3%). Two hundred sixty seven (66.75%) of the barbers were private employed. About 249 (62.25%) barbers were with working experience of less than five years. Two hundred twenty five (56.25%) of barbers had an average of 3-7 customers per day. As indicated in Table 1 below the majority of the barbers 350 (87.5%) were males.

Table 1: Socio demographic characteristics of barbers working in five sub cities of Addis Ababa, Ethiopia, June 2017 (n= 400).

Variables	Frequency	Percent
1.Gender		
Male	350	87.5
Female	50	12.5
Total	400	100.0
2.Age in years		
<20	17	4.25
20-24	113	28.25
25-29	162	40.5
30-34	62	15.5
35-39	27	6.75
40+	19	4.75
3.Marital status		
Single	281	70.3
Married	108	27.0
Widowed	1	0.3
Divorced	10	2.5
4.Work experience in years		
<5	249	62.25
5-9	99	24.75
10-14	30	7.5
15-19	13	3.25
20-24	8	2
25+	1	0.25
5.Occupational status		
Self employed	133	33.3
Private employed	267	66.75
6.Work load per day		

<3	13	3.25
3-7	225	56.25
8-12	146	36.5
13+	16	4
7.Educational status		
Illiterates	3	0.8
1-8	144	36.0
9-12	221	55.3
TVET diploma	30	7.5
university degree and above	2	0.5

5.2 Magnitude of Hepatitis B Virus among barbers

In this study 15 barbers were positive for HBsAg giving an overall magnitude of 3.75% (15/400). Among unmarried or single participants, 11(3.92%) were positive ($\chi 2=0.45$, P=0.93,). The highest prevalence was seen in the age group of 25-29 years from which 6 (3.7%) were positive; but the association of HBsAg and age group was not statistically significant ($\chi 2=0.392$, P=0.996). Regarding educational level, 7(4.86%) of the study participants did positive from primary education and 6(2.71%) of the barbers were positive from secondary school. The overall serological results were not significantly associated with socio demographic characteristics.

Table 2: Magnitude of HBsAg in relation to socio demographic characteristics among barbers working in five sub cities of Addis Ababa, Ethiopia, June 2017 (n=400).

Variables	N (%)	HBsAg result		X^2	P value
		Pos (%)	Neg (%)		
Age					
< 20	17(4.25%)	0(0%)	17(100%)		
20-24	113(28.25%)	5(4.42%)	108(95.58%)		
25-29	162(40.5%)	6(3.7%)	156(96.30%)	0.392	0.996
30-34	62(15.5%)	2(3.23%)	60(96.77%)		
35-39	27(6.75%)	1(3.70%)	26(96.30%)		
40 +	19(4.75%)	1(3.70%)	18(94.74%)		
Gender					
Male	350(87.5%)	13(3.71%)	337(96.29%)	0.005	0.945
Female	50(12.5%)	2(4%)	48(96%)		
Marital Status					
Single	281(70.3%)	11(3.92%)	270(96.09%)		
Married	108(27%)	4(3.70%)	104(96.30%)	0.450	0.930
Widowed	1(0.3%)	0(0%)	1(100%)		
Divorced	10(2.5%)	0(0%)	10(100%)		
Work experience in					
years	249(62.25%)	10(4.02%)	239(95.98%)		
<5	99(24.75%)	3(3.03%)	96(96.97%)		
5-9	30(7.5%)	1(3.33%)	29(96.67%)	12.194	0.788
10-14	13(3.25%)	0(0%)	13(100%)		
15-19	8(2%)	1(12.5%)	7(87.5%)		
20-24	1(0.25%)	0(0%)	1(100%)		
25^+					

Work load per day					
<3	13(3.25%)	1(7.69%)	12(92.31%)		
3-7	225(56.25%)	8(3.56%)	217(96.44%)	11.274	0.588
8-12	146(36.5%)	6(4.11%)	140(95.89%)		
13^{+}	16(4%)	0(0%)	16(100%)		
Educational status					
Illiterates	3(0.8%)	0(0%)	3(100%)		
1-8	144(36%)	7(4.86%)	137(95.14%)		
9-12	221(55.3%)	6(2.71%)	215(97.29%)	2.05	0.726
TVET diploma	30(7.5%)	2(6.67%)	28(93.33%)		
University degree	2(0.5%)	0(0%)	2(100%)		

5.3 Assessment of knowledge, Attitude and practices towards Hepatitis B virus

5.3.1 Assessment of knowledge towards HBV

Table 3 describes the responses of the participants towards HBV knowledge. Knowledge was assessed by questions focusing on HB etiology, sign and symptoms and transmission. Out of the 400 participants, 140 (35%) were within the adequate knowledge range whereas 260(65%) showed poor knowledge about HBV. Only 116(29%) of study participants know that HBV can spread via shaving instruments and 146(36.5%) know that HBV can spread through unsafe sex. When we see barbers knowledge about vaccine, 147(36.8%) of the barbers know that vaccine is available for Hepatitis B Virus and 107(26.8%) of study participants know that the virus can spread through contaminated blood.

Table 3: Knowledge responses about HBV among barbers in selected sub cities of Addis Ababa, Ethiopia, June 2017 (n=400).

Knowledge Items	**Yes (%)**	**No (%)**
Heard about hepatitis	310(77.5)	89(22.3%)
Heard about hepatitis B	112(28%)	288(72%)
Is hepatitis B viral	76(19%)	324(81%)
Can hepatitis B affect liver	103(25.8%)	297(74.3%)
Can hepatitis B cause liver cancer	92(23%)	308(77%)
HBV can affect all age groups	93(23.3%)	307(76.8%)
Nausea, vomiting and loss of appetite are common symptoms of hepatitis B	118(29.5%)	282(70.5%)
Jaundice is one of common symptoms	148(37%)	252(63%)
Spread via contaminated blood and body fluids	107(26.8%)	293(73.3%)
Spread via shaving instruments	116(29%)	284(71%)
Transmitted from mother to child	83(20.8%)	317(79.3%)
Transmitted via unsafe sex	146(36.5%)	254(63.5%)
Is hepatitis B curable/ treatable	213(53.3%)	187(46.8%)
Is vaccination available for hepatitis B?	147(36.8%)	253(63.3%)
HBV can be prevented?	237(59.3%)	163(40.8%)

Table 4: Source of information about HBV among barbers in selected sub cities of Addis Ababa, Ethiopia, June 2017 (n=111).

Source of information about HBV	Frequency	Percent (%)
Friends and relatives	22	19.81
Television	27	24.32
News papers	12	10.81
Radio	20	18.01
Health care worker	28	25.22
From others	2	1.8

Adequate knowledge is probably an important factor in prevention of HBV infection, the association between knowledge and HBV status is shown in Table 5. Those with good knowledge were more likely less infected with HBV (X^2=0.19, P=0.89) which is not statistically significant.

Table 5: Association of knowledge out come and HBV status among barbers in selected sub cities of Addis Ababa, Ethiopia, June 2017.

Lab Result	**Knowledge outcome**		Chi square	P-value
	Poor	Good		
HBV Positive	10 (3.85%)	5 (3.57%)	0.19	0.890
HBV Negative	250 (96.2%)	135 (96.43%)		
Total	260 (65%)	140 (35%)		

As indicated in table 6 below male barbers, educated barbers and barbers with work experience of less than five years had more good knowledge about hepatitis B virus.

Table 6: Association of knowledge out come and socio demographic characteristics among barbers in selected sub cities of Addis Ababa, Ethiopia, June 2017.

