

# Prevalence of HBV, HCV & HIV among Whip Battered Individuals during Social Events in North Sudan

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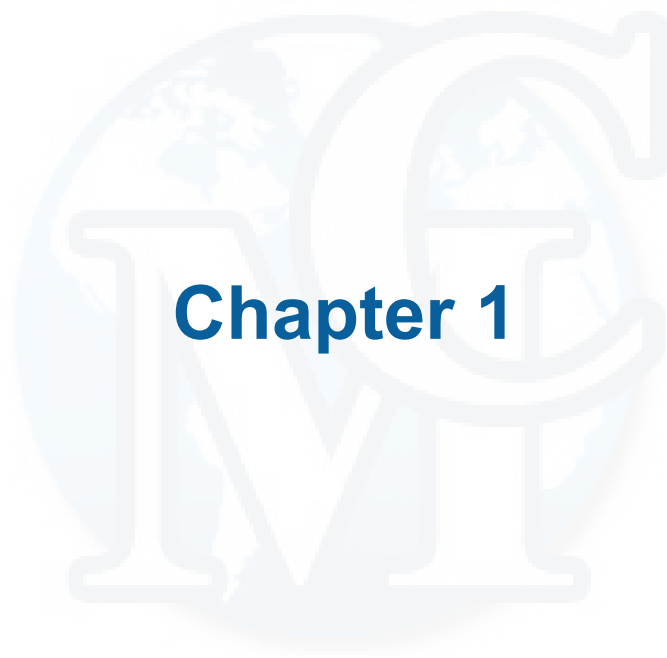
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# Chapter 1

## Abstract

**Background:** The analytic study carried out in north sudan to know the prevalence of HIV, HBV, HCV among hitting people during social events.

**Methods:** Data was collected through questionnaire by offering a number of questions relevant to the objectives of the study. Researchers took a statistical approach to the SPSS system for the extraction percentages and discussed for the purpose of access to scientific findings.

**Results:** Questionnaire collect from 126 cases in north sudan target age above 12 year administrate by randomized method male class.

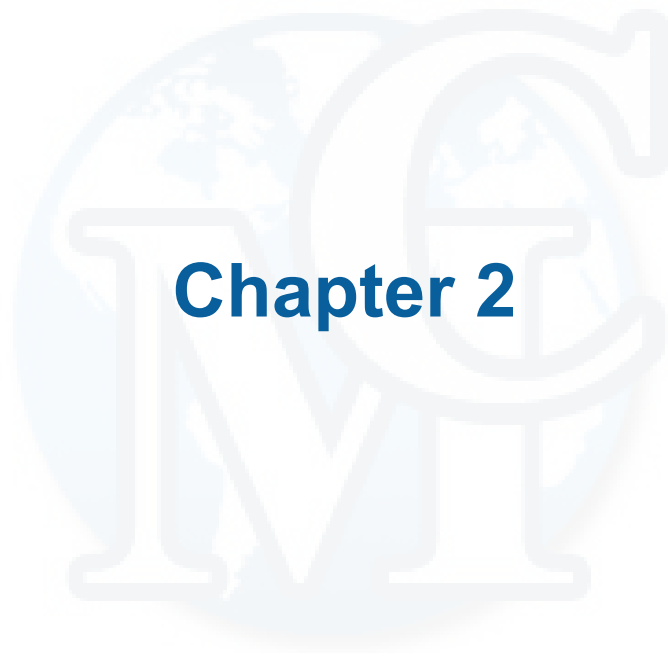
No HIV, HBV case in all study groups. There are 3 cases of HCV

- (1) In hitting people,
- (2) In non hitting.

### Conclusions and recommendations:

- 1) Increase awareness of people about risk of hitting itself and hitting transmission diseases
- 2) The hitting is not religious habit so can easy take off it and it is remark of no developed health country
- 3) Increasing of health education by application of Medical College
- 4) Programs in the community
- 5) Conduction of further studies to determine the association between hitting and HBV,HCV,HIV
- 6) Promote early vaccination of population at risk group against hepatitis

**Abbreviations:** AIDS: Acquired Immunodeficiency Syndrom; BBD: BLOOD BORNE DISEASES; HCC: Hepatocellular Carcinoma; HBV: Hepatitis B Virus; HCV: Hepatitis C Virus; HBcAg: Hepatitis B Core Antigen; HBsAg: Hepatitis B Surface Antigen; HIV: Human Immune Deficiency Virus; IgM: Immunoglobulin M; IRES: Internal Ribosome Entry Site; PCR: Polymerase Chain Reaction; RNA: Ribo -Nucleic Acid; EIA: Enzyme Immunoassays; SVR :Sustained Virological Response Rate; WHO: World Health Organization

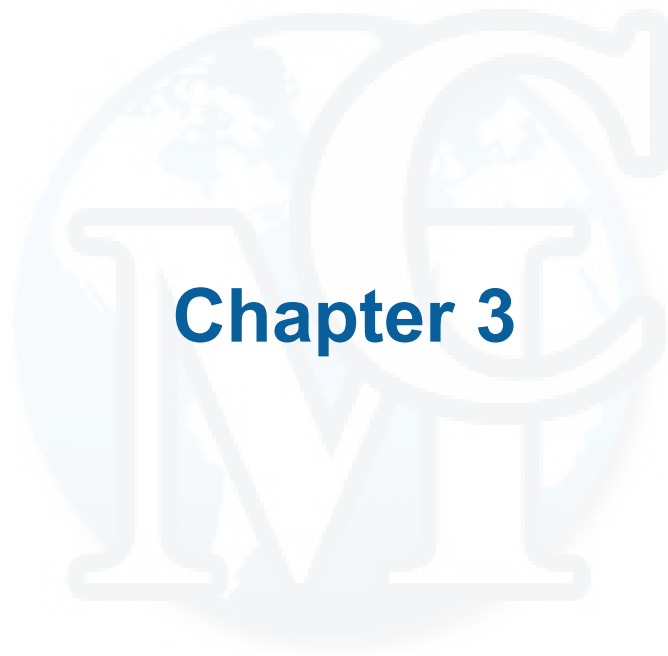


## Chapter 2

## Introduction

### The blood-borne disease

Disease is one that can be spread through contamination by blood and other body fluids. The most prevalent BBVs are: human immunodeficiency virus (HIV)-a virus which causes acquired immunodeficiency virus (AIDS), a disease affecting the body's immune system; hepatitis B (HBV) and hepatitis C; BBVs causing hepatitis, a disease affecting the liver, viral hemorrhagic fevers. Diseases that are not usually transmitted directly by blood contact, but rather by insect or other vector, are more usefully classified as vector-borne disease, even though the causative agent can be found in blood. Vector-borne diseases include: west niloe virus and malaria. Many blood-borne diseases can also be transmitted by other means, including high-risk sexual behavior or intravenous drug use. An infected person can transmit (spread) blood-borne viruses from one person to another by various routes and over a prolonged time period. As well as through blood, these viruses can also be found and transmitted through other body fluids, for example: vaginal secretions, semen, and breast feeding. Unless contaminated with blood, minimal risk of BBV infection is carried by: urine, saliva, sweat, tears, sputum, vomiting, and feces. The first known case of AIDS in Sudan was detected in 1986. Since that time an increasing number of HIV/AIDS case have been diagnosed AIDS has rapidly established itself through the world and is likely to endure and persist well into the 21st century. AIDS has involved from a mysterious illness to a global pandemic which has infected tens of millions in less than 20 years. In the following chapters the major clinical presentations methods of transmission and prevention are mentioned



## Chapter 3



## Literature review

**A. AIDS:** Stands for acquired immune deficiency syndrome.

- a. Acquired: Means you can get infected with it.
- b. Immune deficiency: Means weakened in the body immune system that fights disease [1].
- c. Syndrome: Means group of health problem.

AIDS is caused by HIV (Human Immune Deficiency Virus) the first cases of AIDS were diagnosed in 1981 in USA.

## What is HIV?

Is a retrovirus, a type of virus that is still largely unknown? HIV was first described in 1983 by medical researcher in Paris. It has had several names during its short history but HIV has now been accepted internationally. The virus internationally. The virus interest the T helper of immune system. In the cells it destroys genetic material and the damage is Permanent. All body fluid contain T helper the concentration is high in blood, semen and the vaginal secretion. Being HIV Positive or having HIV disease is not the same as having AIDS, many people are HIV Positive but not sick for many years. As HIV Disease continues it slowly wears the Immune system. Viruses, fungi, parasite and Bacteria that usually don't cause any problem can make you sick, if your Immune system is damaged.

## Mode of transmission

**Sexual Transmission:** This is most frequent mode of transmitting HIV. The virus can be transmitted from an infected person to his or her sexual partner.

