ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF MEDICINE



DEPARTMENT OF PEDIATRIC AND CHILD HEALTH

Magnitude and Risk Factors of HBV and HCV infection among Children and Adolescents in Tikur Anbesa Specialized Hospital Pediatric and Adult GI Clinic, Addis Ababa

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A Research thesis to be submitted to college of Health Science ,Addis Ababa University, For partial fulfillment of Specialty Certificate training on Pediatric and Child health

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Declaration

I am a final year pediatric and child health resident and declare this is the thesis on magnitude and associated risk factor of HBV and HCV infection for partial fulfillment to certificate of pediatric and child health specialty of 2026

Dr. Mitiku Kuma GSR/4299/15 ----------

Approval

I hereby certify, by my signature, that the above-mentioned student has completed this research work from beginning to end under my guidance and with my support in obtaining the information.

Advisor – Dr. Abebe Habtamu ----------

Abstract

Title: *Magnitude and Risk Factors of Hepatitis B and C Among Children and Adolescents in Ethiopia*

Objective: This study aimed to assess the prevalence, identify risk factors, and explore challenges related to Hepatitis B (HBV) and Hepatitis C (HCV) infections among children and adolescents in Ethiopia.

Study Design: We did this study at Tikur Anbessa Specialized Hospital. We looked at records and asked people questions over a period of six to twelve months. We did blood tests to see if people had Hepatitis B or Hepatitis C.

Results: We found out that a lot of kids and teenagers in Ethiopia have Hepatitis B. Not as many have Hepatitis C but it is still a problem. Some of the reasons people get these diseases are because their mothers had it when they were born they did not get the Hepatitis B vaccine they got bad medical care and they did not know about the disease. We also saw that not many people get checked for Hepatitis B and C and it is hard for some people to get treatment.

Proposed Solutions: We think it is very important to make sure all babies get the Hepatitis B vaccine when they are born. We also need to check people for Hepatitis B and C especially pregnant women and kids. Doctors and nurses need to be more careful when taking care of patients so they do not spread the disease. We need to tell people more about Hepatitis B and C so they know how to protect themselves. It is also very important to make sure people can get the treatment they need and to make hospitals better at taking care of people with Hepatitis B and C.

Hepatitis B and C are still problems for kids and teenagers, in Ethiopia. We need to make sure people get vaccinated get checked for the disease and get treatment if they need it. We also need to tell people more about Hepatitis B and C. If we work together we can prevent people from getting these diseases and help people who already have them.

Keywords: Hepatitis B, Hepatitis C, kids, teenagers, Ethiopia, how many people have it things that make you more likely to get it vaccine, checking for the disease health

Abbreviations

- HBV – Hepatitis B Virus
- HCV – Hepatitis C Virus
- HBsAg – Hepatitis B Surface Antigen
- Anti-HCV – Hepatitis C Antibody
- MTCT – Mother-To-Child Transmission
- WHO – World Health Organization
- MOH – Ministry of Health
- HIV – Human Immunodeficiency Virus
- DAA – Direct-Acting Antiviral
- ARV – Antiretroviral
- EPI – Expanded Program on Immunization

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Introduction

1.1. Background of the study

Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) infections are serious health issues in Africa, including Ethiopia. These infections significantly contribute to chronic liver disease, cirrhosis, and liver cancer. Children and adolescents in Africa face heightened risks due to factors like transmission from mother to child, limited vaccination coverage, and unsafe medical practices.

In Ethiopia and other African countries, HBV is particularly prevalent because of mother-to-child transmission, childhood transmission, and poor access to screening and treatment. While HCV rates are generally lower than those of HBV, it remains a major issue due to unsafe medical practices and a lack of awareness.

Africa has one of the highest rates of these infections worldwide, with millions of children and adolescents affected by HBV and HCV. According to the World Health Organization (WHO), Sub-Saharan Africa has some of the highest HBV prevalence rates, with 6-8% of the population chronically infected.

In Ethiopia, the prevalence of HBV ranges from 4% to 10%. Some studies show even higher rates among certain populations. Mother-to-child transmission is a major infection route in Ethiopia, especially since birth-dose vaccination is not widely used. Child-to-child transmission is also common, driven by cultural practices such as scarification, sharing personal items, and low awareness.

HCV prevalence in Africa is lower than HBV but still significant, ranging from 1% to 5% in different countries. In Ethiopia, HCV prevalence is about 0.9% to 3%, with higher rates in high-risk groups. For children, the primary transmission method is from mother to child, while risky behaviors in adolescents, like unsafe injections and tattoos, raise the risk.

Several factors contribute to the spread of HBV and HCV among children and adolescents in Ethiopia and Africa. One major cause of chronic HBV infection is the lack of routine screening for pregnant women. Many African countries, including Ethiopia, do not have a universal HBV birth-dose vaccination program.

Children in Africa often share items like razors and toothbrushes, which raises the risk of HBV transmission. Cultural practices like traditional scarification, circumcision, and ear piercing with unclean tools also promote the spread of HBV.

Despite availability, HBV vaccination coverage is low in many African countries, including Ethiopia. Delayed vaccination schedules further heighten the risk of early

infections. Poor infection control in healthcare settings, including unsterilized equipment and unsafe blood transfusions, adds to HBV transmission risks. Traditional healing practices using unclean instruments also present dangers.

Unprotected sex is an increasing worry for HBV transmission in adolescents. Although less prevalent in Ethiopia than other regions, injecting drug use is an emerging risk factor.

While less common than HBV, HCV can also spread from mother to child during childbirth. Co-infection with HIV raises the risk of HCV transmission. The use of unclean syringes and medical tools is a major source of HCV transmission in healthcare settings. Blood transfusions without adequate screening can lead to new infections. Tattooing, scarification, and traditional circumcision with non-sterile instruments are widespread in many African countries, including Ethiopia. Additionally, unregulated ear piercing and dental procedures contribute to HCV spread.

Engaging in injecting drug use or receiving tattoos or piercings from unregulated sources raises the risk of HCV infection. A lack of awareness about HCV transmission among young people leads to risky behaviors.

To combat these issues in Ethiopia and Africa, we need to strengthen the HBV vaccination program, including a universal birth-dose vaccine. Screening for HBV among pregnant women and providing antiviral treatment when needed is crucial. We also need to raise awareness about HBV transmission risks and safe healthcare practices. Ensuring that medical procedures are safe and that infection control measures are in place at healthcare facilities is vital. Improving blood screening programs can help prevent transmission through transfusions. Educating healthcare workers and the public about HCV transmission is essential. Finally, implementing harm-reduction programs for adolescents engaging in high-risk activities is important.

1.2. Statement of the problem

Hepatitis B and Hepatitis C are problems for peoples health all around the world especially in places like sub-Saharan Africa, including Ethiopia. These infections can spread through blood. Can cause very bad liver diseases like cirrhosis and liver cancer making people very sick for a long time and even causing death.

In Ethiopia things are really tough for kids and teenagers. A lot of things contribute to this like people not knowing much about Hepatitis B and Hepatitis C not being able to get to hospitals in areas doctors not following safe rules and not enough people getting vaccinated and checked for these infections. Hepatitis B is more common. It affects around 4 to 10 percent of the people while Hepatitis C is not as common but is still a big deal.

One of the worries is when moms pass Hepatitis B to their babies. A lot of women do not get checked and not all babies get the vaccine they need when they are born. So a

lot of kids get infected when they are very young. Things like using tools that are not clean and doing traditional things like scarification also make it more likely for people to get infected.

It is hard for people to get checked and treated especially if they live outside of cities. A lot of people do not know they are infected until they get very sick. Even though there are treatments they are often very expensive and people cannot get them. Also people do not know much about how to prevent and treat Hepatitis B and Hepatitis C.

