WOLKITE UNIVERSITY

COLLEGE OF MEDICINE AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL LABORATORY SCIENCE

PREVALENCE AND ASSOCIATED FACTORS OF HEPATITIS B AND HEPATITIS C VIRUS INFECTIONS AMONG PATIENTS ATTENDING WOLKITE UNIVERSITY SPECIALIZED HOSPITAL, GURAGE ZONE, SOUTHERN CENTRAL ETHIOPIA

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WOLKITE- ETHOPIA

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Abbreviation and Acronyms

- Anti HCV Ab = Anti Hepatitis virus antibody
- CLD =Chronic liver disease
- ELISA=Enzyme linked immunosorbent assay
- HBCAg=Hepatitis B core antigen
- HBV= Hepatitis B virus
- HBsAg =Hepatitis B surface antigen
- HCV= hepatitis c virus
- IDU = injection drug users
- WHO = World Health Organization
- SOPS = Standard Operating Procedures

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Abstract

Back ground: Hepatitis B and c viruses account for a higher proportion hepatitis cases which is major causes of morbidity and mortality worldwide. Studies in Ethiopia showed that 11-12% and 12% prevalence of HBV in the general population and hospital adulated respectively. About 31% of medical wards patients mortality was due to chronic liver disease associated with HBV and HCV infection.

Objectives: The aim of the study was to assess prevalence and associated factors of HBV and HCV infection among patients ttending wolkite university specialized hospital ,Gurage zone, southern central Ethiopia.

Method and material: Cross sectional study was conducted on 310 patients in wolkite university specialized hospital . Socio-demographic data was collected using closed face to face interview question. Three to five militer of blod sample was collected for determination of HBVand HCV serostatus. SPSS version 20 statistical software packages was used for analysis. Descriptive statistics like frequencies and proportions was used to summarize the data. Bivariate and multivariate analyses was used to examine the relationship between the dependent variables and selected socio-demographic factors.

Results: The overall prevalence of HBsAg and anti-HCV among patients in wolkite university specialized hospital was 28(9.03%) and 27(16.074%) respectively. The detection rate of HBsAg and anti-HCV in female participants was 19(6.7%) and 24(18.1%), whereas it was 9(3.2%) and 5(10.9) among males respectively. Sex, chew chat,marital status were found to be associated to HBV and HCV infections.

Conclusion: This study showed intermediate prevalence of hepatitis B and hepatitis C virus 28(9.03%), 27(16.074%) respectively among study participants in wolkite university specialized hospital, gurage zone, SNNPR, Ethiopia.

CHAPTER -1 INTRODUCTION

1.1 Background

Hepatitis is an inflammation of the liver most commonly caused by viruses A, B, C, D and E .viral hepatitis is a serious public health problem affecting billions of people globally. Hepatitis B virus (HBV) and Hepatitis C virus (HCV) which accounts substantial proportion(1). Approximately 7% of the world population and 3% of the of people of world are infected by HBV and HCV respectively (1) and About 620,000 peoples dies from HBV infection caused Liver disease every year and about 350,000 peoples die from HCV infection related problems (2).In Africa one fifth of the population are chronic hepatitis B and C Viruses Carries and liver cancer is the major cause of death is the continent (3). It was reported that 12% of the hospital admitted and 31% of the medical world patients mortality in Ethiopia was due to chronic liver disease (CLD) and the major cause of CLD was viral hepatitis (4).Surveillances also show that prevalence of HBV in the general population was 2% in Ethiopia (6) Combined HBV and HCV infection is possible because they have common mode of transmissions (7). HBV and HCV can be transmitted through Exposure to infection blood, semen and other Body fluids and /or from infected mother to infants of the time of birth also can be transmitted through transfusion of HBV contaminated blood and blood products contaminated injection during medical procedure and injection drug use (8,9).

The main pathogenesis mechanism that brogue sign and symptoms of acute HBV and HCV infection is the host's cell mediated immunity and inflammation (10).

Sign and symptoms of acute HBV and HCV infection include fever, malaise and anorexiafollowed by nausea and vomiting, abdominal pain and chills possible that the classic enteric symptoms of liver damage by HBV and HCV infections (e.g. jaundice, dark urine and pale stool). HBV and HCV infections are diagnosed mainly by serologic technique either by ELISA or by rapid test kits.

The diagnosis of HBV is conducted by detection of viral antigen like HBsAg ,HBeAg and HBcAg and serum pattern of antibody to individual antigens. HCV is diagnosed by detection of anti HCV Ab Iin the serum. TO prevent and .control HBV and HCV infections there should be pre transfusion blood screening , avoiding life style that facilitate viral transmission ,avoid intimate contact with chronic carriers .for HBV vaccine is also available and prescribed for high risk groups and infants as special case (10) .

2 .1 Statement of the problem

Hepatitis B and C virus infection are major causes of illness and death worldwide particularly in developing countries (1).

An estimated Two billion (approx. 30%) of the world population have been infected with HBV and more than 360 million have chronic liver infection (3) About 620,000 people die as result of HBV infection Caused liver disease every year globally (3).

Estimation also shows About 3% of the world population is carrier of HCV and three to four million peoples are infected by HCV every year (3).