### Exposure to infected blood or blood products:

- a. Transfusion of infected blood or blood product.
- b. Use of needle, syring, knife and surgical instrument that may have been used on an infected person and not properly sterilized.
- c. By exposure of cuts and wounds to infected blood or body fluid.

### Perinatal Transmission:

This may occur before, during or shortly after birth which represent 60%.

### \*How HIV is not transmitted?

- i. Person to person contact.
- ii. Respiratory or enteric route.
- iii. Insects, food, water, toilets, swimming pools, sweats, tears, sharing of food or drinking utensils.

## Clinical presentation of HIV infection

You might not know if you get infected by HIV. Some people get fever. Headache, sore muscle, joint pain, swollen lymph

gland or skin rash for one or two weeks most people think it's the flue. Some people have no symptoms. The virus will multiply in the body for a few weeks or even months before your immune system respond. During this time you won't test (+ve) for HIV, but can infect other people. When your immune system respond it starts to make antibodies, when this happens you test (+ve) for HIV.

### Symptoms and Signs suggestive of HIV infection, if present for more than one month include:

- a. Fever.
- b. Significant weight loss.
- c. Mental changes.
- d. Generalized lymphadenopathy.
- e. Chronic cough.
- f. Persistent or intermittent diarrhea.
- g. Skin infection.

### Opportunistic infection, include:

- a. Pneumocystis carinii pneumonia.
- b. Oro-pharyngeal Candidiasis.
- c. Mycobacterium tuberculosis.
- d. Cryptococcal meningitis.
- e. Toxoplasma cncephalitis.
- f. Herpes simplex infection.
- g. Herpes zoster.
- h. Cytomegalovirus.
- i. Chronic diarrhea caused by cryptosporidia & isospora.

### Tomour, include:

- a. Laposi sarcoma.
- b. High grade B. cell external lymphoma.

### The clinical case definition for AIDS in adults:

AIDS in adults is diagnosed by existence of at least two of the major signs + at least one minor signs in the absence of known cases of immune suppression such as cancer or malnutrition.

### Major sign include:

- a. Weight loss > 1% of body weight.
- b. Chronic diarrhea > one month.
- c. Prolong fever > one moth

### Minor sign include:

- a. Persistent cough> one month.
- b. Generalized pruritis dermatitis.

- c. Recent herpes zoster.
- d. Chronic progressive disseminated herpes simplex infection.
- e. Generalized lymphadenopathy.

**The person infected with HIV goes through various stages as follows:**

- a. Initial infection period:
- b. Which lasts several weeks or months "average 6 weeks" 70% here no symptoms but 30% mild illness. Fever, sore throat rash.

**Acute infection:**

This stage lasts for 1-2 weeks. It is an acute seroconversion illness which is flu-like febrile illness with fever, sweating, myalgia, arthralgia and malaise. They may develop an erythematous skin rash and lymphadenopathy.

**Asymptomatic stage "carrier":**

It is seropositive period which can last from several months to 15 years or more, with average being seven years. Patient is quiet well but infectious "HIV carrier"

**Persistent generalized lymphadenopathy:**

**AIDS related to complex "ARC":** Patient has some of features of immune deficiency but no opportunistic infections "loss of weight, tiredness, diarrhoea, fever, candidiasis and herpes zoster.

**AIDS:** End stage of HIV infection in which there is failure of immune system and appearance of opportunistic infection and neoplasm.

**Prevention and control:** There is no vaccine against AIDS. Health education is very important; everybody should know to protect themselves from infection by living responsibly. The whole community should be involved [2].

**Control:** a) Precautions on handling blood and other body fluid: Treat and handling all blood and other body secretion from all patients as infectious, therefore wearing of gloves and other protective material when handling the above is very crucial.

Disinfection and sterilization of medical instruments [3].

**Treatment:** Is there a cure for AIDS? There are drugs that can slow down HIV virus and slow down the damage to immune system. There is no way to clear out HIV of your body. Other drugs can be prevent or treat opportunistic infection. In most cases these drugs work very well. The newer, stronger antiretroviruses have also helped reduce the rate of most opportunistic infection. Patients should be given treatment to cease signs and symptoms as far as possible.

**Anti retroviral therapy for HIV**

**Current used drugs:**

- a. Nucleoside Nucleoside Reverse Transcriptase Inhibitors.
- b. Zidovudine.
- c. Didanosine.
- d. Zalcitabine (ddc).
- e. Lamivudine (ZTC).
- f. Stavudine.

**Protease inhibitors:**

- a. Zalcitabine.
- b. Indinavir [4].

**Hepatitis infection definition:**

Hepatitis viral infection that attacks the liver and can cause both acute and chronic diseases alike.

and transmits the virus through contact with an infected person's blood or other body fluids.

**Aetiology:**

- a. Viral causes
- b. Virus A, B, (D), C, E
- c. Epstein-Barr virus
- d. Cytomegalovirus
- e. Yellow fever virus
- f. Drugs
- g. Paracetamol rifampicin
- h. Poisoning
- i. Amanita phalloides (mushrooms)
- j. Aflatoxin Carbon tetrachloride

**In our study we dealing with most common hepatitis:**

**HBV infection:**

**Definition:** Hepatitis B viral infection that attacks the liver and can cause both acute and chronic diseases

What is HBV: Hepatitis B virus (HBV) genome viral DNA is partially double-stranded (red incomplete circle and blue circle). The long strand (blue) encodes seven proteins from four overlapping reading frames (S, surface (Pre-S1, Pre-S2, S); C, core (Pre-C, C) P, polymerase (P) and X gene (X). EcoRI restriction-enzyme-binding site is included as a reference point.

**Structure of virus:**

Hepatitis B virus is a hepadnavirus-hepa from hepatotropic (attracted to the liver) and DNA because it is a DNA virus [12] and it has a circular genome of partially double-stranded DNA. The viruses replicate through an RNA intermediate

form by reverse transcription, which in practice relates them to retroviruses [13]. Although replication takes place in the liver, the virus spreads to the blood where viral proteins and antibodies against them are found in infected people [14]. The hepatitis B virus is 50 to 100 times more infectious than HIV (Figure 1).



Figure 1

#### Enotype:

- A. Is mainly seen in North West Europe, North American and Central Africa;
- B. In South East Asia( including China, Taiwan and Japan);
- C. In South East Asia;
- D. In Southern Europe, India and the middle East;
- E. In West Africa;
- F. In South and Central America, in American Indians and Polynesia;
- G. In France and the USA; and
- H. In Central and South America.

#### Epidemiology:

More than 240 million people suffer from a number of cases of infection of the liver, chronic (long-term). Die annually about 000 600 people as a result of the severe consequences of the disease and chronic. Available since 1982 for the vaccine for hepatitis B is 95% effective in preventing the evil effects of chronic infection and is the first vaccine to fight cancer mainly affects the rights. And able to Hepatitis B virus survive outside the host body for at least seven days and stays which also able to cause infection of the disease if it enters a person's body is not protected vaccine.

#### Mode of transmission:

**Contaminated blood:** Transmission from mother to child at birth. Through sexual contact and the use of contaminated needles

#### The virus cannot transmit y?

- A. Water
- B. Food

#### Clinical presentation:

Does not appear on most people experience no symptoms during the acute infection of the disease, however, some develop severe illness condition symptoms lasting for several weeks.

**Include:** yellowing of the skin color and eyes (jaundice), Dark urine, Extreme fatigue, nausea and vomiting pain in the abdomen. Rashes (e.g urticaria or maculopapular rash), polyarthritis affecting small joint. Others have of people in chronic liver disease that can develop later to cirrhosis or liver cancer. And recovering the proportion of more than 90% of healthy adults infected with hepatitis B virus and completely gets rid of the virus within six months.

#### Investigation:

- A. HBV infection is characterized by acute hepatitis antigen HBsAg and the presence of antibodies immunoglobulin M(IgM) antigen primary HBcAg. And also shows the patient during the initial phase of infection, a positive serologic antigen HBeAg.
- B. The chronic infections (for more than 6 months) are characterized by the presence of antigen HBsAg permanently (either in conjunction with or without antigen HBeAg). This is the permanent presence of the antigen HBsAg is the key attribute that alarming infection to the development of chronic liver disease and liver cancer cells injury at a later stage of life.
- C. Indicates the presence of antigen HBeAg to infected blood and body fluids is highly contagious.

#### Prevention an control:

- a. Prevent perinatal HBV transmission.
- b. Routine vaccination of all infants.
- c. Vaccination of children in high-risk groups.
- d. Vaccination of adolescents.
- e. Vaccination of adults in high-risk groups.
- f. Disposed about the harmful customs and traditions whipping in social events.

#### HCV Infection:

The coordinator of the network sunrise that the prevalence of the disease jumped to "1.6" by 16 people carrying the virus among every 1,000 citizens. He added that the cumulative number of cases recorded in the state since 2005 and so far reached 75 cases.