Kids and teenagers are especially in danger because they might get infected when they are young they might not get. They might do things that are not safe when they are older. At the time Ethiopias healthcare system does not have enough money, supplies or trained doctors and nurses which makes it harder to prevent and control Hepatitis B and Hepatitis C.

Overall, Hepatitis B and Hepatitis C are still causing a lot of health and money problems in Ethiopia. Even though we can prevent and treat these infections there are still gaps, in vaccination, checking, awareness and getting care and these are big problems that need to be solved quickly. Hepatitis B and Hepatitis C need attention and action to prevent and control them.

1.3. Significance of the Study

This study checks how many kids and teens in Ethiopia have Hepatitis B (HBV) and Hepatitis C (HCV) what makes them get these infections and the problems in stopping them from spreading. The study is important not for health but also for policy, society and the future of the people in Ethiopia.

Hepatitis B (HBV) and Hepatitis C (HCV) are often not noticed, in young people. By finding out how many kids and teens have HBV and HCV and what makes them get these infections we can make people aware and help prevent them through vaccination and screening.

Finding these infections early is key to avoid liver problems and cancer later in life.

* These findings can help make health policies and programs

* They can help more kids get vaccinated the first dose of Hepatitis B (HBV) vaccine at birth.

* They can also help make screening systems stronger and support planning by the Ethiopian Ministry of Health and the World Health Organization.

* This study can show where healthcare services are lacking and suggest ways to improve access in rural areas.

In the run stopping and managing HBV and HCV early can reduce the big health and economic problems caused by liver diseases. It can also help reduce stigma by making people understand these infections better and be more supportive to those who have them and their families. This study helps the effort to stop hepatitis from being a health threat by 2030.

It fills in gaps in data on kids and teens in Ethiopia and can help make treatment more accessible by finding barriers and solutions. The study, on Hepatitis B (HBV) and Hepatitis C (HCV) can guide health policies and programs to improve healthcare services.

1.4. Scope of the Study

This study is about Hepatitis B and Hepatitis C. It wants to know how many children and teenagers in Ethiopia have Hepatitis B and Hepatitis C. The study will look at kids from birth to fourteen years old. Teenagers from fifteen to nineteen years old. It will also try to understand what puts them at risk of getting Hepatitis B and Hepatitis C.

The study will happen in Ethiopia. It will look at both cities and rural areas.. Most of the information will come from Tikur Anbessa Specialized Hospital. The hospital has records of patients. The study will use these records to get information. The study will also ask people questions to get information. This might not show the picture of Ethiopia.. It will give us some idea of what is happening in the country.

The people in the study will be children and teenagers. Some of these kids will be at risk of getting Hepatitis B and Hepatitis C. The study will pay attention to kids who are born to mothers with Hepatitis B or Hepatitis C. It will also look at kids who have had medical care or have been to traditional healers. Teenagers who do things will also be part of the study.

The study will look at what's happening now with Hepatitis B and Hepatitis C. It will collect information over six months to one year. The study will use blood tests to see if someone has Hepatitis B or Hepatitis C. It will also try to find out how many kids will have long-term health problems because of Hepatitis B or Hepatitis C.

The study will focus on Hepatitis B and Hepatitis C. It will look at how these diseasesre spread from mother to child. It will also look at how kids get Hepatitis B and Hepatitis C from medical care or from doing risky things. The study will see how many kids get the Hepatitis B vaccine when they are born. It will also look at how easy it's for kids to get checked for Hepatitis B and Hepatitis C. The study will see if kids and teenagers know about Hepatitis B and Hepatitis C. It will also look at how these diseases affect peoples health and money in the run.

The study will get information from hospital records. From asking people questions.. The study might have some problems. Sometimes hospital records are not complete.. Sometimes people do not tell the truth, about things they do.

1.5. Delimitation of the Study

This study is about Ethiopia and it looks at a few specific places mostly using information from the Tikur Anbessa Specialized Hospital. There are some areas that're really far away or hard to get to that might not be included, which means some people who are at high risk might not be represented.

This research is about children from birth to fourteen years old and teenagers from fifteen to nineteen years old. It does not include adults so the results will not show what is happening with people. Also some groups that are really vulnerable like children who live in refugee camps or institutions might not be fully included.

This study just looks at what's happening right now it does not follow people over time. So it cannot show what happens in the term or why something is happening.

The study will mainly use blood tests and questionnaires to collect information. These methods are useful. They might not catch infections that are just starting or they might not have all the details about someones health. Also when people answer questions about things that're sensitive like behaviors that are not safe they might not always tell the truth.

This study looks at the risks that we already know about like when a mother passes something to her child or when medical practices are not safe or when people do things that are not good for them.. It might not look at all the possible risks, like things that have to do with the culture or the environment.

We will not have all the details about how a disease's progressing or about complications like liver cancer. This limits what we can understand about the term effects on peoples health.

We also have to think about the fact that we do not have time, money or resources which can affect how many people we can include in the study, where we can go and what kind of tests we can do.

Finally we have to think about things like making sure people understand what they are getting into keeping their information private and dealing with stigma, which can affect whether people participate and the quality of the information we get especially when we are talking about sensitive topics, like the Ethiopia study.

1.8. Conceptual Framework

This study assumes that **HBV and HCV infections** among children and adolescents are influenced by multiple risk factors, which lead to infection depending on healthcare access and awareness.

Independent variables (Risk factors):

- Mother-to-child transmission
- Unsafe medical/traditional practices
- Risky behaviors (adolescents)
- Low vaccination coverage
- Poor awareness and socio-economic status

Mediating factors:

- Access to healthcare (screening, treatment)
- Vaccination availability
- Health awareness

Dependent variables (Outcomes):

- HBV and HCV prevalence
- Chronic infection and complications

LITERATURE REVIEW

2.1. Introduction

Hepatitis B and Hepatitis C viruses are the main burden for children and adolescents and remain important causes of chronic liver disease. Children and adolescents are at risk for hepatitis; therefore, elimination efforts are a key factor in early life infection, leading to a chronic state and a high risk of developing cirrhosis and hepatocellular carcinoma. For critically reduce the burden of infection and chronic outcome should be maternal screening, timely birth dose HBV vaccine, safe blood and injection practice.(1)

2.2. Global burden of HBV and HCV

Lots of studies from around the world have shown that fewer kids and teenagers are getting sick with diseases over the last twenty years especially since vaccines became available. However in some places a lot of people are still getting sick.

Globally the number of people getting Hepatitis B has gone down a lot between 1990 and 2020. These days many children have to live with Hepatitis C. This usually happens when they get it from their mother at birth. This is called transmission and it is the main way kids get Hepatitis C if their mother has it. If the mother is not treated there is a 5-10 percent chance that the baby will get Hepatitis C. The number of people with Hepatitis C varies from place to place. Depends on the risk group, such as kids born to infected mothers kids who get transfusions and kids who live with someone who has Hepatitis C. Now it is hard to get kids with Hepatitis C the medical care they need. According to some reviews there are gaps, in finding kids with Hepatitis C and getting them the care they need.

2.3. Regional burden of HBV and HCV

In Ethiopia, a systematic review and primary studies report variable HBV seropositivity depending on the population and age group. A meta-analysis was performed in Ethiopia, and fall in the low to intermediate endemicity range in the general population, but in HIV-infected children, adolescents living with HIV have high exposure and co-infection rates. There is also subnational heterogeneity and variable vaccine coverage or immunity among older children. (4)

In Africa, a systematic review on HCV reported relatively low to moderate seropositivity overall but a higher incidence in high-risk groups, such as transfused children, those with medical exposure, and children born to infected mothers. In Ethiopia mainly primary studies was done like cohorts on HIV confected with HCV (5)

2.4. Associated Risk factors

There are things that can increase the risk of getting HCV and HBV for kids. Let us look at the categories.