150 million peoples are infected by, are at a risk of cirrhosis, and are at a risk of developing cirrhosis and\or liver cancer and more than 350 peoples die; from HCV infection related liver disease every year (3)

According to the World Health Organization (WHO) report, globally, about 400 million and 170 million people are chronically infected with HBV and HCV, respectively (17). Approximately 1 million people die each year from hepatitis B and C virus infections (18).

Although remarkable advancements are developed, these viral infections become a serious health challenge of world including Africa. In Africa, one fifth of the populations are chronic hepatitis B and C Viruses Carriers and liver cancer is the major cause of death in the continent (29).

In sub-Saharan Africa the prevalence of HBV carriers ranges from 10 to 20 %(13). Ethiopia is one of the highest burden countries with high prevalence of HBsAg (35.8%) and anti-HCV (22.5%) among chronic liver diseases and is country without organized handling and controlling measures and the community have no good awareness regarding the infection. This is causing more burden of chronic liver disease (CLD) In Ethiopia due to viral hepatitis (14).

A population survey and studies done on volunteer blood donors in Ethiopia Shows that prevalence of HBsAg was 11-12% and the overall HBV infection rate was 76-79 % (11). HCV prevalence was reported 5% from the study done on general population in Ethiopia and it is associated with course and high maternal and fetal mortality rate (11).

The mortality impact HBV and HCV have a great impact on the economy as they mainly stick to the working age group (30-45) with a virtually mortality rate of 100% (15).

For this reason, both HBV and HCV infection are important public health problems but in for innately there is no adequate data for the prevalence and associated risk factors of HBV and HCV infection in wolkite town.

Therefore this study is intended to find out the prevalence of Hepatitis B and C Viruses infection and their associated risk Factors in Gurage zone among patients admitted to wolkite university specialized hospital.

The result that will be gotten from this study can be disseminated to concerned body to intervene the problem by talking preventive and control measures that indicated by the study result also the data originated from this study could be used as starting point for future further studies.

1.3 Significance of the study

The primary aim of this study is to produce information on prevalence of hepatitis B and C virus infection and their associated factors in Wolkite University specialized Hospital. It well supports and helps to create awareness for study participants about HBV and HCV infection and how to prevent and Control them.

The information also can be used for intervention of the problem and can be used by other researchers as a starting point for further studies.

CHAPTER TWO; Literature Review

2.1 prevalence of HBV and HCV infection

Hepatitis B and C viruses (HBV and HCV) are the major causes of liver diseases in the world. The relative importance of HBV and HCV infections varies greatly from one part of the world to another and changes over time (1). Worldwide, over two billion people are infected by HBV alone, of whom about one million die annually. Hepatitis C virus affects about 200 million people (2). However, in many countries its prevalence is expected to surpass that of hepatitis B, particularly among certain risk groups that are vulnerable to both hepatitis B and C viruses (3).

In Africa about one fifth of the population are Carriers of HBV and HCV (3). prevalence of HCV is estimated about 8% in west Africa while prevalence of HCV ,about 10% in some parts of Africa (3).Indeed About 20-25% of African population are chronically infected by Hepatitis Band c viruses and liver cancer prevalent among affected individuals (5) . With men in the 30-45 age group severely affected with almost 100%mortality rate (5).

In1993. A total of 13, 361 case of hepatitis B were reported to CDC (13) each year an estimated of 300,000 peoples in use are infected with HBV 915)

An epidemiologic study done from 1981 to 1988 in USA showed that the proportion of hepatitis B cases accounted for homosexual activity decreased by 62% as proportion of case acquired by hetero sexual activity increased by 38% (16).

In 2005, there were an estimated 19,000 new cases of hepatitis A, 15,000 new cases of HBV and 20,000 new cases of HVV infection were reported (16).

IN addition, at least 2.25 million people have chronic HBV infection and 3.2 -4 million people estimated to have chronic HCV infection, which can cause liver cirrhosis liver cancer, liver failure and death (16).

In South American the prevalence of HBsAg increases from south to north, from 0, 5 % to 1.1 %. In Argentina, Uruguay and Southern Brazil (1.5% to 3%) moderate rates (17).

A remarkably high prevalence has been Noticed in the Central Amazon region (5%-15%) as well as some areas in Colombia. Peru. Venezuela (17).

The world prevalence of HCV infection based on immune assay for Ab to HCV approximates 1% -2% in US.1.8percentage of the population was positive for Anti HCV Ab (18).

Sero prevalence of HCV Ab using second generation assay was around 0.3% in Australia 1.5 % to 3% in the Philippines Indonesia, Thailand as Vietnam 1% in Taiwan and China and as high as 3% -4% in Japan(19). Transmission of HCV to health workers by needle Stick was well documented and there was 2% to 4% seroconversion rate reported (20).

India showed that HBV infection was nearly 3.5% and chronic Hepatitis B is repented in more than ----of the chronic hepatitis case (21).