**Progression:****Acute hepatitis C:**

- i. 15-40% will spontaneously resolve, generally within the first 6-18 months after acute onset.
- ii. 60-85% will progress to chronic infection.
- iii. Chronic.
- iv. 85-90% stable.
- v. 10-15% progress to cirrhosis.
- vi. Cirrhosis.
- vii. 75% slowly progressive.
- viii. 25% progress to HCC.
- ix. 2-4% liver failure.
- x. HCC.
- xi. Risk increases for every year for a patient with chronic hepatitis C.
- xii. Patients without signs of cirrhosis can develop HCC.

**Clinical presentation:**

- a. 60-70% has no discernible symptoms.
- b. 20%-30% might have jaundice.
- c. 10%-20% might have non-specific symptoms (e.g., anorexia, malaise, or abdominal pain).

**Mode of transmission:**

- a) Transmitted by blood to bloodstream contact.
- b) Approx 90% of new infections due to the sharing and reusing of injecting drug equipment.
- c) Unsterile tattooing or body piercing.
- d) Mother to baby (during pregnancy or at birth-5%-8% risk).
- e) Sharing personal grooming items (razors, toothbrushes).
- f) Breach of standard precautions-unsterile medical procedures.
- g) Nosocomial Transmission.
- h) Sexually transmitted rare.

**HCV is not Transmitted via:**

- a) Public toilets.
- b) Swimming pools.
- c) Coughing or sneezing.
- d) Kissing or hugging.
- e) Mosquito or animal bites.

- f) Sharing food.

**HCV Testing:**

- i. Initial Screening
- ii. Used to determine exposure/detect hepatitis C antibodies. (Example: Enzyme immunoassays (EIA)).

**Initial screening – negative result:**

- i. A negative test most likely means that a person is not infected.
- ii. False negatives are uncommon.
- iii. May occur if a person has been recently infected.
- iv. May occur in individuals who are immuno-suppressed or on long-term hemodialysis.

**Initial Screening - Positive Result**

- i. False positives are uncommon.
- ii. Most likely to occur in individuals at low-risk for infection.
- iii. May occur in individuals with autoimmune liver disease.
- iv. A positive test, especially in a person with known risk factors, most likely means that they have been exposed to the virus.
- v. Screening test results can be verified with a supplemental or confirmatory test.

**Confirmatory Testing:**

- a) To ensure that a positive screening test result is a true positive.
- b) To distinguish between a resolved and an active infection.
- c) They can be used alone or more than one test can be used.
- d) Antibody test 'Window period' 2-weeks up to 6 months, but on average 6 to 12 weeks. Indicates a person has been exposed to the virus. Doesn't determine if infection is current or what genotype is present.
- e) PCR tests.
- f) Qualitative-virus detected/not detected.
- g) Quantitative- viral load.
- h) Genotype.

**Treatment:**

- i. Combination Therapy-(pegylated interferon and ribavirin).
- ii. Treatment Regime.
- iii. Weekly self administered injections of pegylated interferon & daily ribavirin tablets taken orally.

- iv. Treatment adherence is critical to achieve sustained viral response (SVR).
- v. 6 -12 months (depending on genotype / cirrhosis).
- vi. Overall across genotypes, 60% viral clearance – and up to 80% viral clearance in genotype 2 & 3.

### Prevention:

#### Injecting Drug Users:

- a) Stop using and injecting drugs.
- b) Enter and complete substance abuse treatment.

#### If continuing to inject drugs:

- a. Never reuse or “share” syringes, needles, water, or drug preparation equipment.
- b. If injection equipment has been used by other persons, first clean the equipment with bleach and water.
- c. Use only syringes obtained from a reliable source (e.g., pharmacies).

#### Injection Drug Use:

Use a new sterile syringe to prepare and inject drugs. If possible, use sterile water to prepare drugs. Otherwise use clean water from a reliable source (such as fresh tap water). Use a new or disinfected container (“cooker”) and a new filter (“cotton”) to prepare drugs. Clean the injection site prior to injection with a new alcohol swab. Safely dispose of syringes after one use. Get vaccinated against hepatitis A and B.

**Persons At-risk for STDs:** Have sex with only one uninfected partner or do not have sex at all. Use latex condoms correctly and every time to protect themselves and their partners from diseases spread through sexual activity. Get vaccinated against hepatitis B, and if appropriate, hepatitis A.

#### A. Previous studies

a.A previous study in 2008 Sub-Saharan Africa has been devastated by the HIV/AIDS epidemic. While only 10% of the world’s population lives in sub-Saharan Africa, an estimated 70% of all HIV infected adults and children.

The first area to experience high prevalences of HIV was East Africa with countries in this area now experiencing adult prevalence rates of around 8–10%. Rates in two of these countries, Kenya and Somalia, appear to be still rising. West Africa has been relatively less affected by HIV with adult prevalence rates in most countries still estimated as less than 3%. However, there are worrying signs in two of the largest countries in West Africa with prevalences of 11% in Côte D’Ivoire and 5% in Nigeria. The most shocking statistics are from southern Africa where adult HIV prevalences have risen rapidly in the last few years to around 20%, with a staggering 35% prevalence in Botswana. South Africa is now the country with the highest number of people with HIV/AIDS in the world. However, there is some good news.

After a strong HIV prevention programme in Uganda, adult prevalence has decreased from 14% in the early 1990s to around 8% in 2000. Also while the number of children and adults living with HIV/AIDS in sub-Saharan Africa increased during 2000, the increase (3.8 million) was slightly less than in 1999 (4.0 million). However, if rates start rising rapidly in some of the more populous countries, such as Nigeria, this trend could easily be reversed.

HIV/AIDS in North Africa and the Middle-East HIV data from this region are very sparse. Best estimates are that around 400,000 adults and children were living with HIV in this region at the end of the year 2000. While adult HIV prevalence is at present low (an estimated 0.2%), recent data from Algeria and Sudan give warning signs that HIV may be spreading into the general population.

#### B.South and South-East Asia

Despite an overall estimated adult prevalence rate of only 0.56%, this region contains around 16% of the total number of people in the world living with HIV/AIDS. There are enormous variations in how the HIV epidemic has spread within this region. National estimates put the prevalence at around 0.7% or less for all countries except Cambodia (4%), Myanmar (2%) and Thailand (2%). Thailand has a well-documented epidemic which showed rapid rises in HIV prevalence in the late 1980s which were reversed through a vigorous campaign to promote condom use, especially for contact with sex workers. There are hopeful signs that a similar approach by Cambodia may be limiting the spread of HIV into the general population there.

India is one of the most populous countries in the world and with a relatively low overall adult HIV prevalence of 0.7% already has the second highest number of people living with AIDS in the world. There is wide variation within India. By 1998, Maharashtra and Andhra Pradesh states had antenatal prevalences of 2% or more while others had prevalences close to zero. National and some state governments have implemented prevention programmes to try and limit HIV infection in IDU and sex workers. They have also launched mass publicity campaigns to reduce risky sexual behaviour, especially among young men, in an effort to avert large scale infection in the general population.

#### C.Latin America and the caribbean

In Latin America, the highest rates of HIV prevalence are seen in the central American countries of Belize (2%), Guatemala (1.4%), Honduras (1.9%) and Panama (1.54%) and on the Caribbean coast in Guyana (3%) and Suriname (1.3%). Transmission within these countries is predominantly through heterosexual intercourse and in many of these countries HIV is spreading rapidly.

The Caribbean has been badly affected by the HIV/AIDS epidemic with an overall adult prevalence rate of 2.1% at the end of 2000 second worst in the world after sub-Saharan Africa. The most badly affected countries are Haiti with an adult prevalence rate of 5.2%, the Bahamas (4.1%) and the Dominican Republic (2.8%). In these countries,

transmission is predominantly heterosexual and rates are particularly high amongst young women (as in sub-Saharan Africa).

