

# **Knowledge and Awareness of Hepatitis B among the university students of Bangladesh**

**This research paper is submitted to the Department of Pharmacy, East West University in the partial fulfilment of the requirements for the Degree of Bachelor of Pharmacy**

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## **Declaration by the Research Candidate**

I, Md. Rashadul Alam, ID: 2012-1-70-0054, hereby declare that the dissertation entitled “Knowledge, Awareness and Attitude of Hepatitis B among the university students of Bangladesh” submitted by me to the Department of Pharmacy, East West University and in the partial fulfillment of the requirement for the award of the degree Bachelor of Pharmacy, under the supervision and guidance of Nishat Nasrin, Senior Lecturer, Department of Pharmacy, East West University, Dhaka.

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## **Certificate by the Supervisor**

This is to certify that the thesis entitled " Knowledge, Awareness and Attitude of university students about Hepatitis B and its infected person " submitted to the Department of Pharmacy, East West University for the partial fulfillment of the requirement for the award of the degree Bachelor of Pharmacy is a bonfires record of original and genuine research work carried out by Md. Rashadul Alam, ID: 2012-1-70-054 in 2016 of his research in the Department of Pharmacy, East West University, under our supervision and guidance .

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## **Certificate by the Chairperson**

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## Dedication

This research work is dedicated to my beloved parents,  
honorable faculties and loving friend.

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## **Abstract**

Hepatitis B (HB) is a serious global public health problem which affects liver. Hepatitis viruses are the most common cause of hepatitis in the world but other infections, toxic substances (e.g. alcohol, certain drugs), and autoimmune diseases can also cause hepatitis. Aims of the present study were to determine the knowledge level of university students in Bangladesh about Hepatitis B, their perception of risk factor and their attitude towards Hepatitis B infected person. A questionnaire based survey was carried out among 1003 university students in Dhaka city of Bangladesh. During the study it was found that 100% respondents heard about Hepatitis B where 67.70% were male. Most of them got information from media (48%) and educational institute (43.6%). About 59% students were aware of the affected organ. Among them 82.3% mentioned liver and some other had misconception about the affected organ. Level of vaccination of university students was 51.6% and rest of them didn't take vaccine because of irresponsibility, lack of time and lack of knowledge. Of those who were aware of hepatitis B infection, 65.5% mentioned blood transfusion as route of transmission of Hepatitis B, 55.6% mentioned needles and sharps while only 47% said that the disease can be transmitted through unprotected sex. Most common incorrectly identified routes of transmission by the respondents include mosquito bites (22.2%) and transmission through sharing toilets with infected person (9.3%). The ways of preventing Hepatitis B infection were knowledge and education (78.3%) and blood test before marriage (70.9%). Almost all of the students had positive attitude towards Hepatitis B infected person. Different types of seminar on Hepatitis B, arranged by university can increase students' level of knowledge and awareness. Government and different health related organization should take necessary steps to increase knowledge and awareness about Hepatitis B virus and its infection.

**Keywords:** Hepatitis B, Bangladesh, Vaccination, Transmission.

# **Chapter 1**

## **Introduction**

## **1.1 Overview**

The liver is one of the body's powerhouses. It helps process nutrients and metabolizes medicines. The liver also helps clear the body of toxic waste products.

The word hepatitis means an inflammation of the liver. It can be caused by one of many things — including a bacterial infection, liver injury caused by a toxin (poison), and even an attack on the liver by the body's own immune system. However, hepatitis usually is caused by a virus. The three most common hepatitis viruses are hepatitis A, hepatitis B, or hepatitis C. Two other types of hepatitis virus, D and E, are rare in the United States (Kidshealth Organization, 2015).

Hepatitis is an inflammation of the liver. The condition can be self-limiting or can progress to fibrosis (scarring), cirrhosis or liver cancer. Hepatitis viruses are the most common cause of hepatitis in the world but other infections, toxic substances (e.g. alcohol, certain drugs), and autoimmune diseases can also cause hepatitis (World Health Organization, 2015).

## **1.2 Types of hepatitis**

### **1.2.1 Hepatitis A virus (HAV)**

Hepatitis A virus (HAV) is present in the faeces of infected persons and is most often transmitted through consumption of contaminated water or food. Certain sex practices can also spread HAV. Infections are in many cases mild, with most people making a full recovery and remaining immune from further HAV infections. However, HAV infections can also be severe and life threatening. Most people in areas of the world with poor sanitation have been infected with this virus. Safe and effective vaccines are available to prevent HAV.