A. Vertical Transmission

When a mother has HBV she can pass it to her baby. This is a problem if the baby does not get the HBV birth dose and HBIG. A lot of babies who get HBV from their mothers will have it for the rest of their lives.. If the baby gets the birth dose vaccine on time and the mother gets treatment it can really reduce the risk of getting HBV.

For HCV the baby can get it from the mother before it is born. This happens to 5-10% of babies but it is more likely if the mother also has HIV. There is no medicine that can stop HCV from being passed to the baby like there is for HBV. The best way to prevent it is for the mother to get treated before she gets pregnant.

B. Household and close contact exposure

Kids can get HBV if they are around someone who has it like a family member or caregiver. This can happen if they touch something that has the virus on it like a cut or a razor. Even if the person with HBV does not look sick they can still pass it to others.

C. Health care related exposures

Sometimes kids can get HBV or HCV when they go to the doctor or hospital. This can happen if they get a shot with a needle that has not been cleaned properly or if they get blood from someone who has the virus. Before they started checking blood for HBV and HCV a lot of kids got infected from blood transfusions.

D. Traditional practice and community exposure

In some places people do things that can increase the risk of getting HBV and HCV. For example some people get scars or circumcisions in ways that're not safe. These practices can spread the virus.

E. HIV coinfection and Immunosuppression

Kids who have HIV are more likely to get HBV and HCV. This is because their bodies are already weakened from fighting the HIV virus. Some studies have shown that kids, with HIV are more likely to get HBV and have a time fighting it off.

F. Immunization gaps and Vaccine induced immunity decline

The HBV vaccine is very important. Some kids do not get it when they are supposed to. This means they might not be protected from the virus. Even if they do get the vaccine it might not work well if they get it when they are older. Some studies have shown that the

vaccine does not work well in the long term so we need to make sure kids are getting the vaccine and that it is working properly.

2.5. Measurement issues and heterogeneity

The prevalence of HBV and HCV varies by age group which younger children always lower if took birth dose of vaccine effectively, by sampling frame which community or hospital, by assay which occult infections and by study quality. There are a publication gaps for many pediatric subpopulations (12)

2.6. Public health implications

There is expanded antenatal screening for HBV and ensuring prompt HBV birth dose top priorities to prevent vertical transmission (13)

Improving pediatric case finding that integrate HBV\HCV testing in maternal-child and HIV care platforms to identify infected children (14)

Maintain high routine HBV vaccine must be continued, sero-protection in older cohorts, and consider catch up campaigns where immunity is low. (15)

Every health care safety and blood safety be addressed via strengthen infection prevention, safe injection and transfusion. (16)

Fill the research gaps by doing high quality population based pediatric studies (17)

Objective

3.1. General Objective:

To assess the magnitude and identify the associated risk factors of Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) infections among children and adolescents.

3.2. Specific Objectives:

1. To determine the prevalence of HBV and HCV infections among children and adolescents in the study area.

2. To identify socio-demographic factors (e.g., age, sex, residence, parental education) associated with HBV and HCV infections.

3. To assess behavioral and environmental risk factors (e.g., history of injections, dental procedures, blood transfusion, traditional practices like circumcision or tattooing) linked to HBV and HCV transmission.

4. To examine the role of maternal and perinatal factors (e.g., maternal HBV/HCV status, birth delivery method, immunization history) in the transmission of HBV and HCV.

5. To evaluate the level of awareness and knowledge about HBV and HCV among adolescents and their caregivers.

4. Research Methodology

4.1. Study Site

Tikur Anbessa Specialized Hospital, also known as Black Lion Hospital is an important hospital in Addis Ababa, Ethiopia. It was started in 1964. It is the main hospital where students from Addis Ababa Universitys School of Medicine go to learn. Tikur Anbessa Specialized Hospital has special services that you cannot find in other hospitals in Ethiopia whether they are public or private.

Tikur Anbessa Specialized Hospital was first called Prince Mekonnen Memorial Hospital when it was opened in 1961. Later in 1976 it was renamed to Tikur Anbessa Hospital. Over time Tikur Anbessa Specialized Hospital has become the hospital in Ethiopia where people are sent for special care and it has about 700 beds, for patients.

4.2. Study Period

The study was conducted from January 2020 to January 2025 G.C, covering a period of past 5 years.

4.3. Study population

4.2.1. Target Population

All children and adolescents (typically aged 0–18 years) at risk or affected by liver diseases, including HBV and HCV.

4.3.2. Source Population

All children and adolescents who visited the Pediatric Gastroenterology (GI) Clinic at TASH during the study period January 2020 to January 2025 G.C.

4.3.3. Study Population

The doctors at the TASH Pediatric GI Clinic looked at all the children and teenagers who came in when they were zero to nineteen years old. They checked the kids who had skin, dark pee, pain on the right side of their belly felt tired had a fever felt sick, to their stomach threw up had a big liver that hurt and had liver problems. The doctors thought these kids might have Hepatitis B. They also thought some kids might have Hepatitis C if they felt tired felt bad over had pain on the right side of their belly had liver problems and the doctors had all their medical records. The doctors checked these kids for

Hepatitis B and Hepatitis C by doing blood tests that look for Hepatitis B surface antigen and anti-Hepatitis C antibody.

4.4. Study Design

A cross-sectional hospital-based study was conducted to determine the prevalence and associated risk factors of Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) among children and adolescents attending the Pediatric Gastroenterology Clinic at Tikur Anbessa Specialized Hospital (TASH), Addis Ababa.

4.5. Inclusion and Exclusion Criteria

4.5.1. Inclusion Criteria

- Children and adolescents aged 0–18 years.
- Attended the Pediatric GI Clinic at TASH during the study period.
- Suspected HBV when a patient presents with jaundice, dark urine, right upper quadrant pain, fatigue ,fever, nausea ,vomiting , tender hepatomegaly and elevated liver enzymes
- Suspected HCV in patients with fatigue , malaise, right upper quadrant pain , elevated liver enzymes
- Had documented HBV and/or HCV serology results.
- Consent given by parents/guardians or assent by participants where appropriate via phone

4.5.2. Exclusion Criteria

- Incomplete medical records regarding hepatitis status.
- Patients or guardians who decline participation.

4.6. Sample Size Determination

N- total population- 100

P-0.5 CI – 95%(Z-1.96) d- 0.05

no= $\frac{Z^2p(1-p)}{d^2}$ ------$\frac{3.8416*0.5*0.5}{0.05^2}$ = 384.16

n¬= $\frac{no}{1+\frac{no-1}{N}}$ 384.16\ 1+384.16-1\100 =80 so sample size is **80**

4.7. Sampling Technique

Simple random technique

4.8. Data Collection Methods and Analysis

Data was collected using structured data abstraction forms from medical records. Data was entered into Epi Data and analyzed using SPSS version XX or Stata. Descriptive statistics used to calculate prevalence. Bivariate and multivariate logistic regression was conducted to identify independent risk factors. A p-value < 0.05 was considered statistically significant.

4.9. Variables

4.9.1. Dependent Variables:

- HBV infection status (positive/negative)
- HCV infection status (positive/negative)

4.9.2. Independent Variables:

- Age
- Sex
- Vaccination status
- History of blood transfusion
- Surgical history
- Parenteral medication use
- Family history of hepatitis
- History of hospital admission
- HIV status

4.10. Data quality Control

To make sure the information we collected is correct and trustworthy we took some steps to control the quality of the data. We gave the people who collected the data and their supervisors a lot of training on what we wanted to learn from the study the tools we used to collect the data, who could be in the study and who could not and things we had to think about to be fair.

We tried out the tools we used to collect the data on a group of people about 5 to 10 percent of the total number of people in the study at a place that was similar to where we were actually going to collect the data like another clinic for kids.