According to a study done in Pakistan prevalence of HBV among study participants was 3.17% and prevalence of HCV was reported to be 13 .0% the proportion of hepatitis B reactive cases was fairly similar across different age groups. However, the frequency of hepatitis C reactive cases significantly higher among individuals of age between 41to 51 years compared to individuals of age 21-30 years. After adjusting for age, prevalence among prisoners and injection drug users was higher than health care work prevalence. Prevalence of hepatitis B and C differed significantly between group prevalence of HBV and HCV lowest among health workers (HBV -1.0% and HCV 2.9% while prevalence of hepatitis Band C is highest among Injection drug users (IDUs) (HBV-5,7% and HCV -68.3% prevalence of hepatitis Band C is higher among security personnel compared with prisoners while no difference of HCV prevalence between these group injection drug users were 46 time more likely to be hepatitis C positive compared to Health Care Workers (22).

Study done in morocco reported that sera prevalence of anti HCV Ab was found to be 1.58% of these individual viral DNA was defected in 70,9%.prevalence of HCV through the age group was 0% ,o,77%, 0.92% ,17%^ and 3.12% for <20,[20-29],{30-39},[40-49]and >50 age respectively ,for those individual prevalence of HCV in female 1.48 which was lower than that of male 1,62% the overall than that of male 1.62% the overall prevalence of HBsAg was 1.81% and the prevalence was as follows across the age group 0% ,1.41% ,2.12% ,1.95%, and 1.71% ,for <20,[20-29][30-39],40-49] and >50 age respectively. HBsAg prevalence across gender was 2.29% for male and 0.93% in female subjects males with age group [30-39]and [40-49] year represent the highest sera prevalence of HBsAg found in this study 2.47% and 2.45% respect out of 23.578(23).

Study done in Hiroshima Japan reveals that prevalence of HBV infection was 2.78 per 100,000 persons per year and in China 10% of the total population was suffering from HBV infection (25).

Estimation shows that HBV infection patients in Pakistan could be 7 million and HBV seroprevalence was 4.3% and HCV seroprevalence was 6.5% of total studied population(26).

Another study in Pakistan showed the overall prevalence of HBVinfection within Study period was 4.6% and for HCV was 13.3% and dual infection was observed 3.9% of in the participants (27).

A cross sectional study was carried out In Nairobi, Kenya indicated that from the a total of 300 hundred infected individuals consisting of 129 (43%) males and 171 (57%) females 15.3% (46/300) were HIV-1 co-infected with either HBV or HCV or both, 10.3% (31/300) with HIV-1 and HCV and 6% (18/300) with HIV-1 and HBV infections. However, only three individuals (1%) were co-infected with the three viruses (HIV/HBV/HCV) (25).
According to study done on patients admitted with Chronic liver disease in public hospital in AA, prevalence of HBsAg was 35.8%. the prevalence is higher in males 38.2% than in female 31.8% the prevalence of HBV was highest 61% in age group of 28-37 year but none in >68 year age group ,more urban dwellers 28.3% were HBsAg positive than rule dwellers which was 7,5%. Married patients have higher prevalence than singles which 19.2% for married 12.5 for singles and 1.7% for widowed participants (24).

Among patients with CLD 22.5% were positive for anti HCV Ab ,the prevalence was higher in females 29.5% in male 18,4% the magnitude of HCV by age group was higher the age group of 48-57 was lowest in about 68 years old prevalence of anti HCV Ab progressively increased from 1.7% for age group 18-28years to 9.2% in age group 48-57 years than decline to Zero for age group>68 years old sero positivity of HCV was high among widows 50% than divorced (37.5%)(24).

Dual infection was detected in three patient out of 120 (2.5%).Of 120 subjects with CLD 58.3% had history of admission to hospitals ,of these 28.6% and 22.9% of 120 subjects with CLD 58% had history of admission to hospital of these 28.6% and 22.9% were positive for HBsAg and Anti HCV Ab respectively of these who admitted to hospital only 35.7% had history of blood transfusion and 30 % of them had history of Either minor or major surge of these who have history

of surgery 19.0% and 23.8% were positive for HBsAg and anti HCV Ab respectively. 42.5% of the study participants had history of dental extraction at health facilities and 34.2% were at home, and 6.7% of them in both at home and health facility of those dental extraction at health facility 35.2% were positive for HBsAg and 33.3 were positive for Anti HCV Ab .those who had Tooth extraction at health facilities were 2.95 times more likely to have infection with HCV than the counter parts participants who had contact with jaundiced patient were 20.8% from those 44% were positive for HBsAg and 24% were positive for anti HCV AB (24).

A cross-sectional study conducted in Gojjam zones, northwest Ethiopia indicated that among 481 adults 7.5% of the adult population were infected with either HBV, HCV and HIV.The prevalence of HBV was 15(3.1%) and for HIV was 16(3.3%). The sero-prevalence of HCV was five (1.0%). HIV-HCV co-infection was found to be two (0.4%) (28).