### **1.2.2 Hepatitis B virus (HBV)**

Hepatitis B virus (HBV) is transmitted through exposure to infective blood, semen, and other body fluids. HBV can be transmitted from infected mothers to infants at the time of birth or from family member to infant in early childhood. Transmission may also occur through transfusions of HBV-contaminated blood and blood products, contaminated

injections during medical procedures, and through injection drug use. HBV also poses a risk to healthcare workers who sustain accidental needle stick injuries while caring for infected-HBV patients. Safe and effective vaccines are available to prevent HBV.

### **1.2.3 Hepatitis C virus (HCV)**

Hepatitis C virus (HCV) is mostly transmitted through exposure to infective blood. This may happen through transfusions of HCV-contaminated blood and blood products, contaminated injections during medical procedures, and through injection drug use. Sexual transmission is also possible, but is much less common. There is no vaccine for HCV.

### **1.2.4 Hepatitis D virus (HDV)**

Hepatitis D virus (HDV) infections occur only in those who are infected with HBV. The dual infection of HDV and HBV can result in a more serious disease and worse outcome. Hepatitis B vaccines provide protection from HDV infection.

### **1.2.5 Hepatitis E virus (HEV)**

Hepatitis E virus (HEV) is mostly transmitted through consumption of contaminated water or food. HEV is a common cause of hepatitis outbreaks in developing parts of the world and is increasingly recognized as an important cause of disease in developed countries. Safe and effective vaccines to prevent HEV infection have been developed but are not widely available (World Health Organization, 2015).

## **1.3 History of Hepatitis B Virus (HBV)**

The HBV was discovered in 1966 (Blumberg *et al.*, 1967). HBV, the causative agent of B-type hepatitis in humans, is a Hepatotrophic DNA-containing virus that replicates via reverse transcription (Shen *et al.*, 2004). HBV is the only known DNA virus that has hepatocytes specificity (Lu *et al.*, 2004a).

Hepatitis B virus (HBV) was the first human hepatitis virus from which the proteins and genome were identified and characterized. Before discovery of the hepatitis viruses, two

types of hepatitis transmission were differentiated based on epidemiological observations. Type A was considered to be predominantly transmitted by the fecal-oral route, whereas type B was transmitted parenterally (Seo *et al.*, 2004).

In 1966, Blumberg, in a research for polymorphic serum proteins, discovered a previously unknown antigen in the blood of an Australian Aborigine (Australia antigen). Four years later, it was recognized that the appearance of this antigen was related to type B hepatitis (Mao *et al.*, 2004). Using immune electron microscopy, Dane eventually discovered virus-like particles that carried this antigen on their surface, in the serum of hepatitis B patients, and these particles were considered the hepatitis B virus (Lee *et al.*, 2004).

In 1973, the viral nature of the particles discovered by Dane was confirmed by the detection of an endogenous DNA polymerase activity within their core (Schiefke *et al.*, 2004).

This enzyme allowed Shen *et al.*, (2004) to detect and characterize the HBV genome as a small, circular, partially double-stranded DNA molecule.

#### **1.4 Morphology of Hepatitis B Virus**

The virion of hepatitis B (Dane particle) consists of surface and core. The core is formed in hepatocyte nucleus and the surface particles are made in the cytoplasm. The core contains a DNA polymerase. The structure is double-stranded and circular. It is approximately 3200 nucleotides in length and has a single-stranded gap of 600-2100 nucleotides (Sherlock and Dooley 2002). The DNA-polymerase reaction appears to repair the gap. The core contains a core antigen and another antigen called “e” is a protein subunit of the core (Shindo *et al.*, 2004).

Hepatitis B virus is spherical with a diameter of 42nm. Using negative staining of virions adsorbed to the electron microscopic grids, a double-shelled structure of the virions becomes apparent. The outer protein shell (or envelop) is formed by the HBs proteins (Kumar and Agrawal, 2004). Surface structure details such as knobs or spikes as observed on many other enveloped viruses are found on HBV (Sugauchi *et al.*, 2004).

The inner protein shell is referred to as the core particle or capsid, having a diameter of 34nm in cryoelectron microscopy (Hanazaki, 2004). It is composed of HBc protein and encloses the viral DNA, which is often positively stained (Tsitsilonis *et al.*, 2004).