#### **D.Hepatitis B in Asia and Africa**

Asia and Africa were classified as high endemic areas for hepatitis B infection, but due to the national vaccination programs, some countries became intermediate and low endemic areas. China is the only country in Asia that was classified as high endemic area with prevalence of 7-20% for HBV infection. Countries with intermediate endemicity include India, Korea, Taiwan, and Thailand, and those with low endemicity include Japan, Pakistan, Singapore, and Malaysia with 0.2-1.9% prevalence. Most countries in Africa are considered as high endemic areas with chronic HBV infection rates of 7-26% in West and East Africa. Central and Southern Africa is highly endemic regions except Zambia, which has borderline intermediate endemicity. North Africa is considered also as a highly endemic except Tunisia and Morocco, which have intermediate endemicity with infection rate below 7%. Most Asian countries have started hepatitis B prevention programs, but only few African countries have started infant vaccination programs. The vaccination program in some Asian countries has changed HBV endemicity. In Saudi Arabia, the prevalence of HBV infection in children decreased from 6.7% to 0.3% within eight years from starting the vaccination program. In Malaysia, HBV prevalence in 7-12 years old children decreased from 1.6% (in 1997) to 0.3% (in 2003) after the implementation of infant vaccination program in 1990. Data about the efficacy of immunization programs in African countries are limited. A study from Egypt, which integrated HBV vaccine in the national immunization program, revealed that HBV prevalence among the studied group was 0% among children aged 2-4 years, 2% among children aged 4-13 years, and 6.66% among adults. El-Raziky et al. recommended mass screening for HBsAg of pregnant Egyptian women and giving a birth dose of HBV vaccine to decrease the vertical transmission of HBV infection.

#### **E.Hepatitis C in Asia and Africa**

Countries with the highest reported prevalence rates are located in Africa and Asia, with prevalence of 5.3% in Africa and 2.15-3.9% in Asia. The most common risk factors for HCV transmission are intravenous drug abuse and blood transfusion. Contaminated injection instruments are the major risk factor of HCV infection. In Egypt, high HCV seroprevalence was attributed to contaminated glass syringes used in national wide Schistosomiasis treatment from 1960 to 1987. Blood transfusions are also highly effective means of HCV infection transmission. WHO's Global Database on Blood Safety estimated that 43% of donated blood in developing countries is not screened adequately for transfusion-transmitted infections, including HCV. There are other sources of HCV transmission such as hemodialysis and sexual transmission. The latter is not confirmed and the role of sexual activity in HCV transmission remains unclear; however, in a study among spouses in

Egypt, 6% were estimated to have contracted HCV from their spouse.

#### **F.Hepatitis B and C in Europe**

The prevalence of chronic HBV infection in the European general population ranges from 0.2% in Ireland and the Netherlands to over 7% in some parts of Turkey. The prevalence of HCV also varies from 0.4% in Sweden, Germany, and the Netherlands to over 2-3% in some Mediterranean countries. The overall prevalence differs among racial and ethnic populations and is highest among individuals who emigrated from areas with high endemicity of HBV and HCV infections (e.g. Asia, Africa, and Middle East). The high-risk groups in Europe are the same as in Iran, i.e. those who have the possibility to contact with infected blood like drug users, prison-mates, and medical care personnel, but in addition, there is another high-risk group: immigrants from areas of high or intermediate prevalence of HBV and HCV infections. Meffre et al. found four main characteristics associated with high prevalence of both HBV and HCV infections in France that can also be applicable for other European countries: intravenous drug abuse, country of birth, low level of education, and lower socioeconomic level. These four characteristics can be considered as the key for designing the prevention, screening, and treatment systems. Within European region, most countries offer universal vaccination against HBV since 1991. However, the UK and Scandinavian countries still have advocated universal vaccination and focused on well-defined risk groups, due to economic bases. Surveillance data from Italy (where universal vaccination started in 1991 in infants as well as in adolescents) have shown a remarkable overall decline in the incidence of acute hepatitis B after vaccination implementation.

#### **G.Hepatitis B and C in the USA**

The prevalence of chronic HBV infection in the USA is 0.4-0.5%, and that of HCV is 1.8%. Chak et al. designed a study focused on the high-risk groups to estimate the prevalence of HCV infection among prisoners, homeless people, healthcare workers, injection drug abusers, persons on long-term dialysis, recipients of chronic blood transfusions (i.e. hemophiliacs), and non-active military personnel. This study revealed that there were at least 5.2 million persons living with HCV infection in the USA. Analyzed data from National Health and Nutrition Examination Surveys (NHANES) from 1988-1994 (NHANES 1988-1994) and 1999-2006 (NHANES 1999-2006); the prevalence of HBV infection decreased among persons 6-19 years old (from 1.9% to 0.6%) and 20-49 years old (from 5.9% to 4.6%) but not among persons > 50 years old (7.2% vs. 7.7%). This reflects the impact on strategies to eliminate HBV transmission which started in 1991 in the USA including national vaccination program of infants, screening all pregnant women for HBV with post-exposure prophylaxis provided for infants born from infected women, catch up vaccination of adolescents, and vaccination of adults at increased risk of infection.

Among Central and South America, a recent community based study in San Juan, Puerto Rico, showed that estimated prevalence of HCV in 2001-2002 was 6.3%. In Mexico, the prevalence reported was about 1.2%. (4) Among blood donors in Chile and Brazil, prevalence of HCV Ab was low - 0.3%, 1.14% respectively.

#### H. In Europe HCV

General prevalence of HCV is about 1% but varies among the different countries. Prevalence of HCV antibody is 0.87% (1993-1994) in Belgium. In the United Kingdom, at least 200,000 adults carry HCV. In Northern Italy, prevalence of HCV Ab was 3.2%. Three studies in Central and Southern Italy showed a higher rate of HCV (8.4%-22.4%), especially in the older population. Among patients of general practitioners in Lyon, France, the prevalence of HCV was estimated to be 1.3%, very similar to the French general population. Within the Russian army, frequency of anti-HCV was 1.5% among servicemen and donors with increased prevalence in the North Caucasus, Far East and Siberia (3.1-3.8%) compared to the Transbaikal region (0.7%). Low rates were found in Hungary (0.73% of 15,864 blood donors).

#### I. Pakistan in the Middle East

Recently, HCV prevalence studies have come out of Pakistan in the Middle East. 751 out of 16,400 patients (4.57%) were found to +HCV Ab from 1998-2002 with the largest age group from 41-50. Among male blood donors in Karachi, Pakistan, the seroprevalence of HCV was 1.8% with a trend of increasing proportion of positive donors from 1998-2002. There has been very high prevalence rates of HCV reported in Egypt in the past (28%). This was confirmed among 90 blood donors in Cairo, where 14.4% were anti-HCV positive by RIBA test. Then 26.6% among 188 blood donors and 22% among 163 donors were positive with both studies done in Cairo. Rates were lower in Saudi Arabia (1.8%) and Yemen (2.1%). Intermediate rates of HCV have been reported out of Asia. From 1995-2000, 0.49% anti-HCV Ab were detected among 3,485,648 blood donors in Japan. This was lower than the 0.98% of 10,905,489 blood donors reported in 1992. In China, prevalence rates were generally low with rates around 1% among donors in Beijing and Wuhan. However, rates may be higher in certain areas such as the Hubei province (30.13%) and Inner Mongolia Autonomous Region (31.86%). Low rates have been found in Malaysia (around 1.6%) and Singapore (0.54%) [25,26]. Higher rates of HCV have been found in Thailand (3.2-5.6%). Within a smaller community of 103 residents in Sherpas, Nepal, only 1 person had a borderline reaction in 2004. In New Delhi, India, 1.85% of blood donors were positive.

J. There have been fewer studies out of Africa, but lower rates have been reported – 1.6% among blood donors in Ethiopia and 0.9% in Kenya.

K. The estimated prevalence in Australia has been recently reported as 2.3% with the virus affecting 210,000 people

by 2001. The 20-24 year old age group had the highest prevalence with strong majority of the infected population below the age of 50.

#### Justification

The blood borne disease mainly (HIV/HBV/HCV) of is important diseases in Sudan and Africa and study of it is benefit in the community to resolve the health problems. Also at recent year statistical records reveal there is increasing number of HIV HBV HCV. The estimated number for people living with HIV by who in Sudan at 2002 is about 600,000 cases. The issue of our research is attracting attention of the community to control the epidemics of these diseases and prevent their distribution. Also induce attention of all medical fields about hitting problem related to these diseases and other problem.

#### Objectives

##### General objective:

Prevalence of HBV, HCV & HIV among whip battered individuals during social events in north Sudan.

##### Specific objectives:

- To detect the association between the prevalence blood borne virus. (HIV\_HBV\_HCV) and place.
- To detect the association between the prevalence blood borne virus (HIV\_HBV\_HCV) and age.
- To detect the association between the prevalence blood borne virus (HIV\_HBV\_HCV) and marital status.
- To detect the association between the prevalence blood borne virus (HIV\_HBV\_HCV) and level of education. To detect the association between the prevalence blood borne virus (HIV\_HBV\_HCV) and occupation.
- To detect the association between the prevalence blood borne virus (HIV\_HBV\_HCV) and method whipping.
- To identified the cause of whipping.
- To identified the knowledge of the people about the blood borne virus (HIV\_HBV\_HCV).
- To detect other causes of prevalence blood borne virus rather than whipping.
- To detect the association between the hitting and age.
- To know about ability of hitting people to leave this behavior.
- To identify there is relationship between hitting and level of education.