CHAPTER THREE: Objectives

3.1 General Objective

- To assess the prevalence and associated factors of HBV and HCV infection among patients attending Wolkite University specialized Hospital Gurage zone southern central Ethiopia

3.2 Specific Objectives

- To determine prevalence of HBV infection
- To determine prevalence of HCV infection
- To asses associated factors of HBV and HCV infections

CHAPTER –FOUR Methodology and Materials

4.1 Study area, design and period

The study was conducted in Wolkite university specialized Hospital, It is located 158km south west of Addis Ababa on the way to Jimma road in the Southern nation nationalities Region state, of Ethiopia, Gurage zone. Gubre sub city, 14km away from Wolkite town and -Gurage zone is geographically located in the rift valley region at a latitude and longitude of 8°17'N37°47'E and an elevation between 1910 and 1935 m above sea level.

The climatic condition of the town is Weyna Dega and provides service for patients that reside in different locations. The major source of income of farmer is crop farming.

Wolkite university specialized hospital is one of public specialized hospital in the zone. The curative service consists of an inpatient and outpatient department. Obstetric, surgical, medical, pediatric HIV/AIDS, laboratory, x-ray/ultrasound and emergency service are available.

4.1.1 Study design and period

A cross Sectional study was conducted on study subjects in wolkite university specialized Hospital from June to August 2021.

4. 1.2 Population

4.1.2.1. Source population

All patients admitted to Wolkite University specialized Hospital from June1 to August30 2021

4.1.2.2 Study population

The study population were all patients tested to Hepatitis B and C infection in wolkite university specialized hospital from june1 to august 30 2021

4.1.1.3 Study subject

The study population were all patients tested to Hepatitis B and C infection in Wolkite University specialized hospital who fulfill the inclusion criteria during the study period.

4.2 Eligibility criteria

4.4.1 Inclusion criteria

All voluntary patients who are admitted to Wolkite University specialized hospital during the study period was included in the study.

4.4.2 Exclusion criteria

All patients who are admitted to Wolkite University specialized hospital with acute illnesses and those who have mental illness, seriously ill and unable to give consent was also excluded from the study.

4.3 Sample size and sampling technique

4.3.1 Sample size Determination

Standard calculation was used to determine the sample size,by using single proportion population. By considering prevalence of HBV 35.8% and HCV 22.5% from study done in Addis Ababa public hospitals, we used p of HCV(22.5%) = 0.225 ,because it is rare relative to HBV prevalence

- We use 5% margin of error and 95% confidence interval

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

n= the minimum sample size

p= an estimate prevalence rate for the population

d= margin of sampling error tolerated

$z_{1-/2}$= is standard normal variable at (1-)%confidence level and is mostly 5% i.e. with 95% confidence level

$$n = \frac{(1.96)^2 x\ 0.23\ (0.77)}{(0.05)^2}$$

n= 272

The minimum sample size is used as the sample size of this study (n= 272)

Then adding 10% for none response rate, were include a total of 310 study participants

4.3.2 Sampling technique

Systematic random sampling techniques was used to select study subjects from Wolkite University specialized hospital up to the final sample size was reached.

4.3.3 Study variables

4.3.3.1 Dependent Variables

1) HBsAg serostatus

2) Anti HCV Ab sero status

4.3.3.2 Independent variable

Socio demographic character like age, sex, marital status, occupational status, religion, educational status, ethnicity residence and clinical character like jaundice,blood transfusion.

Operational definition of terms

Multiple sexual behavior:-a behavior of individuals with multiple sexual relationship with multiple partners (e.g. with commercial sex workers).

Drug intake:-refers intravenous injection of drug

Alcohol intake:- drinking of alcoholic drinks more frequently in every day or weak more than allowed which may leads unconscious mind and decreased awareness of oneself and ones deed.

Chewing chat;- diffened as those individual addicted of chewing chat.

4.4 Data collection and data collection tool

4.4.1 Data collection

The variables included socio-demographic characteristics, smoking, nutrition, alcohol consumption, history of liver disease, vaccination to HBV, potential risk factors (exposure to blood or body fluid in the eye, nose, needle stick and sharp injury, training on infection prevention and the wearing of gloves) would be collected from patients using pretested interviewer administered questionnaire. There would be strict supervision during data collection and checks for completeness each day-structured format was also utilized for recording clinical and laboratory measurements

4.4.2 Blood sample collection, handaling and Specimen processing

About 5ml of venous blood sample was collected into tubes aseptically after obtained written consent from study participants and the blood samples was with unique identification numbers, clotted, and placed into in biohazard bag and seal. Serum was separated by centrifugation at 3000 r/min for 5 min and placed on tube rack after centrifuged.The serological tests were performed sing hepatitis B surface antigen and HCV rapid test kits at the study site (hospital).

Principle of test

As a test sample flows through the membrane assembly of the test device, the coloured monoclonal anti-HBsAg-colloidal gold conjugate complexes with the HBsAg in the sample. This complex moves further on the membrane to the test region where it is immobilized by another monoclonal anti-HBsAg antiserum coated on the membrane leading to formation of a pink-purple coloured band which confirms a positive test result. Absence of this coloured band in the test region indicates a negative test result. This test strip has a sensitivity of 96.2% and specificity of 99.3%.

4.5 Data processing and analysis

Data were entered using Epidata version 3.1 and exported to SPSS version 20 statistical packages for cleaning and analysis. Data presented using descriptive and inferential statistics. Chi-square and Fisher exact tests were used to assess the association between outcome and independent variables. Bivariate and multivariate logistic regression analysis was employed at a 95% confidence interval to determine the presence of an association between explanatory variables and

the seropositivity of HBsAg. P-value at < 0.05 at 95% CI was taken statistically significant and the Hosmer Lemeshow goodness of fit was used for model fitness.