Age group	**Knowledge outcome**		**Chi square**	**P-value**
	Poor N (%)	Good N (%)		
< 20	25(9.61)	13(9.28)	3.693	0.594
20-24	62(23.84)	30(21.42)		
25-29	110(42.3)	52(37.14)		
30-34	37(14.23)	25(17.85)		
35-39	14(5.38)	13(9.28)		
40 +	12(4.61)	7(5)		
Gender			0.025	0.874
Male	227(87.30)	123(87.85)		
Female	33(12.69)	17(12.14)		
Marital status			2.909	0.271
Single	177(68.07)	104(74.28)		
Married	77(29.61)	31(22.14)		
Widowed	1(0.38)	0(0)		
Divorced	5(1.92)	5(3.57)		
Educational Status			3.15	0.532
Illiterates	3(1.15)	0(0)		
1-8	92(35.38)	52(37.14)		
9-12	142(54.61)	79(56.42)		
TVET diploma	21(8.07)	9(6.42)		
University degree	2(0.76)	0(0)		
Work experience			1.261	0.936
<5	165(63.46)	84(60)		
5-9	62(23.84)	37(26.42)		
10-14	20(7.69)	10(7.14)		
15-19	6(2.30)	7(5)		
20-24	6(2.30)	2(1.42)		
25^{+}	1(0.38)	0(0)		

5.3.2. Assessment of attitudes of barbers towards Hepatitis B

Attitude towards HBV was assessed by asking eight questions. Each question was labeled with positive or negative attitude. Majority 323(80.8%) of the participants do not think that they can get HBV. 388(97%) of them will go to health facility if they have symptoms of hepatitis B and only 5(1.3%) of the study participants responded that they can go to traditional healer. Majority 211(52.8%) of the barbers strongly agree that cleaning shaving machines between clients is important to minimize transmission of hepatitis B and only 10(2.5%) of them disagree that cleaning shaving machines between clients is important to minimize transmission of hepatitis B. Concerning vaccination, 326(81.5%) of the study participants responded that it is important to receive vaccination**.** Most of study participants, 242 (60.5%) of them did not know the fee of treatment and diagnosis of HBV.

Table 7: Attitude responses towards HBV among barbers in selected sub cities of Addis Ababa, Ethiopia, June 2017 (n=400).

Attitude Items	Freq	%
Do you think you can get Hepatitis B?		
Yes	77	19.3
No	323	80.8
What would be your reaction if you acquire Hepatitis B?		
Fear	10	2.5
Shame	4	1
Sadness	51	12.8
Go to health facility	335	83.8
Do you think that you have hepatitis B?		
No	400	100
To whom would you talk about your illness?		
Physician	337	84.3
Spouse	13	3.3
Parents	28	7
Other related	1	0.3

No one	21	5.3
What will you do if you have symptoms of hepatitis B?		
Go to health facility	388	97
Go to traditional healer	5	1.3
Will not go to anywhere	7	1.8
Fee of treatment and diagnosis		
Free	68	17
Reasonable	14	3.5
Somewhat expensive	46	11.5
Expensive	30	7.5
Do not know	242	60.5
Cleaning shaving machines between clients is important to minimize transmission of hepatitis B		
Strongly agree	211	52.8
Agree	152	38
Somewhat agree	26	6.5
Disagree	10	2.5
Strongly disagree	1	0.3
Is it important to receive vaccination?		
Yes	326	81.5
No	74	18.5

5.3.3. Assessment of practices of barbers towards Hepatitis B

Practices of barbers towards HBV were assessed by asking 14 questions listed in table 6. Each question was labeled with good or poor practice. Only 85(21.8%) of the barbers were screened for HBV and none of them were vaccinated against HBV. Eighty nine (22.3%) of barbers responded that they wear glove during serving their customer if they acquire HBV. 112(28%) of barbers said that they separate instruments, if they know that their customers have HBV. All of them responded that they clean instruments and majority of them 245(61.3%) of barbers clean their instruments by putting it under UV light and 148(37%) of barbers clean by flame. Majority 298(74.5%) of barbers clean instruments after use on each customer and 212(53%) of barbers responded that they wash their hands after each shave. Surprisingly only one (0.3%) of barbers had blood transfusion before and 350 (87.5%) of study participants had no any tattoo on their body. Only fifty eight (14.5%) of barbers had unprotected sex before (Table 8). Generally, the overall practices of the participants were 235 (58.75%) for negative practice while 165 (41.25%) were for positive practice.

Table 8: Practice responses towards HBV among barbers in selected sub cities of Addis Ababa, Ethiopia, June 2017 (n=400).

Practice Items	**Freq**	**%**
Screened for Hepatitis B?		
Yes	85	21.3
No	315	78.8
Vaccinated against Hepatitis B?		
No	400	100
What would you do to protect from Hepatitis B?		
Wash instruments with soap and water	9	2.3
Clean with disinfectant solution	7	1.8
Put instruments in boiling water	4	1
Use flame	163	40.8
Put in UV light	217	54.3
If you acquire Hepatitis B then:		
It will make no difference to you and your work	305	76.3
Wear glove	89	22.3
Any other comment	6	1.5
What would you do if your customer has Hepatitis B?		

Excuse yourself from doing his work	32	8
Treat him like all other customers	233	58.3
Separate instruments	112	28
The disease will make no difference	23	5.8
Do you clean your instruments?		
Yes	400	100
How do you clean your instruments?		
Wash instruments with soap and water	5	1.3
Clean instruments with disinfectants	2	0.5
Put under UV light	245	61.3
Use flame	148	37.0
When do you clean your instruments?		
Daily before starting work	101	25.3
After use on each customer	298	74.5
Weekly	1	0.3
Do you wash hands after each shave?		
Yes	212	53
No	188	47
Ever had blood transfusion?		
Yes	1	0.3
No	399	99.8
Ever undergone dental extraction?		
Yes	75	18.8
No	325	81.3
Have body tattoo?		
Yes	50	12.5
No	350	87.5
Ever used IV drugs?		
Yes	1	0.3
No	399	99.8
Ever had unprotected sex before?		
Yes	58	14.5
No	342	85.5

The relation between practice outcome and laboratory findings are summarized in Table 9. As shown in the table, 11 (4.68%) of those participants with poor practice towards the virus were seropositive for HBsAg, which was relatively higher percent when compared to those who have good practice. Those with good practice participants relatively less infected with HBV (X^2=2.83, P=0.092). The difference, however, did not reach statistically significant level.

Table 9: Association of practice out come and HBV status among barbers in selected sub cities of Addis Ababa, Ethiopia, June 2017.

Lab Result	**Practice outcome**		Chi square	P-value
	Poor N (%)	Good N (%)		
HBV Positive	11 (4.68%)	4 (2.42%)	2.83	0.092
HBV Negative	224 (95.31%)	161 (97.57%)		
Total	235 (58.75%)	165 (41.25%)		

6. Discussion

The culture of being shaved by a barber is common in Ethiopia. A barber shop is a potential place where people including barber themselves, can get exposed to blood of infected persons through contaminated instruments. Studies conducted so far have reported a risk of HBV and other blood born diseases transmission to clients due to shaving by barbers (5). This study is the first study reporting the magnitude of HBV among barbers in Ethiopia.

6.1. Magnitude of HBV

In this study, the magnitude of HBsAg among barbers was found to be 3.75% (15/400). The magnitude of HBsAg among barbers in this study was slightly greater than cross sectional study done on 385 barbers in Pakistan in 2014 which was 2.1% (5). In another word when we compare the present study with a cross-sectional sero epidemiological study done on 267 participants in Morocco in 2007 and a descriptive cross-sectional study on 120 barbers in Ghana in 2015 it was much lower when compared to prevalence of 28.1% and 14.5% respectively (27,29).