We did this to make sure the tools were clear, suitable and consistent. We made any changes that were needed before we started collecting the data. One person was in

charge of watching over the data collection every day making sure everything was complete and consistent and helping out if anyone needed it. We put the data into a computer program called Epi Data or another program twice to make sure we did not make any mistakes when we entered the information. Then we checked the two sets of data to make sure they were the same. At the end of every day the people doing the research looked at the data to find and fix any problems away. We also checked some of the data against the records of the people, in the study to make sure it was accurate and to catch any mistakes that might have been made when we collected the data from the medical records

4.11. Ethical Considerations

Ethical clearance obtained from the Institutional Review Board (IRB) of Addis Ababa University. Informed consent obtained from parents/guardians via phone. Confidentiality was maintained by using anonymized codes instead of patient names.

4.12. Data Dissemination

The study results came out like this: a final report was sent to the Department of Pediatrics and Child Health at Addis Ababa University. We also gave a summary to the TASH Pediatric GI Unit so they can make their programs better. The findings of the study were talked about at meetings in our country and other countries where people discuss pediatric infectious diseases and public health. We wrote papers to be published in medical journals. We shared the results with people who need to know like the Ministry of Health and those who make health decisions so they can make good plans for hepatitis testing and shots, for kids and teenagers.

5. Result

5.1. Sociodemographic status

A. sex of the participants

	N	%
Male	47	58.8%
Female	33	41.3%

Table 1- sex of the participants

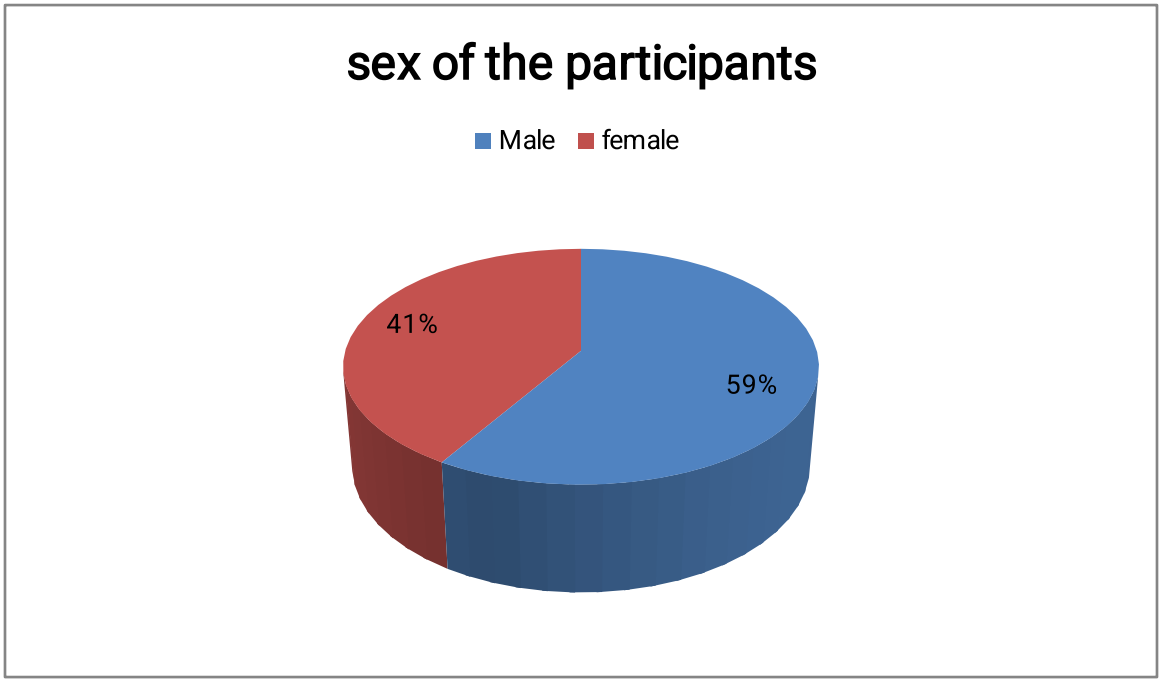


Fig.1. sex of the participants

Among the cases 58.8% is male and the rest female

B. Age of the participant

	N	%
28 days to 1 year	1	1.3%
one to 3 year	5	6.3%
3 year to 5 year	4	5.0%
6 year to 8 year	14	17.5%
9 year to 11 year	11	13.8%
12 year to 14 year	5	6.3%
15 year to 18 year	40	50.0%

Table 2. age of the participant

The mean age is 6.55 , median age is 7.5 and mode 8 ,1st and 3rd quartaile is 5 and 8