In addition, multivariate logistic regression was performed to account for possible confounding variables and all variables with a P-value < 0.25 in the bivariate analysis were included in the multivariate logistic regression analysis.

4.6 Data quality management

Controls (known positive and known negative reagents) was used to control the process and tests were repeated to check if there is a random error. The questionnaire was standardized and supervisors were clarify the pretest.

4.7 Ethical consideration

The study was ethically cleared from Wolkite University, college of medicine and Health sciences, Department of medical laboratory Sciences and Permission was obtained from wolkite university specialized hospital. Written informed consent was also obtained from each study participant and was kept confidential.

4.9 Dissemination plan

The research result will be submitted to Wolkite university, college of Medicine and Health Science, Department of medical laboratory sciences to evaluate the research and the information will be informed to the Gurage zone health bureau.

CHAPTER -Five RESULT

5.1. Socio-Demographic Characteristic of Patients

Three hundred thirty patients were interviewed, among majority were female264(85.2%) . The mean age of the respondent was 29 (SD 12.1). Among the respondents, 131(42.3%), 152(49.0%),27(8.7%), and 0% were Orthodox, Muslim, Protestant, and, other respectively Regarding the occupation 44(12.2%), 95(30.6%), 98(31.6%), 64(20.6%), 9(2.9%), were , Government employee, Student, House wife, Farmer and marchent respectively. As to the marital status of respondents, majority are married 178(57.4%),single 119(38.4%),divorced 13(4.2%) (Table 1).

Table-1 socio demographic distribution among 310 study the participants in wolkite university specialized hospital 2021

NO	Variables	Category	Frequency	Percentage
1	Sex	F	264	85.2
		M	46	14.8
2	Age(Years)	10-28	118	38.1
		29-47	165	53.2
		Above 47	27	8.7
3	Marital status	Single	119	38.4
		Married	178	57.4
		Divorced	13	4.2
	Educational status	Illiterate	60	19.4
		Read & write	69	22.3
		Primary school	36	11.6
		Secondary school	84	27.1
		College (university)	61	19.7

5	Religion	Muslim	152	49.0
		Orthodox	131	42.3
		Protestant	27	8.7
		Others	0	0.0
6	Occupational Status	Government worker	44	14.2
		Student	95	30.6
		Housewife	98	31.6
		Merchant	64	20.6
		Farmer	9	2.9
7	Residance	Urban	165	53.2
		Rural	145	46.8

5.2. Seroprevalence of HBsAg and Anti-HCV Antibody

Out 310 participants,28(9.03%) and 27(16.074%) were positive for HBsAg and anti-HCV rapid tests respectively. There was about 12 mixed infections (Hepatitis B and C)(Fig 1). The detection rate of HBsAg and anti-HCV in female participants was 19(6.7%) and 24(18.1%), whereas it was 9(3.2%) and 5(10.9) among males respectively. High proportion of HBsAg positivity was detected among aged groups (10– 28 and 29-47; 11 (9.3%) and 29-47;15(9.1%) years old). The positivity rate for both HBsAg,11(9.2%) and anti-HCV,11(9.2%) among unmarried participants was higher than among participants with other marital statatus. Participants who were educated at secondary level showed a high prevalence of HBsAg8(28.5%) and anti-HCV10(37.03%) (Table 2 and 3).

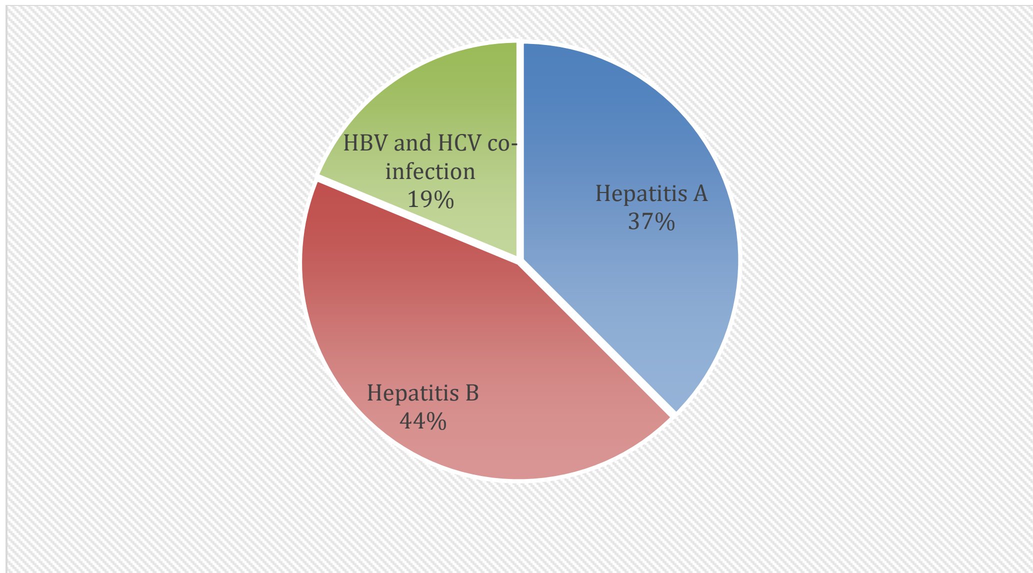

Figure 1 prevalance of HBsAg and HCV coinfection among patients in wolkite university specialized hospital 2021