A cross sectional study on 308 barbers in Egypt in 2007 determined the prevalence of hepatitis B among barbers 4.2% which was comparable with the present study. Again in Assiut District of Egypt in 2015 by Abdelrahim S et al revealed seroprevalence of 8.6% (44). Another study done in Turkey and Isfahan Province of Iran indicated high prevalence of HBsAg 39.8% and 6.6% respectively which were greater than the present study (31, 32). Such deviation could be due to the differences in study area, socio-cultural environment, and barbers level of knowledge about HBV, sexual practices and medical exposure and the difference in hepatitis epidemiology in these countries.

In relation to work experience, in current study 10(4.02%) of participants were positive from <5 years of work experience followed by 3(3.03%) from 5-9 years of work experience which was not statically significant (P-value = 0.788). When we see the age group, majority 11(4%) were positive in the age group 20-29 which is similar with study done in Ghana in 2015 with the highest prevalence of HBV, 58.6% in the age group of 20-29.The high prevalence of HBV infection among the youth could be the result of risky lifestyles because they are in the fire age. Similarly, no significant association was seen in work experience and HBV in this study which is in line with study done by Candan F et al., in Turkey (31). Among unmarried participants

majority 11(3.92%) of barbers were positive followed by married 4(3.70%) of study participants were positive for HBV. Seven (4.86%) of barbers with educational status of primary education were positive followed by 6(2.71%) from secondary school.

6.2. Knowledge, Attitude and Practices of Barbers about HBV

Concerning knowledge level of barbers, out of the 400 participants, only 112 (28%) of barbers were heard about HBV before which was in contrast with studies done in Ghana in 2015 and in Yemen in 2012, where the majority (90.5 %) and (73.1 %) of the participants had heard HBV infection before respectively and the mode of transmission of HBV was unknown by 254(63.5%) of the participants which was similar with 64.5% of barbers did not know the transmission of the HBV reported by Adoba P in 2015 (30,42).

In addition 116(29%) of barbers know that HBV transmitted via shaving instruments which was almost similar with study done by Jokhio A et al., in 2007 by which 36.6% knew that hepatitis can be transmitted via shaving instruments, in this study no one of the barbers were vaccinated against HBV which was highly contradicted with 186 (3.2%), 202 (42.6%) and (10.3%) of barbers were vaccinated against HBV by Jokhio A et al., Shoaei P et al., and Chaudhry M et al., respectively (9, 32, 43). This great difference could be due to lack of awareness about the presence of vaccine, lack of knowledge about the use of the vaccine and economic status. With regard to the knowledge of respondents about the prevention of HBV, more than half of the respondents, 237(59.3%) know that HBV can be prevented. Among 400 participants, 323 (80.8%) of them did not perceive themselves to be at risk for HBV which was little beat greater than 64% of barbers did not perceive themselves to be at risk for HBV in Ghana by Adoba P (30).

Concerning the sign and symptoms of HBV, only 118(29.5%) of the study participants responded that nausea, vomiting and loss of appetite are common symptoms of hepatitis B and only 148(37%) of barbers know that jaundice is one of common symptoms of HBV infection in contrast with study done by Shah HB et al., in 2015 indicating barbers knowledge about symptoms of the disease (urban 81% & rural 93%) (25). Such discrepancy is might be due to difference in educational status, socioeconomic status and geographical location of the study participants. In our study, the major source of information about HBV was health care workers

followed by television while radio was the major source of information on HBV in 2015 in Ghana by Adoba P., (30).

When we see the practices of barbers, only 212 (53%) of barbers were reported that they wash their hands after each shave which was slightly lower than 77% of barbers wash their hands by Shah HB et al (25) and lower percentage 22.5% were reported in Pakistan in 2014 by Abbasi N et al., (5). More than half, 245 (61.5%) of the participants clean their instruments by UV light followed by 148 (37%) of study participants use flame and only 2 (0.5%) of barbers clean their instruments by disinfectants which is not in line with 75.8% of barbers clean instruments with disinfectant reported by Jokhio A et al. In addition majority 350(87.5%) of study participants had no body tattoo which was little beat similar with 97.8% of barbers had no body tattoo reported in Hyderabad, Pakistan in 2010 by Jokhio A et al., (9).

Even though there is no similar study done in Ethiopia on magnitude of HBV among barbers and their knowledge, attitude and practices, our finding was similar with studies done among other group of study subjects in Ethiopia like a cross sectional study on 493 pregnant women in 2005 in Jimma and a cross sectional study in 2013 in Bahir Dar City on 318 pregnant women, the prevalence were 3.7% and 3.8% respectively (38, 39). On the other hand another cross sectional study done in Addis Ababa in 2012 among 292 clients attending the voluntary counseling and testing center and antiretroviral therapy clinic of St Paul's General Specialized Hospital and a cross sectional study on 252 medical waste handlers and non medical waste handlers in Addis Ababa in 2011 indicated the prevalence of 5.7% and 6.3% respectively (40, 41). This difference is may be due to difference in study groups and sample size.

7. Strength and Limitation of the study

7.1. Strength of the study

- This study is the first in Ethiopia to show the magnitude of HBsAg among barbers and their KAP.
- It may be used as baseline information for other researchers.
- Also this study is tried to cover 50% of Addis Ababa sub cities.

7.2. Limitation of the study

- Confirmatory test for positives were done by the same method due to lack of another kit.
- HBSAb test were not performed to screen out either vaccinated or previously exposed participants.
- Other Hepatitis B Virus markers were not done for the final diagnostics
- There is no any magnitude and knowledge, attitude and practice study recorded among barbers in Ethiopia to compare the result; instead it was possible to compare with findings from other countries.

8. Conclusion and Recommendation

8.1. Conclusion

The magnitude of HBsAg was 3.75%. The highest magnitude was seen among those aged 25-29 years 6(3.7%) and 11(3.92%) were among unmarried followed by married 4(3.70%). The highest magnitude was seen in <5 years and 5-9 years of work experience 10 (4.02%) and 3 (3.03%) respectively. The overall knowledge of the participants was found to be poor and their attitude and practice were also limited. In this study, most barbers had poor knowledge about the etiology, symptom, transmission and prevention of hepatitis B. Moreover, all of the study participants were not vaccinated due to lack of knowledge about the presence of HBV vaccine.

In this study, the magnitude of HBV was not associated with any one of socio demographic characteristics, suggesting that any effort to increase knowledge may improve barbers' negative attitudes towards HBV. Inadequate knowledge is probably an important factor in HBV infection, 260(65%) of the study participants were within the poor knowledge. According to the findings there is a lack of understanding of the basics of infection control and the prevention of transmission of HBV. Therefore Addis Ababa Health Bureau and FMHACA are responsible in developing safety guidelines for correct hair cutting and proper decontamination equipments used in barbershops.

8.2. Recommendation

Based on the findings of this study, the following recommendations are forwarded:

- There should be increased awareness of barbers on screening and vaccination must be introduced through health education by the concerned bodies.
- It is also indicated to give training of barbers regarding the methods of prevention of transmitted diseases.
- There should be improved media campaign for HBV infection control.
- Barbers should be trained in universal protection methods, regularly monitored and supervised by the FMHACA and local government authorities on the correct hair-cutting procedures and instrument decontamination.
- Hepatitis B virus vaccination could be considered for risk groups like barbers by Ministry of Health.
- Further studies could be done on both barbers and their customers to compare the results between the two.