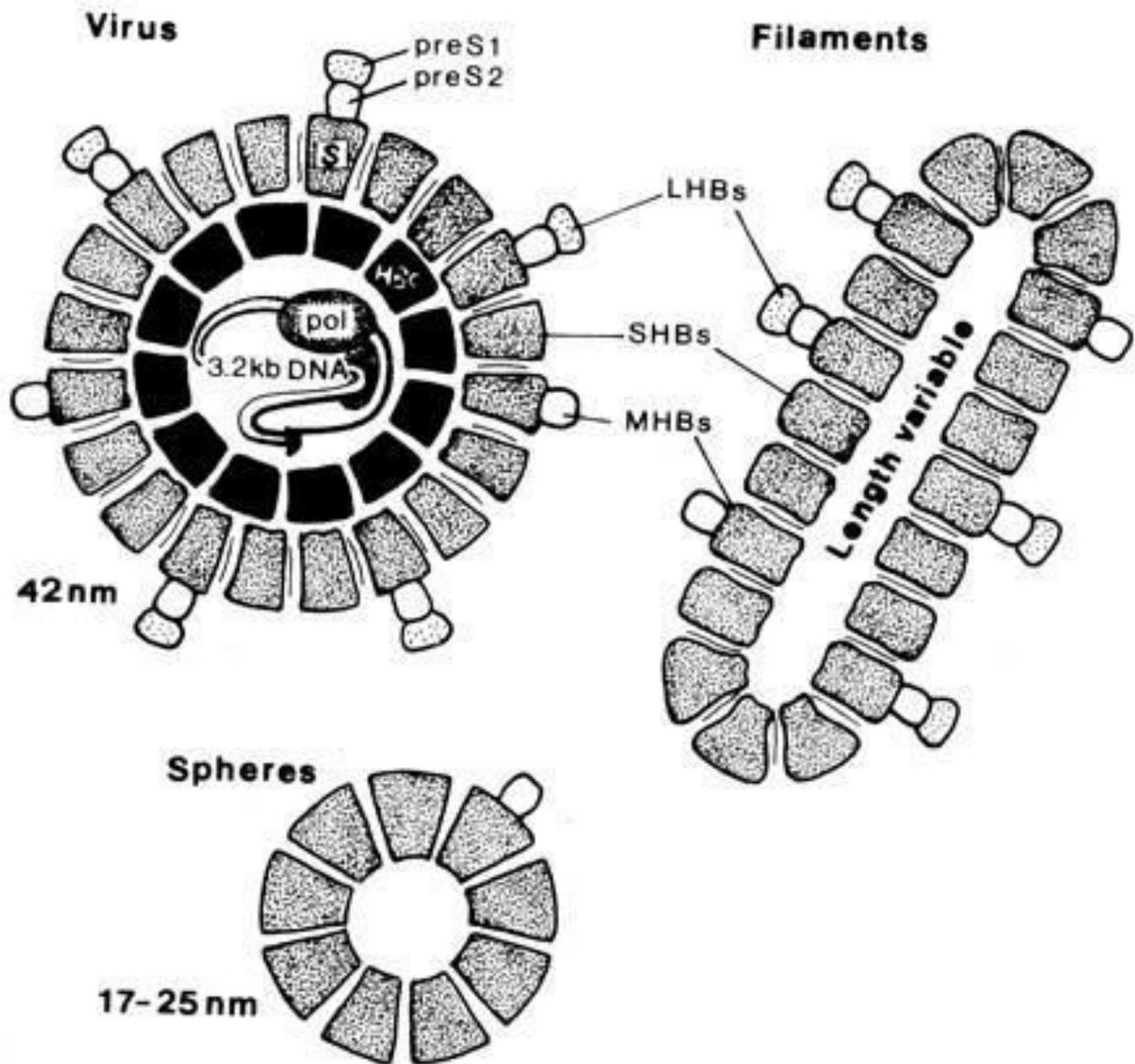


Fig 1.4.1: Schematic diagram of hepadnavirus particles. Individual subunits containing SHBs protein only, HBs protein plus pre-S2 (MHBs), and HBs protein plus pre-S1 and pre-S2 (LHBs) is shown in intact virus, among filaments and spheres. The virus particles contain an internal nucleocapsid (Hbc) and viral genome (Lai *et al.*, 2003a).