#### Methodology

**Study design:** This study is analytic study

**Study area:** The study was conducted in north Sudan in River Nile state

**Study size:** Questionnaire collect from 126 cases in north Sudan target age above 12 year administrate by randomized method male class.

**Study Sample:** 126 cases live in north Sudan village

### Data collection techniques

Direct interview and laboratory ICT of HIV, HBV & HCV

### Data collection method:

Data was collected from 126 Questionnaire, the study information was obtained from each. Age group, social status, hitting type and information related to it, history of blood transfusion, tattoo and operation all were included in well designed questionnaire. Screening of hepatitis B surface antigen(HbsAg), human immunodeficiency virus(HIV), hepatitis C virus(HCV), were done using immuno chromatographic(ICT) the study include (126) blood donor all were males. The screening result for antibody against HIV was negative in all donors and antibodies against hepatitis B were negative in all donors and antibodies against hepatitis C was positive in (3) donor.

### Data analysis:

Data was cleared, entered and analyzed using the computer program SPSS (statistical package for social sciences) version 13.

### Data presentation:

Data was presented as Text, Tables and Figures

**Table 1:** Type.

	Frequency	Percent
Hitting	47	37.3
NOT HITTING	79	62.7
Total	126	100

**Table 2:** Age group.

		Frequency	Percent
	Less Than 10-20	9	7.1
	21-40	66	52.4
	41-60	38	30.2
	More Than 60	10	7.9
	Total	123	97.6
Missing	System	3	2.4
Total		126	100



Figure 2



Figure 3



Figure 4

**Table 3:** Education.

	Frequency	Percent
Illiterate	20	15.9
Primary/Khalwa	43	34.1
Secondary	50	39.7
College	13	10.3
Total	126	100



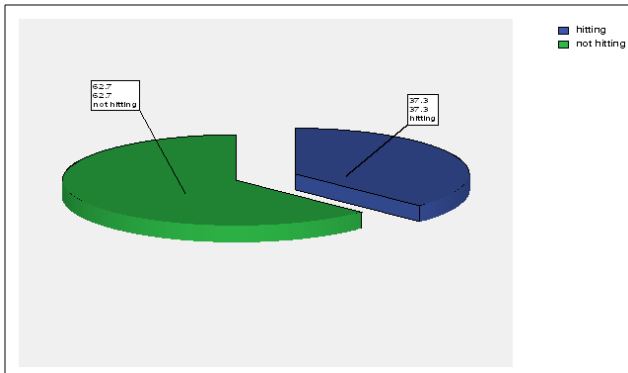


Figure 5: Distribution of study group according to hitting.

Table 4: Occupation.

Occupation	Frequency	Percent
Employee	5	4
Free Worker	100	79.4
Idle	9	7.1
Student	10	7.9
Other	2	1.6
Total	126	100

Table 5: Without clothes.

Without clothes	Frequency	Percent
Yes	42	33.3
No	4	3.2
Total	46	36.5
Missing System	80	63.5
Total	126	100

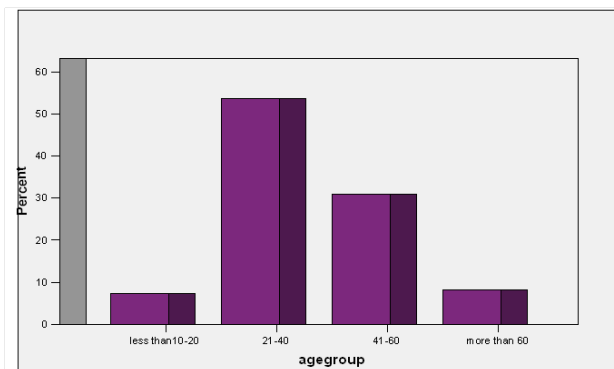


Figure 6: Distribution of study group according to age.

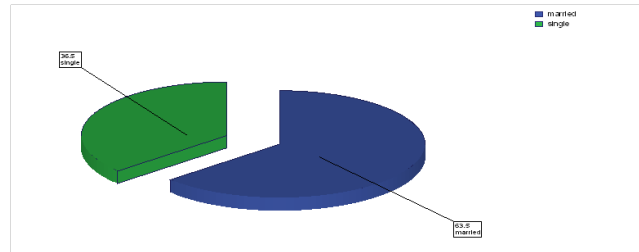


Figure 7: Distribution of study group according to sociostatus.

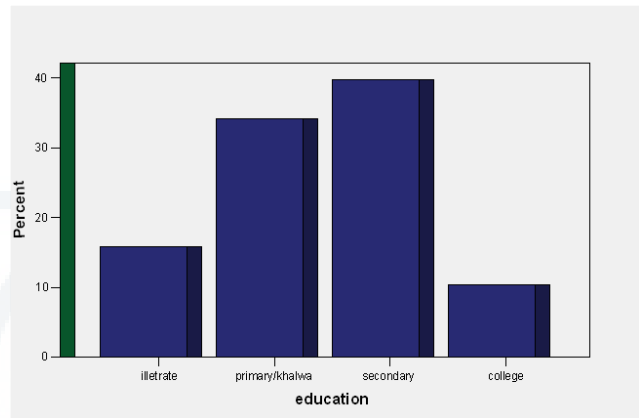


Figure 8: Distribution of study group according to education.

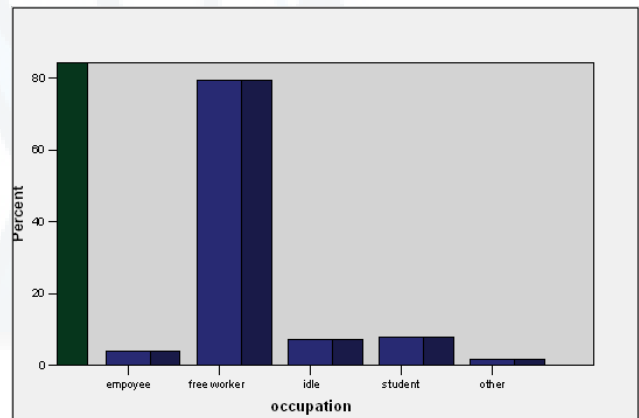


Figure 9: Distribution of study group according to occupation.

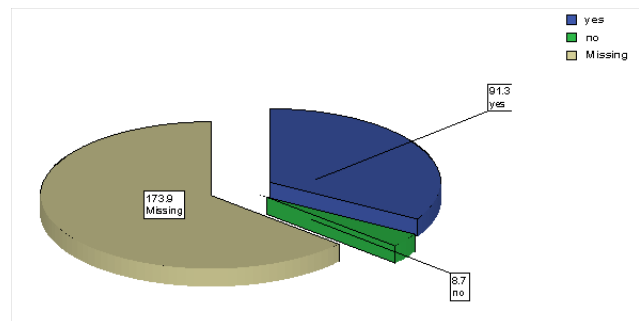


Figure 10: Distribution of study group according to without clothes.

**Table 6:** Group.

		Frequency	Percent
	Yes	43	34.1
	No	3	2.4
	Total	46	36.5
Missing	System	80	63.5
Total		126	100

**Table 7:** Single.

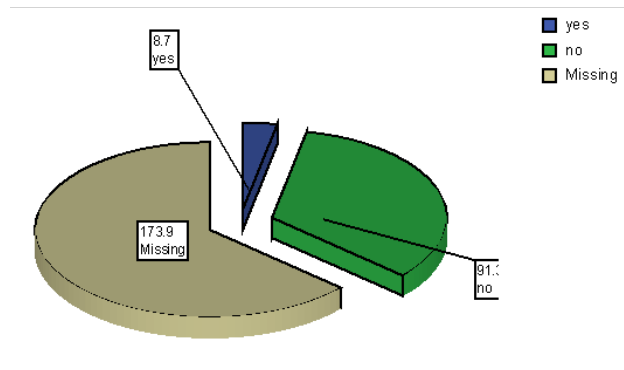
		Frequency	Percent
	Yes	4	3.2
	No	42	33.3
	Total	46	36.5
Missing	System	80	63.5
Total		126	100

**Table 8:** Noofhitting.

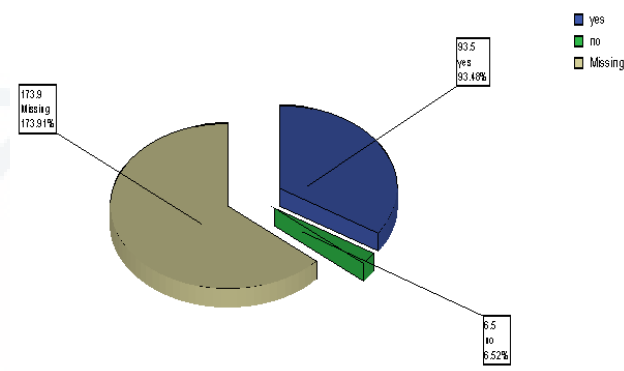
		Frequency	Percent
	5-Jan	20	15.9
	10-Jun	5	4
	More Than 10	21	16.7
	Total	46	36.5
Missing	System	80	63.5
Total		126	100