9. Reference

1. Hepatitis C Fact sheet No164 Updated on July 2016, http://www.who.int/mediacentre/factsheets/fs164/en/. (Cited 2016 Nov 19).
2. Hepatitis B Fact sheet No 204 Updated July 2016, http://www.who.int/mediacentre/factsheets/fs204/en/. (Cited 2016 Nov 21).
3. Yakasai A, Ayyuba R, Abubakar S, Ibrahim A. Seroprevalence of Hepatitis B Virus Infection and its Risk factors among Pregnant Women Attending Antenatal Clinic at Aminu Kano Teaching Hospital, Kano, Nigeria. *Journal of Basic and Clinical Reproductive Sciences.* 2012; 1: 49-50.
4. Chang MH. Hepatitis B virus infection. *Journal of Science direct*. 2007; 12(3): 160-167.
5. Gitlin N. Hepatitis B diagnosis, prevention and treatment. Clinical Chemistry. 1997; 43 (8): 1500-1506.
6. Abbasi N, Fatmi Z, Kadir M, Sathiakumar N. Prevalence of hepatitis B virus infection among barbers and their knowledge, attitude and practices in the district of Sukkur, Sindh. *International Journal of Occupational Medicine and Environmental Health*. 2014; 27: 757- 765.
7. Pawlotsky J. Pathophysiology of hepatitis C virus infection and related liver disease. Trends Microbiol. 2004; 12: 96-102.
8. Amodio E, BenedettoD , Gennaro L , Maida M and Roman N. Knowledge, attitudes and risk of HIV, HBV and HCV infections in hairdressers of Palermo city (South Italy). The *European Journal of Public Health*. 2009; 20: 433- 437.
9. Jokhio A, Bhatti T, Memon S. Knowledge, attitudes and practices of barbers about hepatitis B and C transmission in Hyderabad, Pakistan. *East Mediterr Health J*. 2010; 16(10): 1079–1084.
10. Launiala A. How much can a KAP survey tell us about people's knowledge, attitudes and practices? Some observations from medical anthropology research on malaria in pregnancy in Malawi. *Anthropology Matters Journal*. 2009; 11 (1): 1-13.
11. Haq N, Hassali MA , Shafie AA, Saleem F, Farooqui M, Haseeb A, et al. A cross-sectional assessment of knowledge, attitude and practice towards Hepatitis-B among healthy population of Quetta, Pakistan. BMC Public Health. 2013; 13:448-450.

12. Mukherjee PS, Dutta E, Das Kr, Ghosh Sh, Neogi S, Arka Sarkar. Knowledge about hepatitis B and hepatitis C virus infection and consequences: a cross-sectional assessment of baseline knowledge among infected patients in West Bengal, India. Hepatology, Medicine and Policy. 2016: 2:6-9
13. Bane A, Patil A, Khatib M. Healthcare cost and access to care for viral hepatitis in Ethiopia. International Journal of Innovation and Applied Studies. 2014; 9: 1718-1723.
14. Ali FM, Bhushan P, Patil A, Ustad F. Occupational Exposure to HBV or HIV: which is more significant? *Journal of dentofacial sciences*. 2013; 2(3): 37-40.
15. Mauss S, Berg T, Rockstroh J, Sarrazin Ch, and Wedemeyer H. Hepatology – A clinical textbook.7th Edition. 2016: 39-40.
16. Schweitzer A, Horn J, Mikolajczyk RT, Krause G,and Ott JJ. Estimations of worldwide prevalence of chronic hepatitis B virus infection: a systematic review of data published between 1965 and 2013. (Cited 2016 Nov 22); Available from: www.sciencedirect.com/science/article/pii/S0264410X11020779.
17. Hope VD, Eramova I, Capurro D, Donoghoe MC. Prevalence and estimation of hepatitis B and C infections in the WHO European Region: a review of data focusing on the countries outside the European Union and the European Free Trade Association. Epidemiol Infect. 2013; 29:1–17.
18. Kimberly A, Tanapanpanit O and Reddy KR. Hepatitis B and C in African Americans: Current Status and Continued Challenges. Clinical Gastroenterology and Hepatology. 2014; 1: 2-11.
19. Zampino R, Boemio A, Sagnelli C, Alessio L, Adinolfi LE, Sagnelli E et al. Hepatitis B virus burden in developing countries. *World J Gastroenterol*. 2015; 21(42): 11941–11953.
20. Mekonnen D, Gebre-Selassie S, Fantaw S, Hunegnaw A and Mihret A. Prevalence of hepatitis B virus in patients with diabetes mellitus: a comparative cross sectional study at Woldiya General Hospital, Ethiopia. *Pan African Medical Journal*. 2014; 17:40.
21. Abebe A, Nokes DJ, Dejene A, Enquselassie F, Messele T and Cutts FT. Seroepidemiology of hepatitis B virus in Addis Ababa Ethiopia: transmission patterns and vaccine control. Epidemiology and infection. 2003; 131 (1): 757-770.

22. Ramos JM, Belda S and Reyes F. Prevalence of HIV, HBV, HCV, HTLV and Treponema pallidum among patients attending a rural hospital in Southern Ethiopia. *J Clin Virol*. 2012; 53(3): 268–269.
23. Kurkura G, Legesse W and Zewudie T. Knowledge, attitudes and practices among barbers in south-western Ethiopia. African Newsletter on Occupational Health and Safety. 2002; 12(3): 69- 71.
24. Prince O, Akumiaha A, Linda A and Sarfo B. Knowledge and Practices of Certified Barbers about Hepatitis B and C Transmission in Kumasi, Ghana. *Applied Research Journal*. 2015; 1(2): 27-35.
25. Shah HB, Dar MK, Jamil AA, Atif I, Jazib R and Ali Shan. Knowledge, attitudes and practices of hepatitis B and C among barbers of urban and rural areas of rawalpindi and Islamabad. *J Ayub Med Coll Abbottabad*. 2015; 27(4): 832-836.
26. Abongwa L, Sunjo N and Afah N. Assessment of Knowledge, Attitude and Practice towards Hepatitis B among two rural communities of the Anglophone regions in Cameroon. *International Journal of Applied Sciences*. 2016; 4(3): 490- 505.
27. Belbacha I, Cherkaoui I, Akrim M, Dooley KE and Aouad RE. Seroprevalence of hepatitis B and C among barbers and their clients in the Rabat region of Morocco. 2011; 17(12): 911-919.
28. Shalaby S, Kabbash IA, Saleet GE, Mansour N, Omar A and Nawawy AE. Hepatitis B and C viral infection: prevalence, knowledge, attitude and practice among barbers and clients in Gharbia governorate, *Egypt. Eastern Mediterranean Health Journal*. 2010; 16(1): 10- 17.
29. Prince O, Akumiaha A, Linda A and Sarfo B. Knowledge and Practices of Certified Barbers about Hepatitis B and C Transmission in Kumasi, Ghana. *Applied Research Journal*. 2015; 1(2): 27-35.
30. Adoba P. High prevalence of hepatitis B and poor knowledge on hepatitis B and C viral infections among barbers: a cross-sectional study of the Obuasi municipality, Ghana. BMC Public Health. 2015; 15: 1041-1044.
31. Candan F, Alagozlu H, Poyraz O and Sumer H. Prevalence of hepatitis B and C virus infection in barbers in the Sivas region of Turkey. Occup.Med. 2002; 52(1): 31-34.