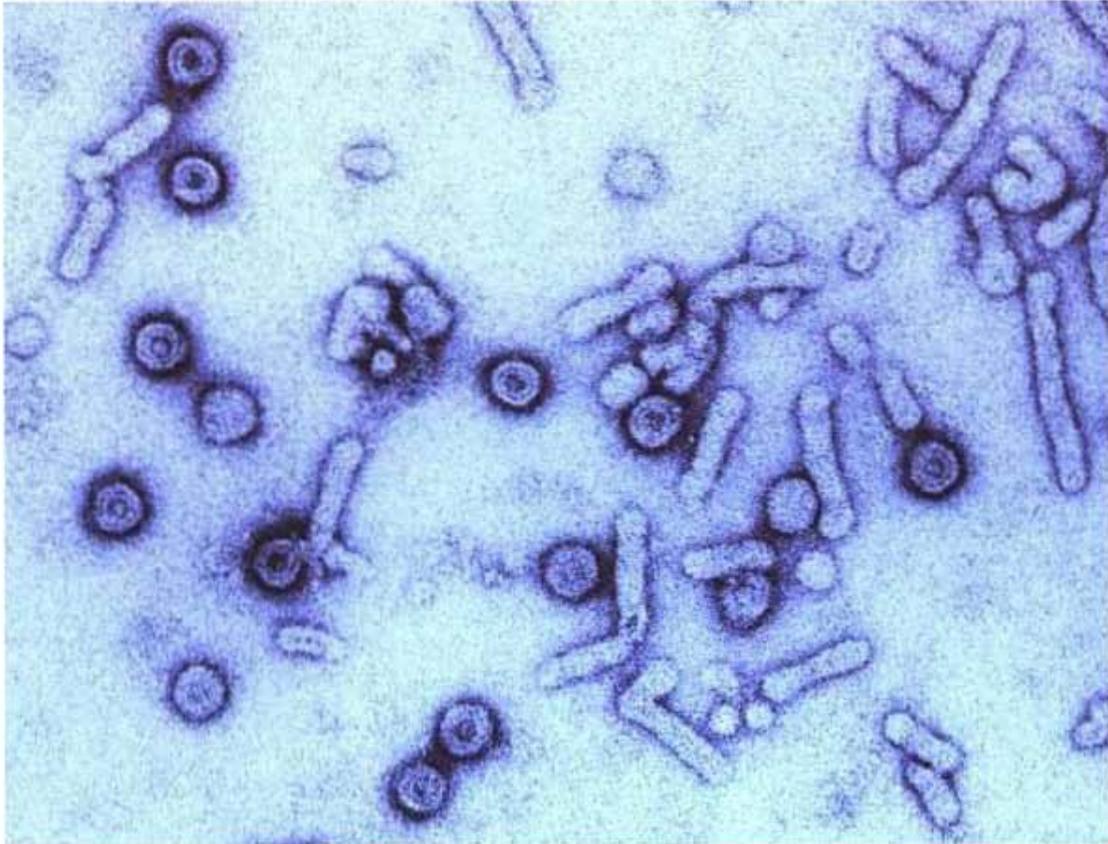


Fig 1.4.2: Electron microscopic presentation of HBV particles. The round 42 nm particles represent infectious virions (Dane particle). The small empty spheres and the filaments are non-infectious. The preparation was enriched in virus particles (Guptan *et al.*, 2002).

### **1.5 Geographical distribution**

Hepatitis B prevalence is highest in sub-Saharan Africa and East Asia, where between 5–10% of the adult population is chronically infected. High rates of chronic infections are also found in the Amazon and the southern parts of eastern and central Europe. In the Middle East and the Indian subcontinent, an estimated 2–5% of the general population is chronically infected. Less than 1% of the population in Western Europe and North America is chronically infected (World Health Organization, 2015).

Worldwide, 2 billion people (1 out of 3 people) have been infected with hepatitis B. 240 million people have become chronically infected (which means they are unable to get rid of the virus). An estimated 1 million people die each year from hepatitis B and its complications.

In the United States, over 12 million people have been infected (that's 1 out of 20 people). An estimated 40,000 people will become infected with hepatitis B each year. Thousands of Americans die each year from hepatitis B and its complications (Hepatitis B Foundation, 2015).

### **1.6 Hepatitis B Virus major health problems**

Viral hepatitis with various forms of acute and chronic liver disease is with potential and ultimately fatal sequelae, causing a public health problem worldwide (Cui *et al.*, 2002).