5.3 Risk factors associated with prevalence of HBsAg

The proportion of HBsAg positivity was higher among male participants,19.6 % (9/37) than among female participants, 7.2% (19/245), the difference was statistically significant ($P = 0.010$). Regarding the marital status, 9.0% (16/178) of the married, 15.4% (2/13) of the divorced and 9.2%(11/119) of the single participants was positive for HBsAg (Table 2).

Data from residence showed that 9.7% (16/155) positive for HBsAg were live in the Urban and 8.3%(12/145) positive for HBsAg were live in rural area. Participants who had tooth excration have a slightly higher positivity of HBsAg, 11.1% (14/126) compared to participants who had not tooth excration 7.6%(14/184). About 9.1% (28/308) of the who had not multiple sex partners were positive for HBsAg. Among respondents who had chew chat some times have higher HBsAg 33.3%(6/18) than among chewing chat always and not chewu chat 0%,7.6%(o/4,22/288) respectively, the difference was statically significant(COR=0.165,CI 95%(0.057-0.483) P=0.001). Drinking alcohol, prediagonised for hepatiatis, blood tansfusion, exposed to jaundice secretion and other proposed risk factors were not associated with HBV infection (Table 2).

Table -2 Frequency distribution of associated factor of Serostatus for HBsAg among participants in wolkite university specialized hospital 2021

Variables	Category	HBsAg		COR	CI(95%)	P	AOR	CI(95%)	P
		Pos(%)	Neg(%)						
Age	10-28	11(9.3)	107(90.7)	0.778	(0.162,3.734)	0.754			
	29-47	15(9.1)	150(90.9)	0.800	(0.172,3.713)	0.776			
	Above 47	2(7.4)	25(92.6)	1					
Sex	M	9 (19.6)	37(80.4)	1					
	F	19(7.2)	245(92.5)	0.319	(0.134,0.757)	0.010	2.112	(0.576,7.741)	0.250
Marital status	Married	16(9.0)	162(91.0)	1.841	(0.375,9.043)	0.452			
	Single	10(8.4)	109(91.6)	1.982	(0.384,10.216)	0.414			
	Divorced	2(15.4)	11(84.6)	1					
Residence	Urban	16 (9.7)	149(90.3)	0.840	(0.384,1.841)	0.663			
	Rural	12 (8.3)	133(91.7)	1					
Diagnosed for Hepatatis	Yes	0(0)	10(100)	0.000	0.000,0.000	0.999			
	No	28(9.3)	272(90.7)	1					
Tooth excration	Yes	14 (11.1)	112(88.9)	0.659	(0.303,1.435)	0.293			
	No	14(7.6)	170(92.4)	1					

Drink alcohol	Yes	3(20.0)	12(80.0)	0.370	(0098,1.400)	0.143	1.266	(0.229,6.994)	0.787
	NO	25(8.5)	270(91.5)	1					
Sex with multiple	Yes	0(0)	2(100)		0.000,0.001	0.999			
	No	28(9.1)	280(90.9)	1					
Exposed to jaundice excretion	Yes	1(33.3) 2(66.7)		0.193	(0.017,2.197)	0.185	0.151	(0.013,1.818)	0.137
	NO	27(8.8)	280 (91.2)	1					
Chew chat	Always	0(0)	4(100.0)	0		0.999			
	Some tmes	6(33.3)	12(66.7)	0.165	(0.057,0.483)	0.001	0.235	(0.049,1.123)	0.070
	None	22(7.6)	266(92.4)						
Injected medical drug	Yes	21(10.8)	174(89.2)	0.537	(0.221,1.306)	0.170	0.632	(0.248,1.612)	0.337
	No	7(6.1)	108(93.9)	1					
History of Blood transfusion	Yes	4(14.8)	23(85.5)	0.533	(0.170,1.668)	0.280	1.877	(0.600,5.875)	0.28
	No	24(8.5)	259(91.5)	1					

5.4 Risk factors associated with anti-HCV antibody prevalence

The proportion of anti-HCV (7.2%) among female participants was lower than male participants (10.9%), but the difference was not significant (COR = 1.573, CI 95% 0.556–4.445, $P = 0.393$). Statistically, significant association could be seen in among married participants with HCV infection (COR = 5.040, CI 95% =1.195–21.258, $P = 0.028$ compared to single and divorced participants, respectively. Only 10.3% (13/126) anti-HCV positive participants had a history of multiple sex with others; however, no significant association with HCV infection was found ($P = 0.165$).

Adjusted odds ratio was calculated using multivariate logistic regression analysis between different marital status and sex and HCV infection. The association remains significant among the married participants(AOR = 0.198, CI 95% = 0.047–0.837, $P = 0.028$) and whereas sex was not significant with HCV infection ($P = 0.393$). others factors like residence ,blood transfusion,injected medical drug,exposed to jaundice secretion factors are not associated with HBV infection as depicted in (Table 3).