32. Shoaei P, Ataei B, Mohammad A, Nokhodian Z, Adibi P. Seroprevalence of Hepatitis B and C Virus Infection Among Barbers in Isfahan Province, Iran. *Avicenna J Clin Microb Infec.* 2015; 2(3): 13-15.
33. Alemairy A, Ahmed A, Swareldahab Z, Saad F, Alaimeri A, Alemairy A, et al. Knowledge and Practice of HBV, HCV and HIV among Barbers and Women Hairdressers (coiffeurs): A Cross Sectional Study in Khartoum State. *American Journal of Epidemiology and Infectious Disease.* 2016; 4(5): 84-90.
34. Krugman S and Overby L. Viral Hepatitis Type B Studies on Natural History and Prevention Re-examined. *New England Journal of Medicine.* 1999; 300:101-102.
35. Kuo G, Choo Q, Alter H, Houghton M. An Assay for Circulating Antibodies to a Major Etiologic Virus of Human Non-A, Non-B Hepatitis. *International Journal of Applied Science.* 1989; 244:362-364.
36. Haq N, Hassali M, Ashafie A, Saleem F, Farooqui M and Aljadhey H. A cross-sectional assessment of knowledge, attitude and practice towards Hepatitis B among healthy population of Quetta, Pakistan. BMC Public health.2012; 12(692):1-8.
37. Mahfoud Z, Kassak K, Kreidieh K, Shamra S, Ramia S. Prevalence of antibodies to human immunodeficiency virus (HIV), hepatitis B and hepatitis C and risk factors in prisoners in Lebanon. *The Journal of Infection in Developing Countries*. 2010; 4(03):144-149.
38. Awol M, Gebre-Selassie S. Sero prevalence of HBsAg and its risk factors among pregnant women in Jimma, Southwest Ethiopia. *Ethiop JHealth Dev*. 2005; 19 (1): 45-50.
39. Zenebe_Y, Mulu W , Yimer M, Abera B. Sero-prevalence and risk factors of hepatitis B virus and human immunodeficiency virus infection among pregnant women in Bahir Dar city, Northwest Ethiopia. BMC Infectious Diseases 2014; 14:114.
40. Shimelis T, Torben W, Medhin G, Tebeje M, Andualem A, Demessie F et al. Hepatitis B virus infection among people attending the voluntary counseling and testing center and antiretroviral therapy clinic of St Paul's General Specialized Hospital Addis Ababa, Ethiopia. ISRN Tropical Medicine 2008, 84 (1): 37-41.
41. Shiferaw Y, Abebe T and Mihret A. Hepatitis B virus infection among medical waste handlers in Addis Ababa, Ethiopia. BMC Research Notes 2011; 4: 479.

42. Al-Rabeei NA, Al-Thaifani AA, Dallak AM. Knowledge, attitudes and practices of barbers regarding hepatitis B and C viral infection in Sana'a City, Yemen. *J Community Health*. 2012; 37(5): 935–939.
43. Chaudhry M, Rizvi F, Ashraf M, Afzal M, Niazi S, Knowledge and practices of barbers regarding hepatitis B and hepatitis C in Bahra Kahu, Islamabad–Pakistan. *Rawal Med J* 2008; 35(1): 37-40.
44. Abdelrahim S, Mohamed M, Ahmed S,Zakria M. Seroprevalence, Knowledge, Attitude and Practices among Barbers and Their Customers Regarding HCV and HBV in Assiut District, *Egypt Journal of Nursing and Health Science*. 2015; 4(3): 19-30.
45. Bandura A. Health promotion from the perspective of Social Cognitive Theory. *Journal of Psychology and Health,* 1998; 13(4): 623-649.

10. Annexes

I. Information sheet (English version)

Objective: The objective of this study is to assess the magnitude of HBsAg among barbers and their knowledge, attitude and practice (KAP) towards infection control methods in selected sub cities of Addis Ababa, Ethiopia.

Participation: We are asking you and others to voluntarily participate in this study. What is expected from everyone is to respond some question which take about ten minutes and give 5 ml of venous blood and blood samples are collected using sterile and disposable equipments.

Risks: While you are participating, you are likely to have some risks. The risks associated with this study could be some discomforts and in a rare occasion a hematoma may be developed when we collect 5ml of venous blood from you. However, these things do not produce serious pain and if in case any problem arises during and following sample collection, we shall offer you necessary medical interventions until you fully recover.

Benefits: If you are positive for HBV during investigation, opportunities for management will be arranged and you will be followed. If you are negative for HBV, you will be recommended for vaccination to prevent future HBV infection by dealing with the concerned body if possible.

Confidentiality: All the data obtained will be kept strictly confidential by using only code numbers which is filled by the investigators and locking the data.

Right to refuse: Since participation in this study is entirely voluntarily, you can refuse to participate in this study at any time. Your refusal will not affect your work.

Principal Investigator Address: Wolde Shure Department of Medical Laboratory Sciences, Collage of Health Sciences, Addis Ababa University, Addis Ababa, Ethiopia

E-mail: wshureone@gmail.com Tel.: +251910120212

School Phone Number +2510112755170

II. Consent form (English Version)

I, the undersigned, confirm that, as I give consent to participate in the study with a clear understanding of the objectives and conditions of the study and with recognition of my right to withdraw from the study if I change my mind.

I……do here to give consent to Mr ……..to include me in the proposed research. I have been given the necessary information about the research. I have also been assured that I can withdraw my consent at any time without penalty or loss of benefits. The proposal has been explained to me in the language I understand.

Code of the participant: _____

Participant's signature: _____

Name of data collector: _____

Date: _____

III. Survey questionnaire (English version)

Questionnaire to assess KAP on HBV among barbers in selected sub cities of Addis Ababa.

Interviewer Name _____ Questionnaire Number _____

Date of interview_____ Participant Code _____

Name of Barbershop _____ Subcity _____Woreda _____

S.No	**Questions**	**Response**
100	**Socio-demographic information (Circle One answer)**	
101	Sex	1. Male 2. Female
102	Age (in years)	_____
103	Marital status?	1. Single 2. Married 3. Widowed 4. Divorced
104	Education Level?	1. Illiterate 2. 1-8 3. 9-12 4. TVET diploma 5. University degree & above
105	What is your occupational status?	1. Self employed 2. Private employed 3. Other _____
106	Working experience?	_____
107	Work load per day?	

200	**Questions towards Knowledge on Hepatitis B virus**	
201	Have you heard of a disease termed as Hepatitis?	1. Yes 2. No
202	Have you heard of a disease termed as Hepatitis B?	1. Yes 2. No
203	Source of information about Hepatitis B?	1. Friends & relatives 4. Radio 2. Television 5. HCW 3. Newspapers 6. From Others
204	Do you know that hepatitis B viral disease?	1. Yes 2. No
205	Do you know that hepatitis B affect liver function?	1. Yes 2. No
206	Do you know that hepatitis B can cause liver cancer?	1. Yes 2. No
207	Do you know that hepatitis B virus can affect any age group?	1. Yes 2. No
208	Do you know that nausea, vomiting & loss of appetite are common symptom of hepatitis B?	1. Yes 2. No
209	Do you know that jaundice one of the common symptoms of Hepatitis B?	1. Yes 2. No
210	Does hepatitis B spread through contaminated blood and body fluids?	1. Yes 2. No
211	Can Hepatitis B transmitted by instruments used for shaving and hair cutting ?	1. Yes 2. No
212	Can Hepatitis B be transmitted from mother to child?	1. Yes 2. No
213	Can Hepatitis B transmitted by unsafe sex?	1. Yes 2. No
214	Is Hepatitis B curable/ treatable?	1. Yes 2. No
215	Is vaccination available for Hepatitis B?	1. Yes 2. No
216	Can Hepatitis B be prevented?	1. Yes 2. No