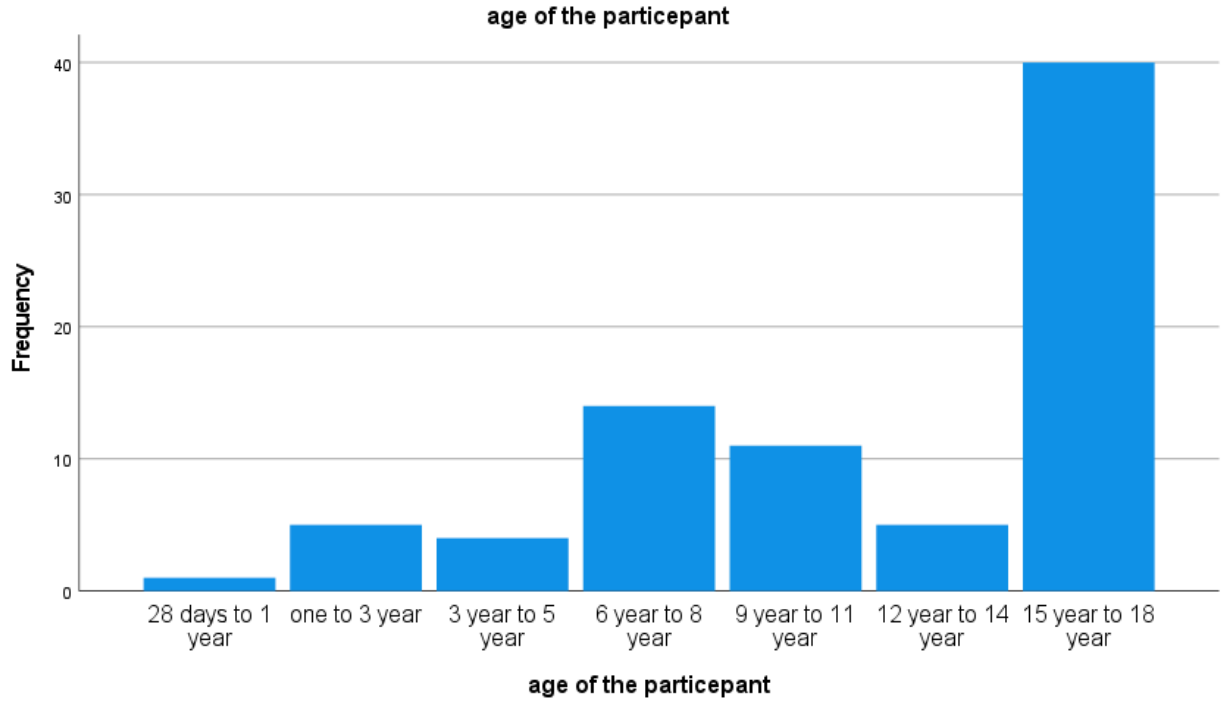


Fig 2. Age of the participant

5.2. Clinical status of the participant

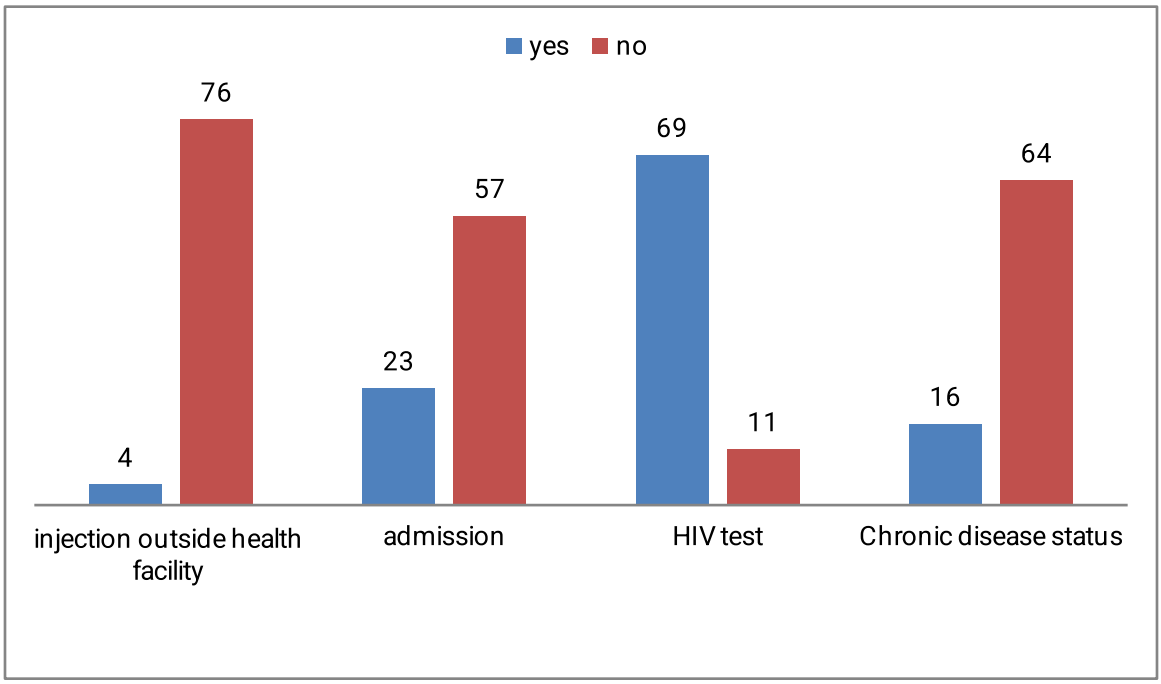


Fig3. Clinical profile of the participant

95% of the case did not get any injection outside the health facilities. 71.3 %(57) had the history of hospital admission. Among the admission most of the cases admitted 2-3 times (52%), 34.7% once time and 13.3 % more than 4 times. From the total cases 86.3 %(69) has been tested HIV, among this 11.3% was positive. 16 cases had chronic disease, from this 9 (56.3%) RVI, 6(37.5%) cardiac and 1(6.2%) others (Birth Asphyxia, Cerebral Palsy).

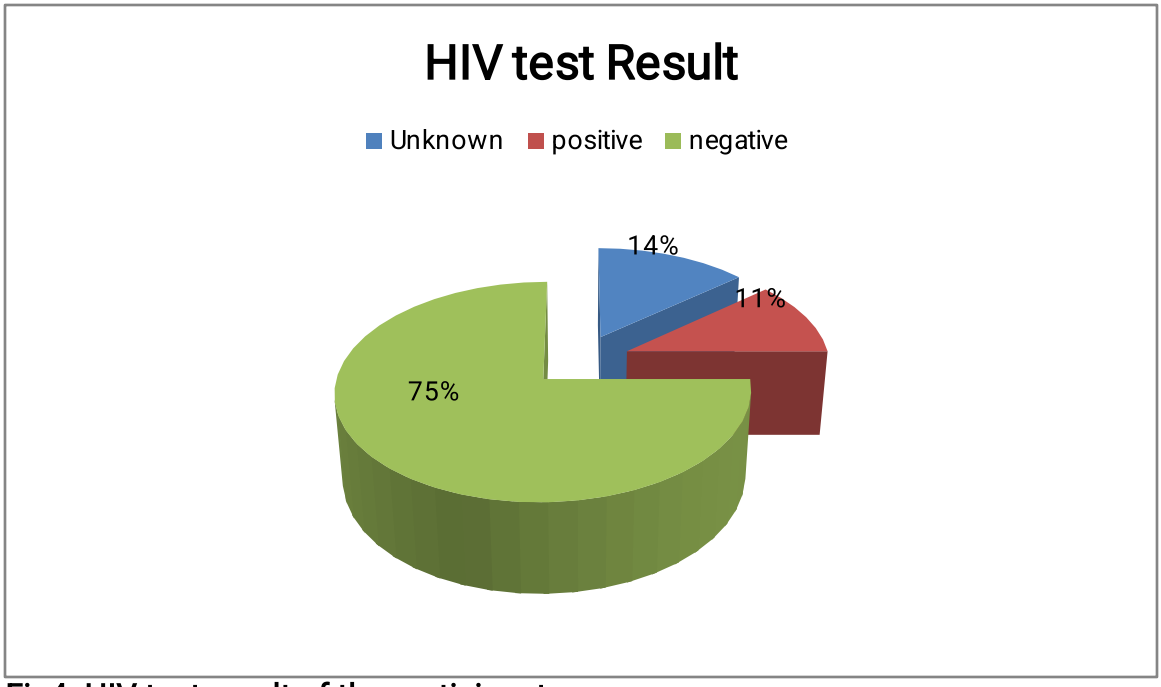


Fig4. HIV test result of the participant

Table3. Clinical profile of the participant

Statistics

		history of injection out of health facility	has the child ever been admitted to a hospital	number of admission	has the child been tested for HIV	if yes result of the test	has the child been diagnosed with any chronic disease	if yes specify
N	Valid	80	80	80	80	80	80	80
	Missing	0	0	0	0	0	0	0
Mean		1.95	1.71	1.51	1.14	1.61	1.80	.71
Std. Error of Mean		.025	.051	.099	.039	.081	.045	.165
Median		2.00	2.00	1.00	1.00	2.00	2.00	.00
Mode		2	2	1	1	2	2	0
Std. Deviation		.219	.455	.886	.347	.720	.403	1.477
Variance		.048	.207	.785	.120	.519	.162	2.182
Skewness		-4.209	-.957	1.474	2.146	-1.553	-1.529	1.795
Range		1	1	3	1	2	1	6
Percentiles	25	2.00	1.00	1.00	1.00	1.25	2.00	.00
	50	2.00	2.00	1.00	1.00	2.00	2.00	.00
	75	2.00	2.00	2.00	1.00	2.00	2.00	.00