Table -3 Frequency distribution of associated factor and Serostatus for HCV among participants in wolkite university specialized hospital 2021

Variables	**Category**	**Hcv status**		**COR**	**CI(95%)**	**P-value**	**AOR**	**CI(95%)**	**P-value**
		Pos(%)	**Neg(%)**						
Age(years)	10-28	11 (9.3)	107(90.7)	0.778	(0.162,3.734)	0.754			
	29-47	11(6.7)	154(93.3)	1.120	(0.234,5.355)	0.887			
	Above 47	2(7.4) 25(92.6)		1					
sex	M	5 (10.9)	41(92.8)	1					
	F	19(7.2)	245(89.1)	1.573	(0.556,4.445)	0.393			
Marital status	Married	10 (5.6) 168(94.4)		5.040	(1.195,21.258)	0.028	4.592	(1.035,20.373)	0.045
	Single	11(9.2) 108(90.8)		2.945	(0.704,12.328)	0.139	2.001	(0.435,9.207)	0.373
	Divorced	3 (23.1)	10(76.9)	1					
Residence	Urban	11(6.7) 154(93.3)		1.379	(0.598,3.181)	0.451			

	Rural	13(9.0)	132(91.0)	1					
Diagnosed for HBV	Yes	0 (0)	10(100.0)		0.00	0.999			
	No	24(8.0)	276(92.0)	1					
Tooth excration	Yes	13(10.3)	113(89.7)	0.553	(0.239,1.277)	0.165	0.452	(0.177,1.154)	0.025
	No	11 (6.0)	173(94.0)	1					
Drink alcohol	Yes	3(20)	12(80.0)	0.307	(0.080,1.172)	0.084			
	NO	21()7.1)	274(92.9)	1					
Sex with multiple	Yes	0(0)	2(100.0)			0.999			
	No	24((7.8)	284(92.2)	1					
	Yes	0(0)	3(100.0)		0.000,0.000	0.999			

Exposed to jaundice excretion	NO	24 (7.8)	283(92.2)	1					
	Always	0(0)	4(100.0)	0.000	0.000,0.000	0.999			
	Some tme	3(16.7)	15(83.3)	0.000	0.000,0.000	0.999			
	None	21 (7.3)	267(92.7)	1					
Injected medical drug	Yes	18(9.2)	177(90.8)	0.541	(0.208,1.406)	0.207	0.543	(0.199,1.480)	0.233
	No	6(5.2)	109(94.80	1					
Blood transfusion	Yes	4(14.8)	23(85.2)	0.437	(0.138,1.388)	0.160	0.384	(0.112,1.315)	0.128
	NO	20(7.1)	263(92.9)	1					

Chapter 6- Discussion

viral hepatitis is a serious public health problem affecting billions of people globally. Approximately 7% of the world population and 3% of the of people of world are infected by HBV and HCV respectively (1) and About 620,000 peoples dies from HBV infection caused liver disease every year and about 350,000 peoples die from HCV infection related problems (2). Although direct comparison is difficult because of limited published data in Africa, we have tried to compare our results with other results found in other countries, but originated from Africa.

The prevalence of hepatitis B surface antigen (HBsAg) in the present study among patients in wolkite university specialized hospital was 9.03%, which was classified as an intermediate prevalence.The probable reasons for this intermediate prevalence might be due to a lack of knowledge about the transmission and the prevention of ways of the infection, having multiple sexual partners, and a large number of study participants were not vaccinated.

In addition, sex and chewing chat have been identified as common risk factors for HBV infection. The current finding was lower than reports from Ethiopia conducted at national level which is 35.5% (30).The variation could be due to differences in the study period, or sample size difference. The current finding was lower than reports from South Sudan among high- risk groups, 11% (18), and 26% (31). Similarly, it was less than studies done in South Sudan, 12.3% (32), and central Sudan, 17.5% (33). Our result was congruent with prevalance of hepatitis B previous studies done in different African immigrants in the USA: Sudanese, 9.1% and Somalian, 8.3%, whereas it was higher than Kenya, 5.9%, Tanzania, 4.1% Burundi, 3.1% and Rwanda immigrants 3.0% (34). However, it was higher than studies done in among refugees in Gambella, Ethiopia(7.03%), and study conducted in Gojjam zones, northwest Ethiopia(3.1%)(29).similarly , it was higher than studies done in Gondar among street dwellers, 10.9%, among young males in all regions of Ethiopia, 10.8% (39, 40), and South Sudan study among out patients in six clinics, 26.0% [30]. The above variations might be due to differences in study groups, level of exposure to the risks, test methodology, origin of country, and sample size. The world prevalence of HCV infection based on immune assay for Ab to HCV approximates 1% -2% in US.1.8percentage of the population was positive for Anti HCV Ab (18).