**Table 9:** Whyhitting.

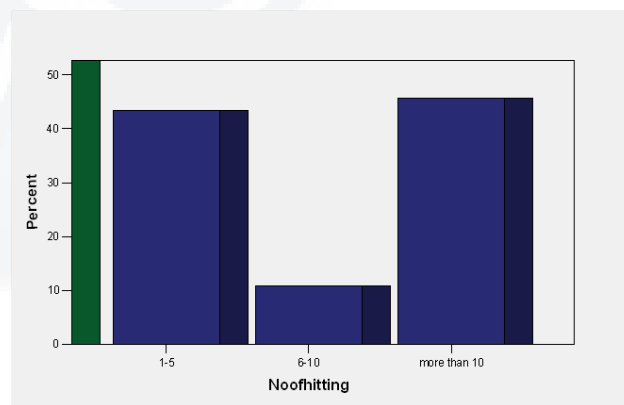
		Frequency	Percent
	Courtesy	4	3.2
	Courage	29	23
	Customs And Traditions	9	7.1
	Other	3	2.4
	Total	45	35.7
Missing	System	81	64.3
Total		126	100



**Figure 11:** Distribution of study group according to single hitting.



**Figure 12:** Distribution of study group according to group hitting.



**Figure 13:** Distribution of study group of non hitting type.

**Table 10:** Hitting transmission diseases.

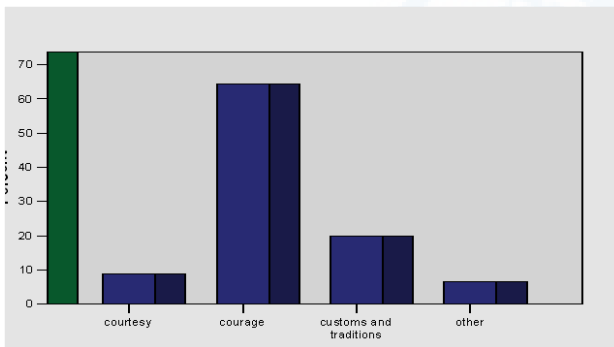
		Frequency	Percent
	Yes	23	18.3
	No	22	17.5
	Total	45	35.7
Missing	System	81	64.3
Total		126	100

**Table 11:** If you know.

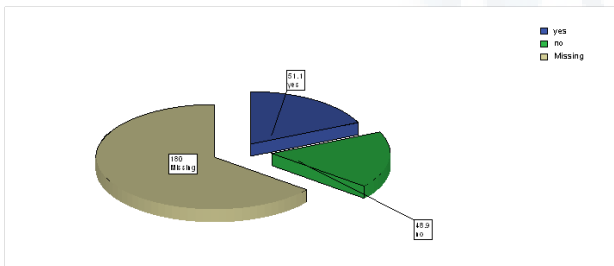
		Frequency	Percent
	Yes	35	27.8
	No	10	7.9
	Total	45	35.7
Missing	System	81	64.3
Total		126	100

**Table 12:** Operation.

		Frequency	Percent
	Yes	6	4.8
	No	38	30.2
	Total	44	34.9
Missing	System	82	65.1
Total		126	100



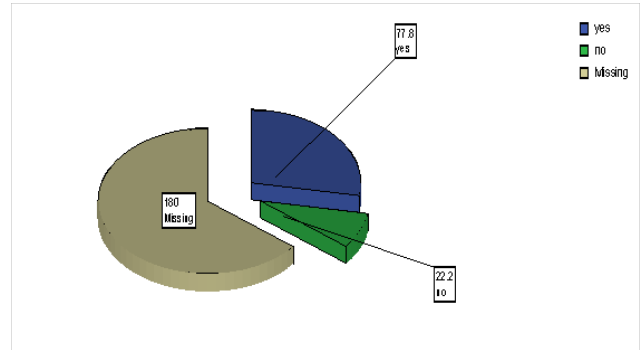
**Figure 14:** Distribution of study group according to reason hitting.



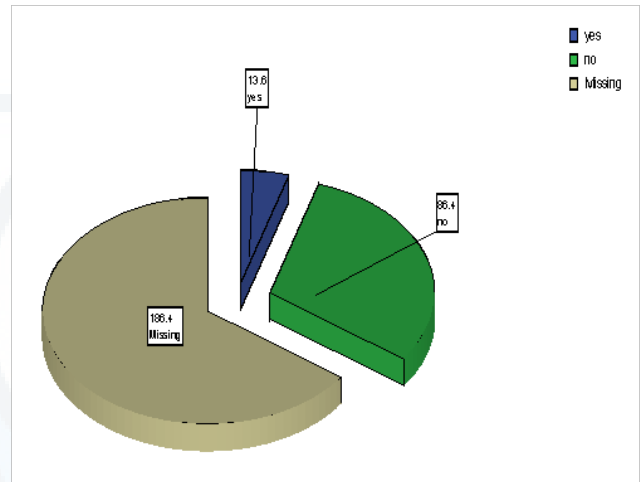
**Figure 15:** Distribution of study group according to their knowledge of blood transmission disease.

**Table 13:** Hijama.

		Frequency	Percent
	Yes	5	4
	No	39	31
	Total	44	34.9
Missing	System	82	65.1
Total		126	100



**Figure 16:** Distribution of study group how answer yes or for leave hitting.



**Figure 17:** Distribution of study group according to operation.

**Table 14:** Cautionary Kawi.

		Frequency	Percent
	Yes	34	27
	No	10	7.9
	Total	44	34.9
Missing	System	82	65.1
Total		126	100

**Table 15:** Blood transmission.

		Frequency	Percent
	Yes	4	3.2
	No	40	31.7
	Total	44	34.9
Missing	System	82	65.1
Total		126	100

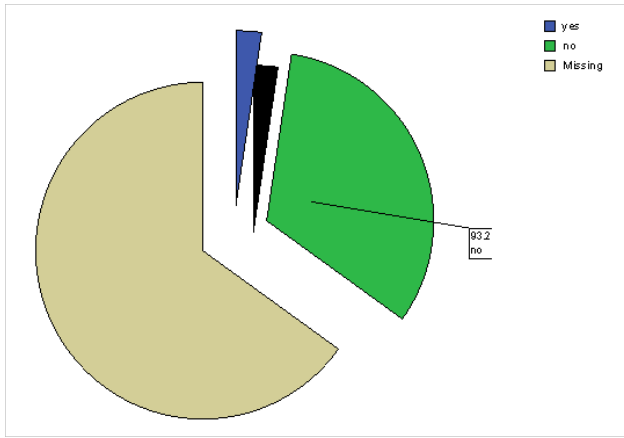


Figure 18: Distribution of study group according to tattoos.

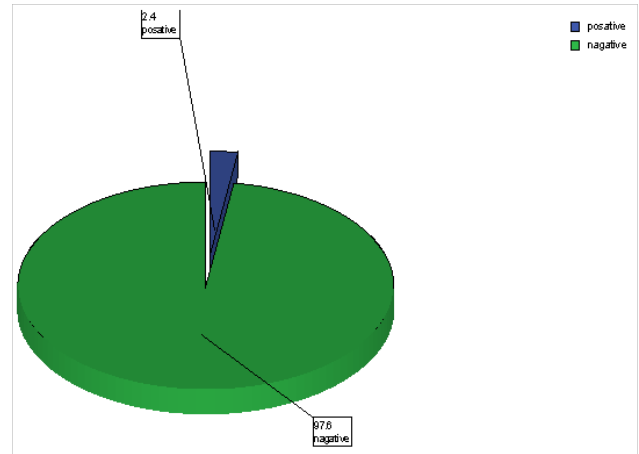


Figure 21: Distribution of study group of HCV.

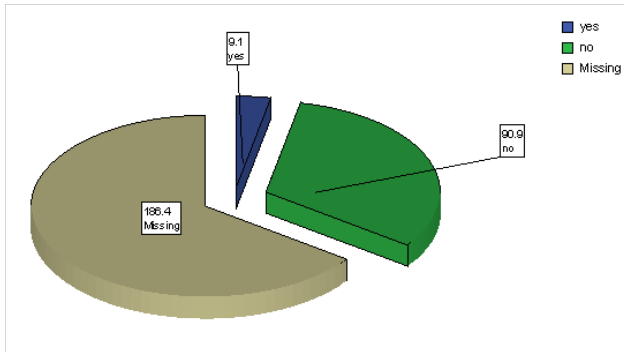


Figure 19: Distribution of study group according to blood transmission.