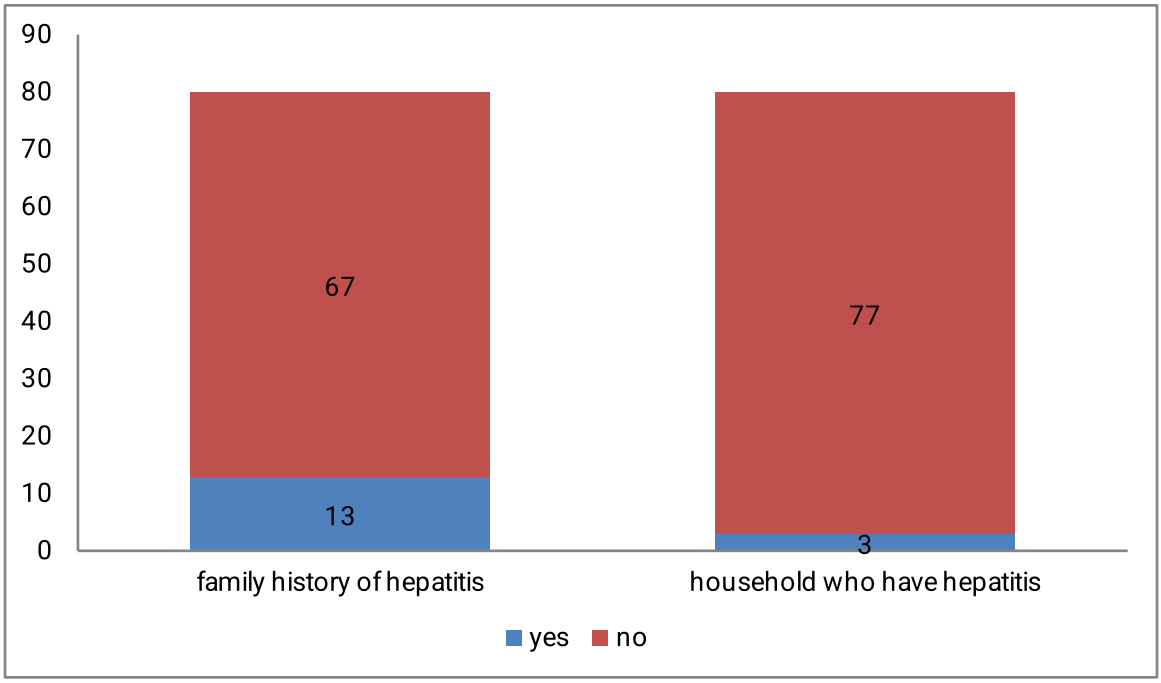


Fig5. Family and household hepatitis status

Among the participant's family 13(16.25%) family member had Hepatitis, from those 7(53.8%) mother, 13.8 %(2) father, sibling and other (grandmother) each of them

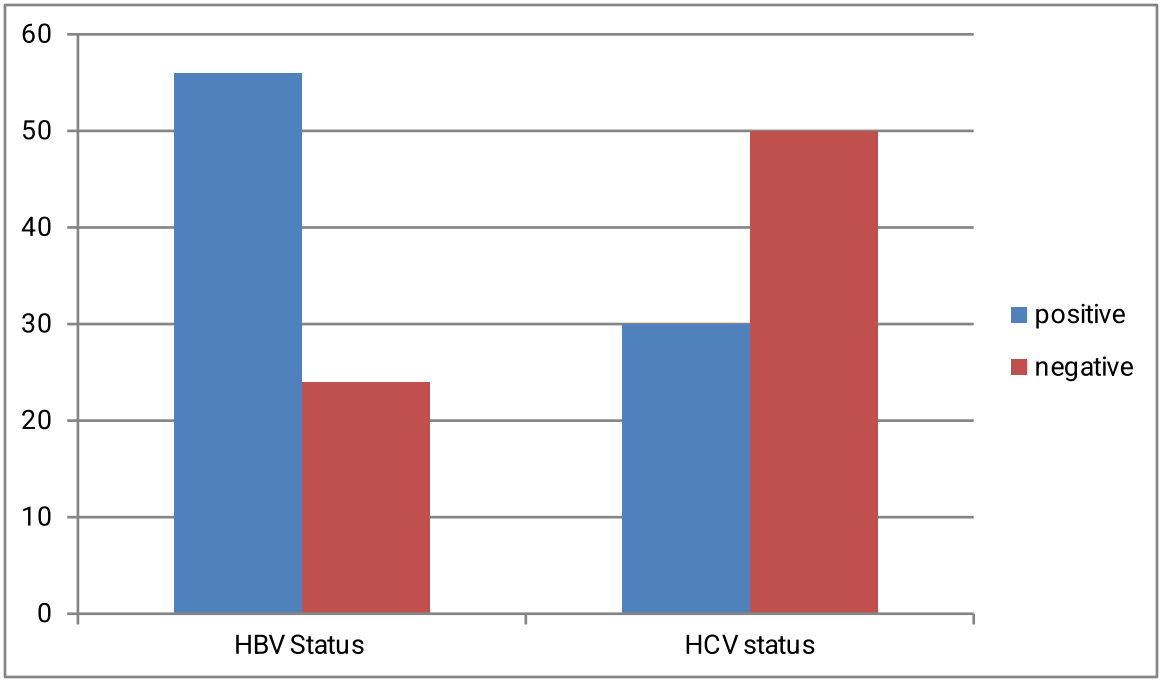


Fig6. HBV and HCV status of the participant

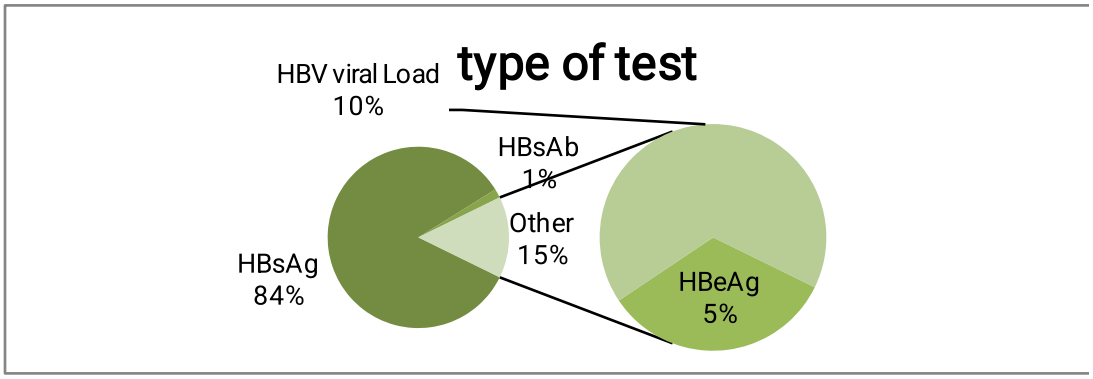


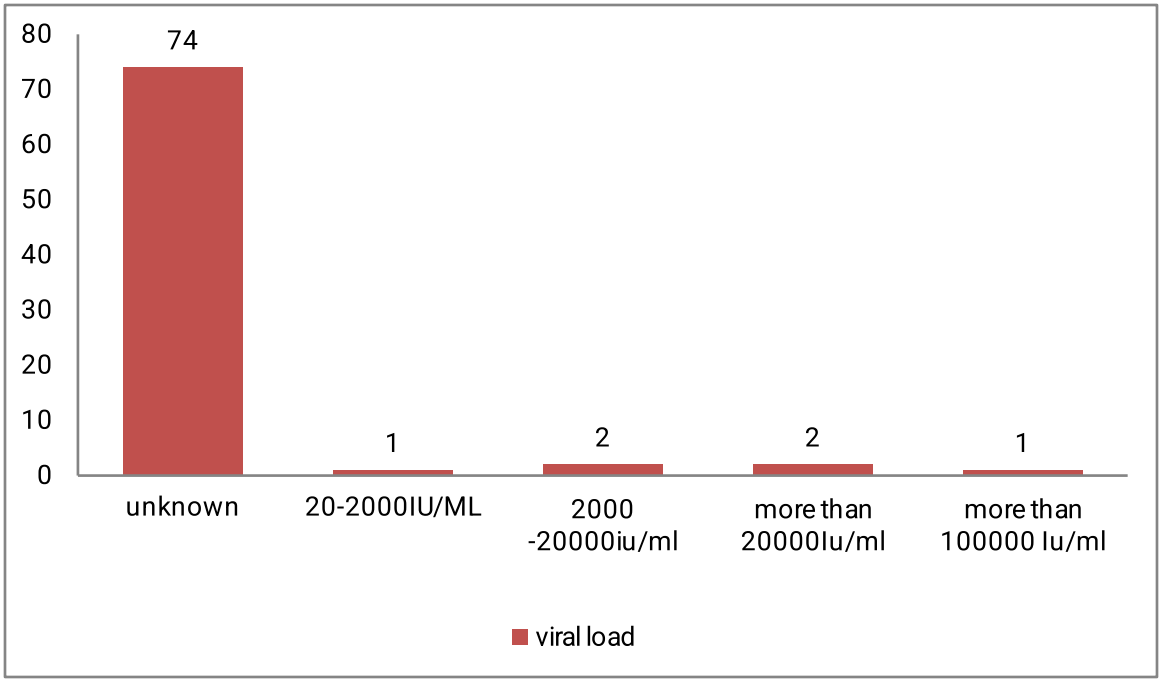
Fig 7. Type of test was done for HBV

Table 4- viral load of HBV

viral load of HBV

	N	%
Unknown	74	92.5%
20-2000 iu/ml	1	1.3%
2000-20000 iu/ml	2	2.5%
more than 20000 iu/ml	2	2.5%
more than 100000 iu/ml	1	1.3%