300	**Questions towards hepatitis B virus attitude**	
301	Do you think you can get Hepatitis B?	1. Yes 2. No
302	What would be your reaction if you found that you have Hepatitis B virus?	1. Fear 2. Shame 3. Sadness 4. Go to health facility
303	Do you think that you have Hepatitis B?	1. Yes 2. No if the answer is no skip to 305.
304	To whom would you talk about your illness?	1. Physician 4. Other related 2. Spouse 5. No one. 3. Parents
305	What will you do if you think that you have symptoms of Hepatitis B?	1. Go to health facility 2. Go to Traditional healer 3. Will not go to any where
306	How expensive do you think is the diagnosis and treatment of Hepatitis B?	1. Free 2. Reasonable 3. Somewhat expensive 4. Expensive 5. Don't know
307	Cleaning shaving machine between clients is critical to minimize transmission of HBV.	1. Strongly agree 2. Agree 3. Somewhat agree 4. I disagree 5. I strongly disagree
308	Is it necessary to receive hepatitis B vaccine?	1. Yes 2. No

400	**Questions towards practices related to Hepatitis B virus**	
401	Have you done screening for Hepatitis B?	1. Yes 2. No
402	Have you got yourself vaccinated against Hepatitis B virus?	1. Yes 2. No
403	What would you do to protect from Hepatitis B?	1. Wash instruments with soap and water 2. Clean instruments with disinfectant solution 3. Put instruments in boiling water 4. Heating instruments 5. Put the instruments in UV Light
404	If you know that your customer has Hepatitis B virus then:	1. You will excuse yourself from doing his work 2. You will treat him like all other customers 3. You will keep separate instruments for these patients 4. This disease will make no difference because it does not spread through contaminated instruments
405	If you get Hepatitis B then	1.It will make no difference to you and your work 2.You will start wearing gloves while working 3.Any other comment:---------
406	Do you clean your instruments?	1. Yes 2. No
407	How do you clean your instruments?	1.Wash instruments with soap and water 3. Wash instruments with disinfectant 4. Put it under UV Light

		5. Heating instruments by flame 6. Any other method: _____ _
408	When do you clean your instruments?	1. Daily before starting work 2. After use on every customer 3. Weekly
409	Do you wash hands after each shave?	1. Yes 2. No
410	Have you ever had blood transfusion?	1. Yes 2. No
411	Have you ever undergone dental extraction?	1. Yes 2. No
412	Did you have tattoo or body piercing in your life?	1. Yes 2. No
413	Have you ever used IV drugs?	1. Yes 2. No
414	Have you ever had unprotected sex before?	1. Yes 2. No
500	**Serology (Laboratory findings)**	1. Positive 2. Negative

IV. Information sheet (Amharic version)

የጥናቱ ዓላማ፤ በጸጉር አስተካካዮች መካከል ያለውን የሄፓታይታስ ቢ ቫይራስ ስርጭት ማወቅና፣ ሠዎች ስለቫይረሶቹ ያላቸውን እውቀት፣ አመለካከት፣የሚወስዱትን የመከላከያ መንገድ እና ተሞክሮ ለማወቅ ጥናት እያካሄድኩ ነው፡፡

በጥናቱ ስለመሳተፍ፤ በዚህ ጥናት መሳተፍ በሙሉ ፈቃደኝነት ላይ የተመሠረተ ነው፡፡ ስለሆነም በመጀመሪያ በጥናቱ እንዲሣተፉ ፈቃደኝነተዎን በትህትና እጠይቃለሁ፡፡ በዚህ ጥናት ለመሳተፍ ከፈቀዱ ለአስር ደቂቃ ያህል ለጥያቄዎች ምላሽ በመስጠት ይተባበሩናል፡፡ 5 ሚ.ሊት ደም ይሰጡናል፣ የሰጡንም ናሙና ለሔፓታይታስ ቢ ቫይራስ፣ ለሔፓታይታስ ሲ ቫይራስና ለሞለኩላር ምርመራ እንድንጠቀም ይፈቅዱልናል፡፡

በጥናቱ በመሳተፍ የሚገኝ ጥቅም ፤ የደመዎ ናሙና በላቦራቶሪ ሲመረመር ሄፐታይተስ “ቢ ከተገኘ የህኪም ክትትልና አስፈሊጊውን ምክር ይሠጠዎታል፡፡ ደሙ ነፃ ከሆነ ደግሞ ክትባት እንዲወስዱ ይመከራሉ፡፡

ምስጢርን ስለመጠበቅ፤ በጥናቱ ውስጥ የተሰበሰቡ ማናቸውም ግላዊ መረጃዎች ሚስጥራዊነታቸው የተጠበቀ ይሆናል፡፡ ከማንነትዎ ጋር በቀጥታ ተያያዥነት ያላቸው መረጃዎች በሙሉ በዋና ተመራማሪው ሚስጥራዊ በሆነ የመረጃ ጥንቅር ዘዴ ከተቀየሩ በኋላ ብቻ ለምርምር ሂደቱ የሚውል ይሆናል፡፡

ከጥናቱ ስለመውጣትና ስለማቋረጥ፤ ይህ ጥናት በፈቃደኝነት ላይ የተመሰረተ እንደመሆኑ መጠን በማናቸውም ወቅት በፈቃድዎ ከጥናቱ መውጣት ይችላሉ፡፡ ከጥናቱ ቢወጡም እንኳ በስራዎት ላይ ምንም አይነት ችግር አያመጣም ፡፡

የዋና ተመራማሪው አድራሻ፤ ወልዴ ሹሬ ፤ የሕክምና ላቦራቶሪ ቴክኖሎጂ ዲፓርትመንት፣ የጤና ሳይንስ ኮሌጅ፣ አዲስ አበባ ዩኒቨርሲቲ አዲስ አበባ፣ ኢትዮጵያ

ኢ-ሜይል፣ wshureone@gmail.com ስልክ ፣ +2519 10 12 02 12

የት/ት ቤቱ ስልክ ቁጥር +2510112755170

V. Consent form (Amharic Version)

እኔ ስሜ ከታች የተገለፀው የጥናቱ ተሳታፊ ለመሆን ስወስን የጥናቱን አላማዎች አሰራሮችና ቅድመ ሁኔታዎች በግልጽ በመረዳትና ከጥናቱ ተሳታፊነት ፈቃደኝነቴን በማንኛውም ደረጃ የማንሳት መብቴን በማረጋገጥ ነው፡፡

እኔ---------- በጥናቱ ተሳታፊ መሆኔን በፊርማዬ እያረጋገጥሁ ይህንን ስወስን በጥናቱ ሳቢያ ልከሰቱ የሚችሉ ግዘያዊ ችግሮች በሚገባ የተረዳሁና ከጥናቱ በማነኛውም ደረጃ እራሴን ለመሰረዝ ብወስን ቅጣት እንደለለው ወይንም ተገቢ የሆነ ጥቅም እንደማይነፈገኝ በማመን ነው፡፡ እነዚህ መረጃዎች ሁሉ በሚገባ በምረዳው ቋንቋ የተገለጸልኝ መሆኑን በፊርማዬ አረጋግጣለሁ፡፡

የተሳታፊው መለያ ቁጥር ---------- ፊርማ----------

የተመራማሪው ሙሉ ስም፣ ----------ፊርማ ----------

VI. Survey questionnaire (Amharic version)

የመረጃ መሰብሰቢያ መጠይቅ ፎርም

የቃለመጠይቅ አድራጊው ስም _____የመጠይቅ ተ.ቁ _____

መጠይቅ የተወሰደበት ቀን _____የተሳታፊው ቁጥር _____

የጸጉር ቤቱ ስም_____ ክፍለ ከተማ ---------- ወረዳ ----------

ተ.ቁ	ጥያቄ	መልስ
100	**የግለሰቡ አካላዊ ማህበራዊ እና ኢኮኖሚያዊ ዝርዝር**	
101	ጾታ	1. ወንድ 2. ሴት
102	ዕድሜ	_____
103	የጋብቻ ሁኔታ?	1. ያላገባ 3. የትዳር ጓደኛ የሞተበት 2. ያገባ 4. የተፋቱ
104	የትምህርት ሁኔታ?	1. ያልተማረ 2. 1-8 3. 9-12 4. TVET ዲፕሎማ 5. ዩንቨርሲቲ ዲግሪ ና ከዛበለይ
105	የስራ ሁኔታ?	1. የግል 2. ተቀጣሪ 3. ሌላ _____
106	የስራ ዘመን?	_____
107	በቀን ስንት ደንበኞችን ያስተናግዳሉ?	