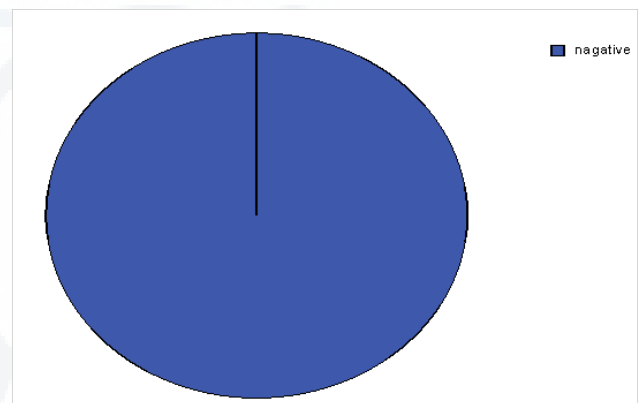


Figure 22: HIV screening.

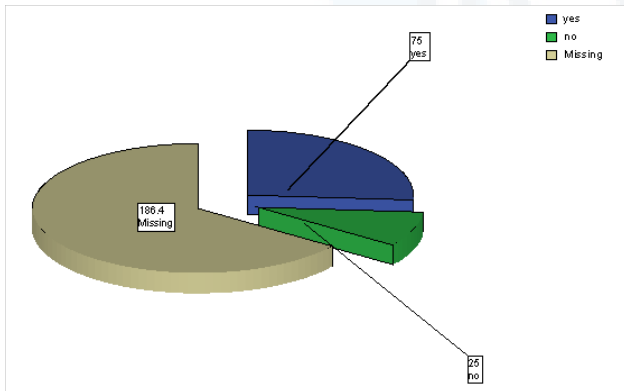


Figure 20: Distribution of study group according to haircut.

Table 16: Haircut.

		Frequency	Percent
	Yes	33	26.2
	No	11	8.7
	Total	44	34.9
Missing	System	82	65.1
<b>Total</b>		<b>126</b>	<b>100</b>

Table 17: Tattoos Washim.

		Frequency	Percent
	Yes	3	2.4
	No	41	32.5
	Total	44	34.9
Missing	System	82	65.1
<b>Total</b>		<b>126</b>	<b>100</b>

Table 18: HCV screening.

	Frequency	Percent
Positive	3	2.4
Negative	123	97.6
<b>Total</b>	<b>126</b>	<b>100</b>

Table 19: HCV screening.

	Frequency	Percent
Negative	126	100

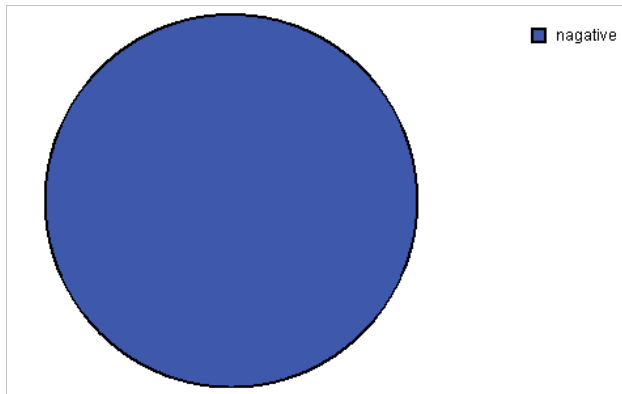


Figure 23: HBV screening.

Table 20: Agegroup \*If you hitting cross tabulation.

Age group	Count	If you hitting		Total
		Yes	No	
Less Than 10-20	9	3	6	9
21-40	66	30	36	66
41-60	38	9	29	38
More Than 60	10	2	8	10
Total	123	44	79	123

\*2 Cells (25.0%) Have Expected Count Less Than 5. The Minimum Expected Count Is 3.22.A  
P valu =3.22.

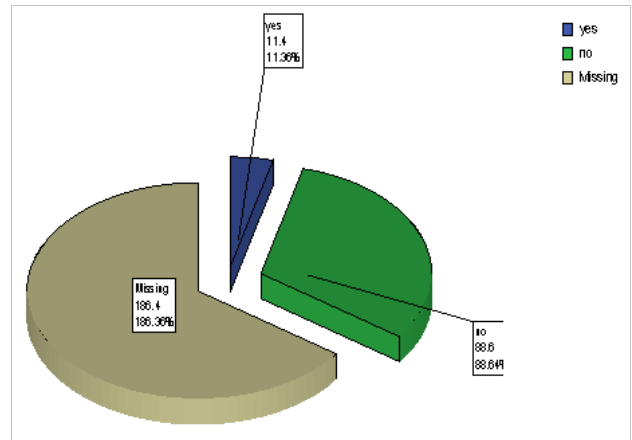


Figure 24: Distribution study group according to hijama.

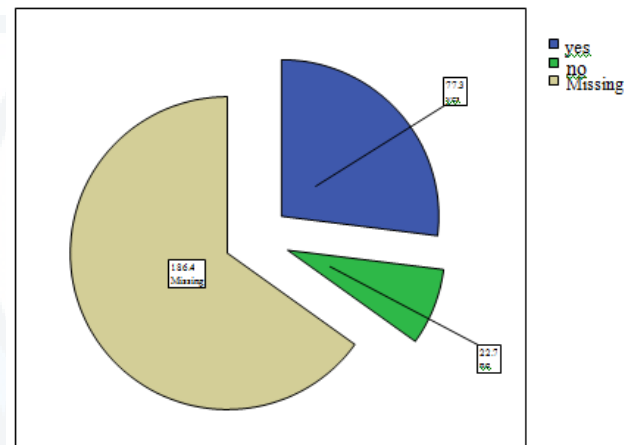
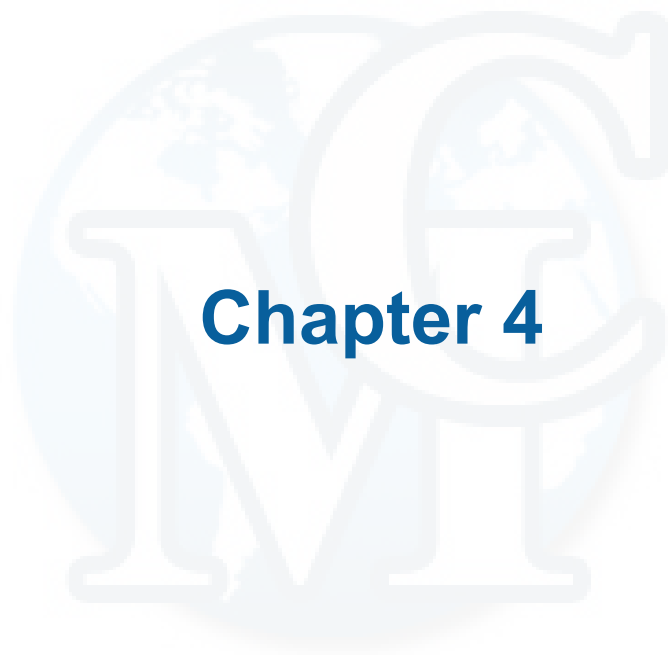


Figure 25: Distribution study group according to Cautery or KAW.



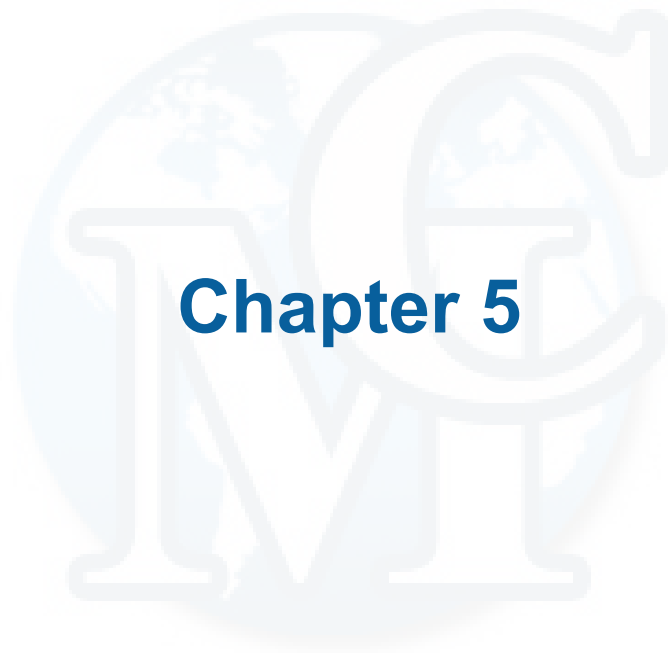
## Chapter 4

## Results

The study was conducted in north sudan locality in River Nile state people all of them are male, most of people educational level was secondary 39% (50),primary 34%(43),illiterate 15% (20),college 10% (13), there was free werker 79%,student 7.9%,idle 7%,empoee 4 %. 37% are hitting, 62% are not hitting. 52% are age group 20 -40 year old, 30% are 40 -60 year old, 63.5% are married and 36 % are single.