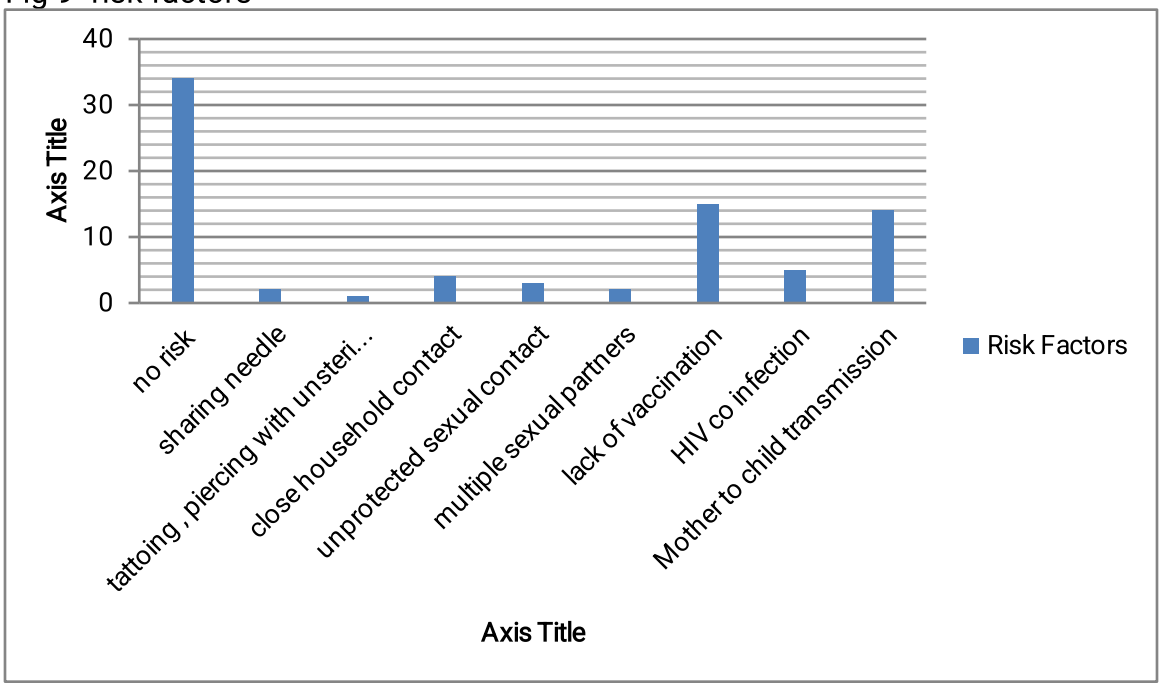
Fig 8- viral load of HBV



5.4. Associated risk factor

Most of the Cases diagnosed by viral marker but only 6 cases had viral load. Among the cases only 8 cases were treated which is 10% , 4 cases of HCV treated by sofosbuvir/declatasvir , 3 cases of HBV treated by tenofovir/lamivudine and 1 cases by TDF.

Fig 9- risk factors



Most common identified risk factors were lack of vaccination and mother to child transmission which accounts 18.8% and 17.5% respectively.

5.5. Association to HBV and HCV

Table 6- sex of the participant * age of the participant Cross tabulation

		age of the participant							
		28 days to 1 year	one to 3 year	3 year to 5 year	6 year to 8 year	9 year to 11 year	12 year to 14 year	15 year to 18 year	Total
sex	male	1	5	4	6	7	2	22	47
	female	0	0	0	8	4	3	18	33
Total		1	5	4	14	11	5	40	80

Table 7 - occupation of the parents * level of education of the parents Cross tabulation

Count

	level of education of the parents					
	not attend	primary school	secondary school	Diploma	degree	Total

occupation of the parents	Farmer	11	7	3	4	1	26
	government employee	1	3	3	8	11	26
	Merchant	1	1	7	5	5	19
	Teacher	0	0	0	0	4	4
	Banker	0	0	0	0	3	3
	health professional	0	0	0	1	1	2
Total		13	11	13	18	25	80

Table 8- test and blood transfusion

Count

		test was done				
		0	HBsAG	HBsAB	HBeAg	Total
history of blood transfusion	yes	2	5	0	1	8
	no	22	47	1	2	72
Total		24	52	1	3	80

Table 9- blood transfusion and HCV status

Count

		HCV status		
		yes	no	Total
history of blood transfusion	yes	3	5	8
	no	27	45	72
Total		30	50	80

Table 10- injection and HBV status

Count

		HBV status	
		positive	Total
history of injection out of health facility	yes	4	4
	no	76	76
Total		80	80

Table 11- history of injection out of health facility * test was done

Crosstab

Count

		test was done				
		0	HBsAG	HBsAB	HBeAg	Total
history of injection out of health facility	yes	0	4	0	0	4
	no	24	48	1	3	76
Total		24	52	1	3	80

Table 12- HCV status and chronic disease

Count

		HCV status		
		yes	no	Total
has the child been diagnosed with any chronic disease	yes	10	6	16
	no	20	44	64
Total		30	50	80

Table 13-family history of hepatitis and HCV status

Count

		HCV status		
		yes	no	Total
is there a known history of hepatitis in the family	yes	10	3	13
	no	20	47	67
Total		30	50	80

Table 14- House hold viral hepatitis status and HCV status

Count

		HCV status		
		yes	no	Total
has anyone in the house hold ever been diagnosed with HBV/HCV	Yes	1	2	3
	no	29	48	77
Total		30	50	80

Table 15- HBV vaccine and test result

Count

		test was done				
		0	HBsAG	HBsAB	HBeAg	Total
has the child received the HBV vaccine	don't know	2	5	0	0	7
	yes	19	37	1	3	60
	no	3	10	0	0	13
Total		24	52	1	3	80

Table 16- test and risk factor

Count

		test was done				
		0	HBsAG	HBsAB	HBeAg	Total
risk factor that was identified	none	11	22	0	1	34
	sharing needle	0	2	0	0	2
	tattoning ,piercing,scarification with unsterli tools	1	0	0	0	1
	close household contact	0	4	0	0	4
	unprotected sexual contact	1	0	1	1	3
	multiple sexual partners	2	0	0	0	2
	lack of vaccination	4	11	0	0	15
	HIV co infection	2	3	0	0	5
	mother to child	3	10	0	1	14
Total		24	52	1	3	80

Table 17- HBV and sex

Count

		HBV status		
		positive	negative	Total
sex of the paticepant	male	33	14	47
	female	24	9	33
Total		57	23	80

Table 18- age and HBV status

Count

		HBV status		
		positive	negative	Total
age of the particepant	28 days to 1 year	1	0	1
	one to 3 year	3	2	5
	3 year to 5 year	3	1	4
	6 year to 8 year	10	4	14
	9 year to 11 year	10	1	11
	12 year to 14 year	4	1	5
	15 year to 18 year	26	14	40
Total		57	23	80

Table 19 -1history of blood transfusion * HBV status

		HBV status		
		positive	negative	Total
history of blood transfusion	yes	6	2	8
	no	51	21	72
Total		57	23	80