200	**ስለ ሄፓታይተስ ቢ ቫይረስ ስላላቸው እውቀት የተዘጋጀ መጠይቅ**	
201	ሄፓይታተስ ስለሚባል በሽታ ሰምተው ያውቃሉ?	1. አዎ 2. አላውቅም
202	ሄፓይታተስ ቢ ስለሚባል በሽታ ሰምተው ያውቃሉ?	1. አዎ 2. አላውቅም
203	ሄፓይታተስ ቢ ስለሚባል በሽታ ከዬት ሰሙ?	1. ከጌዋደኞችና ከዘመድ 4. ከረድዮ 2. ከተለቪዥን 5. ከጤና ባለሙያ 3. ከጋዘጣ 6. ከሌሎች
204	ሄፓይታተስ ቢ በቫይረስ አማካኝነት የሚመጣ በሽታ ነዉ?	1. አዎ 2. አላውቅም
205	ሄፓይታተስ ቢ የጉበትን ስራን ያስተጓጉላል?	1. አዎ 2. አላውቅም
206	ሄፓይታተስ ቢ የጉበት ካንሰር ያመጣል?	1. አዎ 2. አላውቅም
207	ሄፓይታተስ ቢ ሁሉንም የእድሜ ክፍል ያጠቃል?	1. አዎ 2. አላውቅም
208	ማቅለሽለሽ፣ ማስታወክ፣ የምግብ ፍላጎት መቀነስ በቫይረሱ ከተያዙ ሰዎች መካከል የሚታይ ምልክቶች ናቸው?	1. አዎ 2. አላውቅም
209	የአይን ቢጫ መሆን አንዱና ዋነኛው የቫይረሱ ምልክት ነው?	1. አዎ 2. አላውቅም
210	ሄፓይታተስ ቢ ቫይረስ ደምና በደም ውስጥ ሊተላለፍ ይችላል?	1. አዎ 2. አላውቅም
211	ሄፓይታተስ ቢ ቫይረስ በጸጉር ማስተካከያ ዕቃዎች ሊተላለፍ ይችላል?	1. አዎ 2. አላውቅም
212	ሄፓይታተስ ቢ ቫይረስ ከእናት ወደ ልጅ እንደሚተላለፍ ያውቃሉ?	1. አዎ 2. አላውቅም
213	ሄፓይታተስ ቢ ቫይረስ ጥንቃቄ በጎደለው የግብረ ስራ ግንኙነት ሊተላለፍ ይችላሉ?	1. አዎ 2. አላውቅም
214	ሄፓይታተስ ቢ ቫይረስ መታከም ይችላል?	1. አዎ 2. አላውቅም
215	ለሄፓይታተስ ቢ ቫይረስ የተዘጋጀ ክትባት እንዳለ ያውቃሉ?	1. አዎ 2. አላውቅም
216	ሄፓይታተስ ቢ ቫይረስ መከላከል ይቻላል?	1. አዎ 2. አላውቅም

300	**ስለ ሄፓታይተስ ቢ ቫይረስ ስለአለዎት አመለካከት የተዘጋጀ መጠይቅ**	
301	በሄፓታይተስ ልያዝ እችላለሁ ብለው አስበው ያውቃሉ?	1. አዎ 2. አላውቅም
302	የሄፓይታተስ ቢ ቫይረስ በደም ውስጥ እንዳለ ቢነገርዎት የሚወስዱት እርምጃ ምንድን ነዉ?	1. መፍራት 3. ማዘን 2. ማፈር 4. ወደ ህክምና ተቆዋም እሄዳለሁ
303	የሄፓይታተስ ቢ ቫይረስ በደም ውስጥ እንዳለ አረጋግጠው ያውቃሉ?	1. አዎ 2. አላውቅም
304	የሄፓይታተስ ቢ ቫይረስ በደም ውስጥ እንዳለ ቢነገርዎት ለማን ይነግራሉ?	1. ለሐኪም 5 . ለማንም 2. ለትዳር ጓደኛ አልናገሪም 3. ለቤተሰብዎ 4. ለሌላ ሰዉ
305	በሄፓይታተስ ቢ ቫይረስ የሚያዙ ሰዎች ከሚያሳዩት ምልክቶች መካከል ቢመለከቱ ምን ያደርጋሉ?	1. ወደ ጤና ተቋም እሄዳለሁ 2. ወደባህል ህክምና እሄዳለሁ 3. ወደ የትም አልሄድም
306	የሄፓይታተስ ቢ ቫይረስ ምርመራ ወይም ህክምና ምን ያህል እንደሆነ ያውቃሉ?	1. ነፃ 4. ውድ 2. በቂ 5. አላውቅም 3. ትንሽ ውድ
307	የጸጉር ማስተካከያ ማሽኖች ማጽዳትሄፓታይታስ ቫይራስ ስሪጭት ነመቀነስ አስፈላጊ ነዉ::	1. በጠም እስማማለሁ 2. እስማማለሁ 3. ትንሽ እስማማለሁ 4. አልስማማም 5. በጣም አልስማማም
308	የሄፓታይታስ ቢ ክትባት መከተብ አስፈላጊ ነዉ?	1. አዎ 2. አላውቅም

400	**በሽታውን ለመከላከል የሚወስዱት እርምጃ**	
401	የሄፓታይተስ ቫይረስ ምርመራ አድርገው ያውቃሉ?	1. አዎ 2. አላውቅም
402	የሄፓታይተስ ቫይረስ ክትባት ወስደዋል ?	1. አዎ 2. አላውቅም
403	የሄፓታይተስ ቫይረስን እንዴት ይከላከላሉ ?	1. ዕቃዎቹን በዉሃና ሳሙና ማጠብ 2. በተባይ አጥፊ ከሚካሎች ማጽዳት 3. በፈላ ዉሃ ዉስጥ ማስገባት 4. በእሳት ማቃጠል 5. በ ዩ ቪ ብርሃን ዉስጥ ማስቀመጥ
404	ደንበኛችዉ በጉበት በሽታ መያዙን ካወቁ ምን ያደርጋሉ?	1. ደንበኛዉን አያስተናግዱም 2. እንደ ሌሎቹ ደነበኞች ያስተናግዳሉ 3. ዕቃዎቹን ለሱ ይለያሉ 4. በሽታዉ በተበከለ ዕቃ ስለማይተላለፍ የተለየ ነገር አላደርግም
405	የሄፓታይተስ ምርመራ ሲያደርጉ ቢገኝብዎ ምን ያደርጋሉ?	1. ምንም አላደርግም 2. ጓንት ለብሸ እሰራለሁ 3. ሌላ----------
406	ዕቃዎቹን ያጸዳሉ?	1. አዎ 2. አላውቅም
407	ዕቃዎቹን በምን አይነት ዘዴ ያጸዳሉ?	1. ዕቃዎቹን በዉሃና ሳሙና ማጠብ 2. በተባይ አጥፊ ከሚካሎች ማጽዳት 3. በ ዩ ቪ ብርሃን ዉስጥ ማስቀመጥ 4. በእሳት ማቃጠል 5. ሌላ ዘዴ----------
408	ዕቃዎቹን መቼ መቼ ያጸዳሉ?	1. በየቀኑ ስራ ሳይጀመር 2. ለያንዳዱ ደንበኛ 3. በየሳምንቱ
409	ከያንዳንዱ ደንበኛ በኋላ እጅ ይታጠባሉ?	1. አዎ 2. አላውቅም
410	ደም ተለግሶሎት ያዉቃል ?	1. አዎ 2. አላውቅም
411	ጥርስ አስነቅሎ ያዉቃሉ?	1. አዎ 2. አላውቅም
412	ንቅሳት ተነቅሶ ያዉቃሉ?	1. አዎ 2. አላውቅም
413	በደም ስር የሚሰጥ መድሓንት ወስዶ ያዉቃሉ?	1. አዎ 2. አላውቅም
414	ጥንቃቄ የጎደለ የግብረስጋ ግንኙነት አድርጎ ያዉቃሉ?	1. አዎ 2. አላውቅም
500	**የላቦራቶሪ ዉጤት**	**1. ፖዘትቭ 2. ነጋቲቭ**