According to the World health organization (WHO) classification, the prevalence of hepatitis C can be graded as high (> 3.5%), moderate (1.5–3.5%), and low (< 1.5%) (35). Based on the above

evidence, ourtstudy revealed high prevalence of anti-HCV, (16.074%), which might be because blood transfusion,injected medical drug , or it could be due to the exposure of HCV in their country of origin. This study was lower than previous studies from patients with Chronic liver disease in public hospital in AA,(35.8%)(24). This study was higher than studies conducted in Ethiopia at different risk groups: among medical waste handlers 1.0% (16) among military personnel 0.2% (18) and 0.2% among blood donors (36). These variations could be due to differences in the study group, test methodology, study setting, and sample size. From finding of our study there is no consensus on the role of gender as a risk factor for HBV and HCV infection . The proportion of HBsAg positive rate was higher among male participants, 19.6% (9/46) than female participants, 7.2% (19/264). Similarly, anti-HCV positivity rate was higher among male participants, 10.9% (5/46) than female participants, 7.2% (19/ 264), however, the difference was not statistically significant (P = 0.393). In contrast, a higher prevalence of HCV among females was reported in morocco and in public hospital in AA (23,24).

HBV and HCV share a common route of transmission and can coexist with each other. Coinfection with evidence of chronic HBV and HCV seems to result in more severe liver disease than either infection alone, with an increase risk of liver cancer (37) and probably an increase risk of fulminant hepatitis when superinfection with HCV on the background of chronic HBV.

The prevalence of HBV and HCV dual infection in this study was higher (3.9%) than fndings reported by other studies in patients on haemodialysis (3.5%),however less than patients undergoing organ transplantation (8%), and injection drug users (42.5%) (38). the difference in the magnitude of co-infection among these studies and our study could be attributable to difference in the study population, geographical variation, and difference in methodology.

Limitations of the study

Financial reasons(lack of rapid kits) made it impossible to perform all diagnostic markers of hepatitis, which would have been helpful to differentiate chronic infection from acute infections and to determine viral load. In addition, small sample size in our study might limit the association of risk factors with HBV and HCV, and the cross-sectional nature of this study makes it difficult to attribute causality to the observed associations. Furthermore, the respondents might not give true answer like multiple sex partener with other and drink alcohol.

Conclusion

In general,the prevalence of hepatitis B and C viruses was 28(9.03%), 27(16.074%) respectively among study participants in wolkite university specialized hospital, gurage zone, SNNPR, Ethiopia. The prevalence of hepatitis C virus was found to increase in married particpitants, but no other risk factors for either virus were identified as significant. Prevalence of HBsAg was singnificantly associated with sex and chewing chat.

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ANNEX 1-English version questionnaire

INFORMATION SHEET

Good morning/good afternoon. My name is________________. We came from Wolkite University College of Health Sciences. We would like to ask you few question about your socie demographic character and factors associated with hepatatis. This will help us to determine prevalance and identify associated risk factor of hepatitis B and hepatitis C viruses based on your answer to our questions.You have full right to refuse, withdraw or completely reject part or all of your participation in the study. But we encourage your full participation as the answers you give on this form are very important to this study and to plan ways prevent hepatitis viruses.

We are kindly requesting your willingness to participate in the study and to give us valuable information. We guarantee that all information you give me will be kept confidential. Participation in this research is based on your voluntary willingness.

A. Are you voluntary? A. Yes B .No

Finally, you ask your cooperation and patience until we finish our questions

Date; -----------

Code; -----------

CONSENT FORM

I have read the information sheet above and clearly understood the purpose and anticipated benefit of the research. I hereby need to assure with your signature below without any coercion or forceful act by the research team, have decided to voluntarily participate in the study

CODE__ __Signature _____ Date___________

Data collector's Name ___________ Signature ____________________

Supervisor's Name Mr Daniel,Mr Admasu,Mr Temasgen(Msc in MLS)______ _____________Signature _________

Questionnaire part 1 socio-demographic characteristics

Background information

1. Sex

a. male b .female

2. Age in years__________

3. Residence

a. Urban b. Rural

4. Marital Status

a. Married b .Non married c. divorced

5. Educational Status

a. Illiterate b. Read and write c. primary d. secondary e. college and above

6. Occupation

a. Governmental b. Housewife c. Merchant d. Students e. Farmer

7. Religion

a.orthodox b.muslim c.prostant d.others

Part II: UESTIONARE RELATED TO ASSOCIATION FACTOR

No	Questions	Choice of respondent	Skip
1	Have you ever been diagnosed with HBV and HCV?	A. yes B. no	
2	Have you do Sex more than one partner?	A. yes B. no	
3	Have you ever done tooth extraction?	A. yes B. no	
4	Do you drink alcohol?	A. yes B. no	
5	Have ever exposed jaundiced secretion	A. yes B.NO	
6	Have been in blood transfusion	A. yes B. No	
7	Have you been injected in medical procedure ?	A. yes B. No	

Declaration of Investigator

We, the undersigned students of Medical laboratory sscience, declare that this final research was our original work in partial fulfillment of the requirement of degree in medical labarotory science to our best knowledge.

Name of investigators:	Signature	Date
1. Dechasa adugna	----------------------	---------
2. Asefa Meragu	------------------------	-----------
3. Bekal Sirabizu	--------------------------	------------
4. Bashir Adem	----------------------------	------------