Table 20- history of injection out of health facility * HBV status

		HBV status		
		positive	negative	Total
history of injection out of health facility	yes	4	0	4
	no	53	23	76
Total		57	23	80

Table 21- **has the child ever been admitted to a hospital * HBV status**

		HBV status		
		positive	negative	Total
has the child ever been admitted to a hospital	yes	10	13	23
	no	47	10	57
Total		57	23	80

if yes result of the test * HBV status

		HBV status		
		positive	negative	Total
if yes result of the test	unknown	9	2	11
	positive	3	6	9
	negative	45	15	60
Total		57	23	80

Table 22- **has the child been teseted for HIV * HBV status**

		HBV status		
		positive	negative	Total
has the child been teseted for HIV	yes	48	21	69
	no	9	2	11
Total		57	23	80

		HBV status		
		positive	negative	Total
has the child been diagnosed with any chronic disease	yes	6	10	16
	no	51	13	64
Total		57	23	80

Table 23- has the child been diagnosed with any chronic disease * HBV status
Table 24- is there a known history of hepatitis in the family * HBV status

	HBV status	Total

		positive	negative	
is there a known history of hepatatis in the family	yes	4	9	13
	no	53	14	67
Total		57	23	80

Table 25- has anyone in the house hold ever been diagnosed with HBV/HCV * HBV status

		HBV status		
		positive	negative	Total
has anyone in the house hold ever been diagnosed with HBV/HCV	yes	2	1	3
	no	55	22	77
Total		57	23	80

Table 26- has the child received the HBV vaccine * HBV status

		HBV status		
		positive	negative	Total
has the child recevied thr HBV vaccine	dont know	5	2	7
	yes	42	18	60
	no	10	3	13
Total		57	23	80

Table 27- risk factor that was identified * HBV status

		HBV status		
		positive	negative	Total
risk factor that was identifed	none	23	11	34
	sharing needle	2	0	2
	tattoning ,piercing,scarification with unsterli tools	0	1	1
	close household contact	4	0	4
	unprotected sexual contact	2	1	3
	multiple sexual partners	1	1	2
	lack of vaccination	11	4	15
	HIV co infection	3	2	5
	mother to child	11	3	14
Total		57	23	80

Discussion

This study looked at the characteristics of children who got hepatitis B virus infection. The study included 80 children. The results give us information about who gets hepatitis B how it is spread and what other health problems these children have.

Sociodemographic Characteristics

Most of the children in the study were boys at 58.8 percent and girls made up 41.3 percent. This is similar to studies of children with infectious diseases, where more boys go to the doctor or are more likely to get sick.. When we looked at the ages of the boys and girls we did not find a big difference.

Half of the children were between 15 and 18 years old. This means that most of the hepatitis B cases were found when the children were teenagers. This could be because the infection was not found earlier which is common with hepatitis B because it often does not cause symptoms when children are young. It is also possible that more teenagers get tested for hepatitis B.

A little than half of the children at 53.8 percent lived in rural areas. This could mean that children in areas are more likely to get hepatitis B because they do not have access to good healthcare.

Parental Occupation

The parents of the children had levels of education and jobs. Some parents were farmers and some worked for the government. 31.3 Percent of the parents had a university degree. We found that the type of job a parent had was related to their level of education. This is important because it can affect how much the parents know about hepatitis B and how they take care of their children.

Even though many parents had an education we still found that some children did not get the hepatitis B vaccine and the parents did not know much about the disease. This means that just because someone has an education it does not mean they know about hepatitis B.

Medical and Exposure History

Only 10 percent of the children had gotten blood from someone else and very few had surgery at 1.3 percent. This means that getting hepatitis B from a blood transfusion or surgery was not very common.. We did find that children who got blood from someone else were more likely to get tested for HIV.

Some children at 5 percent got injections outside of a hospital. This was related to getting tested for HIV. This is a problem because it means that some people are not using methods to give injections and this can spread diseases like hepatitis B and HIV.

28.7 percent of the children had been in the hospital but this was not related to whether they had a chronic disease. This means that being in the hospital did not make it more likely for the children to get hepatitis B. Hepatitis B is a problem and we need to do more to prevent it. The hepatitis B virus can cause health problems so it is important to learn more, about hepatitis B and how it is spread.

Vaccination Status and Family History

Although 75% of children reportedly received HBV vaccination, documentation of full-dose completion was inconsistent, and some caregivers were unsure of vaccination history. Lack of vaccination was identified as a risk factor in 18.8% of cases, emphasizing gaps in immunization coverage or recordkeeping.

A known family history of hepatitis was present in 16.3% of participants, supporting the role of interfamilial transmission. Mother-to-child transmission was identified as a risk factor in 17.5% of cases, reinforcing the importance of antenatal screening and prevention of vertical transmission.

Recommendations

1. Strengthen Early Screening Programs

Health institutions should implement regular screening and early detection programs for children and adolescents to identify the problem at an early stage and reduce its severity.

2. Improve Health Education

Schools and community health workers should provide health education programs focusing on:

- Risk factor awareness
- Preventive behaviors
- Healthy lifestyle practices

This helps reduce exposure to modifiable risk factors.

3. Focus on High-Risk Groups

Special attention should be given to:

- Younger children and vulnerable adolescents
- Low socioeconomic households
- Areas with limited healthcare access

Targeted interventions can significantly reduce the magnitude of the problem.

4. Strengthen Preventive Services

Health authorities should improve:

- Vaccination programs (if related to infectious diseases)
- Nutritional support
- Access to primary healthcare services
- These measures help lower disease burden.

5. Improve Environmental and Social Conditions

Community-level interventions should address:

- Sanitation and hygiene
- Overcrowding

- Safe school and home environments
- These factors often contribute to higher risk among children.

6. Further Research

Future studies should:

- Use larger sample sizes
- Include longitudinal study designs
- Explore additional behavioral and environmental risk factors

Annex

1. Questions

✅ Section 1: Socio-demographic Information

1. What is the child's age? (in years)

2. What is the sex of the child? [ ] Male. [ ] Female

3. What is the place of residence? [ ] Urban. [ ] Rural

4. What is the child's school level?

[ ] Not in school. [ ] PrimaryPrimar. [ ] Secondary

[ ] Other: _____

5. What is the occupation of the caregiver/parent?

6. What is the educational level of the parent/guardian?

✅ Section 2: Clinical and Medical History

7. Has the child ever received a blood transfusion?

[ ] Yes. [ ] No If yes, how many times? _____

Year of last transfusion: _____

8. Has the child ever undergone any surgical procedures?

[ ] Yes. [ ] No If yes, specify the type: _____

9. Has the child ever received injections outside a health facility?

[ ] Yes. [ ] No

10. Has the child ever been admitted to a hospital?

[ ] Yes. [ ] No. Number of admissions: _____

11. Has the child been tested for HIV?

[ ] Yes. [ ] No. If yes, result: [ ] Positive [ ] Negative

12. Has the child been diagnosed with any chronic disease?

[ ] Yes. [ ] No. If yes, specify: _____

✅ Section 3: Family and Environmental Risk Factors

13. Is there a known history of hepatitis in the family?

[ ] Yes. [ ] No. If yes, who?

[ ] Mother] Father. [ ] Sibling. [ ] Other: _____

14. Has anyone in the household ever been diagnosed with HBV or HCV?

[ ] Yes [ ] No

✅ Section 4: Immunization and Prevention

15. Has the child received the HBV vaccine?

[ ] Yes [ ] No [ ] Don't know

If yes, how many doses? _____

16. Is the child fully vaccinated as per age?

[ ] Yes. [ ] No

✅ Section 5: Laboratory Results

17. HBV status (from medical record):

[ ] Positive. [ ] Negative

18. HCV status (from medical record):

[ ] Positive. [ ] Negative

19. HIV status (from medical record):

[ ] Positive [ ] Negative [ ] Unknown

Annex 2

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