VII. Laboratory test Procedure

Standard Operation Procedure for ELISA

Introduction

HBsAg ELISA is used for the qualitative determination of HBsAg in human serum or plasma. This test is indicated for the screening of blood and blood products to be used for transfusion and an aid for the diagnosis of existing or previous hepatitis B infection. HBsAg is one of the earliest markers that appear in the blood following infection with HBV. This infection of the liver is transmitted by sexual activity, blood borne exposure, mother - infant, and close personal contact. In the HBV infected people, the virus persists for the rest of their lives and can be passed on to others. Therefore Hepatitis B has become a global public health problem.

Principle of the test

In the Murex HBsAg version 3 the sample is pre-incubated in microwells coated with a mixture of mouse monoclonal specific for different epitopes on the a determinant of HBsAg. Affinity purified goat antibody to HBsAg conjugated to horseradish proxidase is then added to the sample in the well. During the two incubations steps any HBsAg present in the sample is bound to the well in an antibody –antigen-antibody-enzyme complex. In the absence of HBsAg no conjugate will be bound. After washing to remove sample and unbound conjugate, a solution containing 3, 3', 5, 5'- tetramethylbendzidine (TMB) and hydrogen peroxide is added to the wells. Wells that contain HBsAg and hence bound conjugate will develop a purple color which is converted to orange when the enzyme reaction is terminated with sulphuric acid. The amount of color can be determined spectrophotometrically and is directly proportional to the amount of conjugate bound and hence the concentration of HBsAg in the sample. Samples with absorbance less than Cut-Off Value is non-reactive for HBsAg and may be considered as negative and samples with absorbance greater than or equal to the Cut-Off Value is considered initially reactive for HBsAg and considered as positive.

Reagents and Materials Required

Materials Required

- Multichannel micropipettes of appropriate volume(50 to 200microliter)
- Micropipettes to cover the range 50 to 1000µl)
- 37°c ± 2°c Thermostat Incubator
- Automated micro plate Strip Washer
- Micro plate Reader
- Disposable Reagent Troughs

Reagents

- Murex HBsAg Version 3 Test Kit
- Distilled/deionized water
- Stop Solution (0.5M to 2M Sulphuric Acid)
- Sodium hypochlorite for decontamination

Specimen transport and storage

Serum, EDTA plasma or citrate plasma samples may be used. Blood collected by vein puncture should be allowed to clot naturally. Care should be taken to ensure that the serum samples are fully clotted. Any visible particulate matter in the sample should be removed by centrifugation. Sample should be stored at 2 to 8 °c. Samples not required for assay with in 72 hrs should be removed from the clot or sell pellet and stored frozen at -15°c or colder. Multiple freeze thaw cycles should be avoided.

Preparation of reagents

Substrate solution

To prepare substrate solution, add a volume of colorless substrate diluents to an equal volume of pink substrate concentrate in either a clean glass container or a new polystyrene vessel. It is extremely important that this order of addition is followed and that any pipettes and glassware used to prepare substrate solution are clean.

Wash fluid

Dilute the wash fluid 1 to 20 with distilled or deionized water to give the required volume or dilute the entire contents of one bottle of wash fluid to a final volume of 2500ml. Store the working strength wash fluid at room temperature in a closed vessel under which conditions it will retain activity for one month.

Test procedure

1. Add 25µl of sample diluent to each well.
2. Add 75µl of samples or controls to the wells
3. To each plate add 75µl of the negative control to wells A and B and 75µl of positive control to well C
4. Add the controls to the designated wells after dispensing the samples.
5. Cover the plate with a lid and incubate for 60 minutes at 37°C
6. Add 50µl of conjugate to each well
7. Shake the plate using a plate shaker for 10 seconds or manually agitate by gently tapping the sides for 10 seconds
8. Cover the plate with a lid and incubate for 30 minutes at 37°C
9. At the end of the incubation time wash the plate 5 times using the automated strip washer program
10. After washing is completed invert the plate and tap out any residual wash fluid on to absorbent paper.
11. Immediately after washing the plate, add 100µl of substrate solution to each well
12. Cover the plate with the lid and incubate for 30 minutes at 37°C while color develops. A purple color should be develop in wells containing reactive samples.
13. Add 50µl stop solution to each well.
14. Within 15 minutes read the absorbance of each well at 450nm using 620 to 690nm as reference wavelength if available.

Quality control

Results of an assay are valid if the following criteria for the controls are met:

Negative control

The mean absorbance of the negative control is less than 0.15 or the mean absorbance of the negative control is less than 0.2. NC= NC<0.15

Positive control

The absorbance of positive control is more than 0.8 above the mean absorbance of negative control which means PC= PC-NC mean>0.8

Assays which do not meet these criteria should be repeated.

Interpretation of results

Negative results

Samples giving an absorbance less than the cut-off value are considered non-reactive in Murex HBsAg version 3.

Reactive results

Samples giving an absorbance equal to or greater than the cut-off value are considered initially reactive in the assay. Cut of value= NC mean + 0.05

Validation of results

The results are valid only when both the positive and the negative controls have passed. Before the results can be released they have to be double –checked by a second person authorized to release results.

Limitations of the procedure

1. The test procedure and interpretation of results must be followed.
2. This test has only been evaluated for use with individual (unpooled) serum. EDTA plasma or citrate plasma samples.
3. A negative result with an antigen detection test does not preclude the possibility of infection.
4. Non-repeatable reactive results may be obtained with any EIA procedure.

5. The most common sources of error are:
    a) Imprecise delivery of sample, conjugate or substrate into the wells.
    b) Contamination of substrate with conjugate
    c) Contamination with conjugates from other assays
    d) Blocked or partially blocked washer probes
    e) Insufficient aspiration leaving a small volume of wash fluid in the wells
    f) Failure to ensure that the bottom surface of the wells is clean and dry and that no air bubbles are present on the surface of the liquid in the wells before a plate is read.
    g) Failure to read at the correct wavelength or use of an incorrect reference wavelength
6. The use of highly haemolzyed samples, incompletely clotted sera, plasma samples containing fibrin or samples with microbial contamination may give rise to erroneous results
7. This test has not been evaluated for use with samples from cadavers.

VIII. Declaration

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

Name: Wolde Shure (BSc)

Signature _____ Date _____

This thesis has been submitted with our approval as university advisors.

1. Mr. Kassu Desta (PhD fellow)
   Signature _____ Date _____
2. Mr. Regassa Diriba (BSc,MSc)
   Signature _____ Date _____
3. Mr. Atsbeha G/Egzabixier (BSc, MSc)
   Signature _____ Date _____

Place: Addis Ababa University

Date of submission: March 2018.