The number of people hitting with clothes is 8.7% and without clothes is 91.3% and who hitted single 8.7% and in group 91.3%. an average of hitting number in 1-5 is 43.5%, 6-10 is 10.9%, and more than 10 is 45.7%. the reason of hitting is courtesy in 8.9%, courage in 64.4%, customs and traditional 20% and other 6.7%. The hitting number of people who know hitting transmission of disease 51.1% and 48.9% doesn't know. In about 77.8% of them they can take off hitting, 22.2% said no. operation in hitting people 13.6%, hijama 11.4%, cauterykawi 77.7%, blood transfusion 9.8%, and hair cut 75%. No HIV, HBV case in all study groups. There are 2 cases of HCV

- 1) In hitting people and
- 2) In non hitting.



## Chapter 5



## Discussion

No HIV, HBV case in all study groups. There are 2 cases of HCV

1. In hitting people and
2. In non hitting.

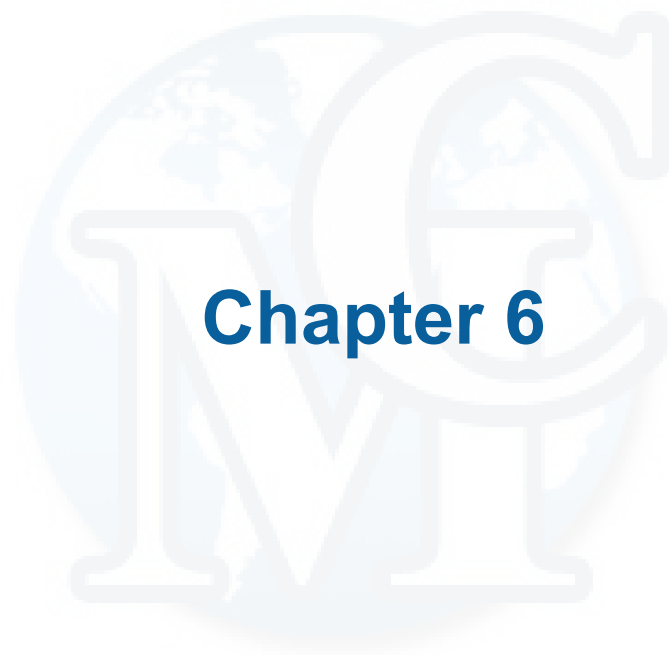
In our research there is no relationship between HBV and hitting, non hitting, socistatus, occupation, education, and all of data related to hitted person that because we have not any case of HBV. In our research there is no relationship between HIV and hitting or non hitting, socistatus, occupation, education, and all data releated to hitted person that because we have not case of HIV. There this relationship between HCV and occupation p value =0,05. This may be due to the pattern of work of affected person (free worker) make them more liable to get infection. HCV positive in age group 20-40 this because the activity of human been start after age of puberty we mean of activity social event and contact with community. Three case of HCV are married these confirm our relation between contact with community and HCV, we fear from:

- I. In Sudan there is tradition habit in people who hitted other people in their weaning this have fidelity of hitting to this people in the future event, and
- II. Also can transmitted HCV to their wife's make other problem?

Two case of HCV are secondary educated and one are illiterate but not there no relationship.

No relationship between hitting and HCV because one case is hitting type and p value =1.10, 65%(30) of hitting case are age group 20-40 year old, this because this age of stabilization in community, age of married, and all younger competent to reach the top of 65%(30) of hitting case are married 91%(42) are hitted without clothes 93%(43) are hitted in group. Number of hitting people that hitting more than 10 =21, 6-10=5, 1-5=20, from this the most number of hitted people more than 10 this indicate large number of social event in north sudan. In hitting people education, secondary 24, khalwa 16, literate 5, collage 2. In non hitting people education, secondary 24, khalwa 27, collage 11, iltrate15, from this the hitting habit more goes with decrease level of education. 51% known about hitting transmission disease, 49% does not know, 77.8% have desire to leave this habit, 22.2% have no desire, so there is strong attraction to stay with this habit, and when we analysis the reason of hitting 65% for courage, 20% for custom and traditional, 10% for courtesy, from that the strong attraction is courage.

In hitting people 13%(6) have history of operation, 10%(5) hjma, 73%(34) cautry, 6%(3) tattoo, 8%(4) blood transfusion, without relationship, but we can say the cauterization spread in north sudan as traditional therapy.



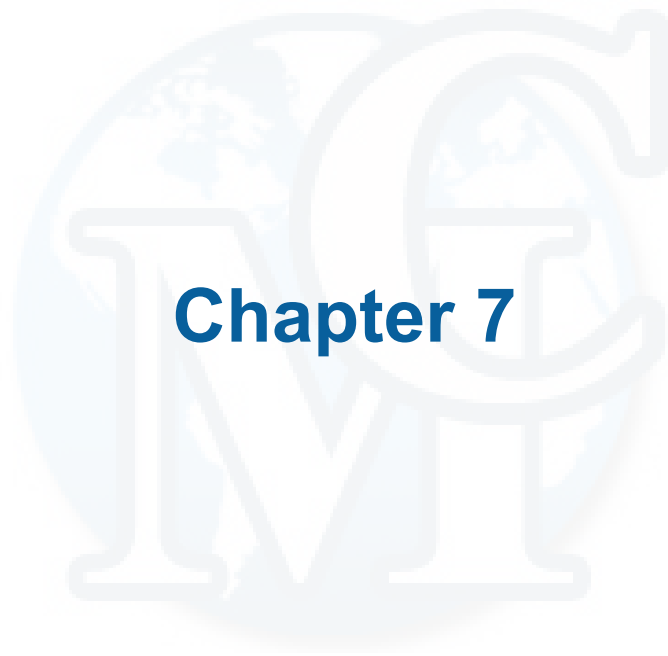
## Chapter 6

## Conclusion

No HIV, HBV case in all study groups. There are 2 cases of HCV

1. In hitting people and
2. In non hitting

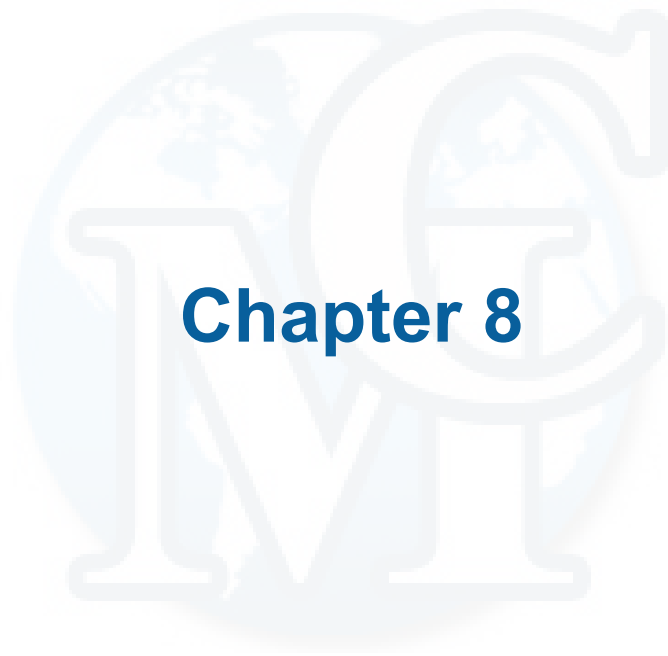
The most hitting; tribe is jalaia, the most level of education in hitted people is secondary, the most occupation is farmer, the most hitting age group is 20-40, the hitted people is without clothes, mostly hitting is in groups, the most hitting number is 10, the most reason of hitting is courage, most of hitting people know about hitting transmission of disease, most of hitting people can take off hitting, the most other way for transmission that can transmit disease in study group is cautry.



## Chapter 7

## Recommendations

- i. Increase awareness of people about risk of hitting itself and hitting transmission diseases the hitting is not religious habit so can easy take off it and it is remark of no developed health country.
- ii. Increasing of health education by application of Medical College programs in the community.
- iii. Conduction of further studies to determine the association between hitting and HBV, HCV & HIV.
- iv. Promote early vaccination of population at risk group against hepatitis
- v. Establishment of youth societies within the clubs and other institutional to strengthen the HIV, HBV & HCV Control activates at the institutional level.



## Chapter 8

## References

1. Parveen Kumar, Michael Clark (2012) kumar &clark's clinical medicine. pp. 1352
2. <http://oxfordjournal.org.com>
3. <http://Britainmedicalbulletin>
4. <http://hepatman.com>
5. <http://bio-medical.org>