Hepatitis B is the most important of several hepatitis viruses of man because of the number of cases of the disease and the frequent occurrence of persistent infection that may lead to cirrhosis and cancer of the liver (Lee *et al.*, 2002).

Roughly, one third of the world population has been infected with HBV (Liu *et al.*, 2003).

Although hepatitis B is an ancient disease, most of our knowledge of its epidemiology, prevention, pathogenesis, natural history and treatment were made in the last 30 years (Tibbs and Smith, 2003).

Fulminant HBV infection is an important cause of acute liver failure and is responsible for approximately 100 to 200 deaths per year in the United States (Pramoolsinsup, 2002).

1 million persons die each year from HBV-related chronic liver disease (Akbar *et al.*, 2004). Worldwide HBV infection is one of the ten leading causes of death (Candotti *et al.*, 2004).

### **1.7 Personal risk factors**

Genetic factors influence disease outcome. Persistent HBV segregated within families in a manner suggestive of autosomal recessive trait and the degree of concordance for HBsAg status is significantly higher in monozygotic twins than in dizygotic twins. Also, the allele HLA-DRB1302 was associated with spontaneous elimination of infection (Zhou *et al.*, 2002).

The prevalence of HBV is closely correlated with age ranging from 2% in those under 12 to 59% in subjects over 39 (Wang *et al.*, 2002a). However, those aged 15-24 are at the highest risk (Yao *et al.*, 2004).

## **1.8 Acute HBV Infection**

The incubation period ranges from 2 to 20 weeks (average 8-12 weeks). The onset is usually insidious beginning with non-specific prodromal constitutional and gastrointestinal symptoms including; malaise, anorexia, nausea and vomiting, and flu-like symptoms of pharyngitis, cough, coryza, photophobia, headache and myalgias. Prodromal symptoms abate or disappear with onset of jaundice, although anorexia, malaise and weakness may persist. These events can be related to circulating immune complexes (Livezey *et al.*, 2002).

The usual clinical attack diagnosed in the adult tends to be more severe than for hepatitis A or C, however, the overall picture is similar. The self-limited, benign icteric disease usually lasts less than 16 weeks, jaundice rarely exceeds 4 weeks. Occasionally, a prolonged benign course is marked by increased serum transaminase value for more than 16 weeks, relapses are rare. Cholestatic hepatitis with prolonged deep jaundice and pruritus is unusual (Craxi and Cooksley, 2003). Physical examination reveals mild tender hepatomegaly in over 70% of cases. Mild splenomegaly and posterior cervical lymphadenopathy is found in 15-20% of cases (D. Valla, 2003).

Nevertheless, the clinical course of acute HBV infection may be anicteric. The high carriage rate of serum markers in those who give no history of acute HBV infection suggests that subclinical episodes must be extremely frequent. The non-icteric cases are more liable to become chronic than the icteric ones (Akarca *et al.*, 2004).

### **1.8.1 Symptoms of acute hepatitis B**

Acute hepatitis B is the period of illness that occurs during the first one to four months after acquiring the virus. Only 30% to 50% of adults develop significant symptoms during acute infection. Early symptoms may be non-specific, including fever, a flu-like illness, and joint pains. Symptoms of acute hepatitis may include: fatigue, loss of appetite, nausea, jaundice (yellowing of the skin and eyes), and pain in the upper right abdomen (due to the inflamed liver).

Rarely, acute hepatitis damages the liver so badly it can no longer function. This life-threatening condition is called "fulminate hepatitis." Patients with fulminate hepatitis are at risk of developing bleeding problems and coma resulting from the failure of the liver.

Patients with fulminate hepatitis should be evaluated for liver transplantation. Small studies suggest that the drug lamivudine (Epivir) may be of limited assistance in these cases.

### **1.8.2 Outcome of acute hepatitis B**

The body's immune response is the major determinant of the outcome in acute hepatitis B. Individuals who develop a strong immune response to the infection are more likely to clear the virus and recover. However, these patients also are more likely to develop more severe liver injury and symptoms due to the strong immune response that is trying to eliminate the virus. On the other hand, a weaker immune response results in less liver injury and fewer symptoms but a higher risk of developing chronic hepatitis B. People who recover and eliminate the virus will develop life-long immunity, that is, protection from subsequent infection from hepatitis B.

Most infants and children who acquire acute hepatitis B viral infection have no symptoms. In these individuals, the immune system fails to mount a vigorous response to the virus. Consequently, the risk of an infected infant developing chronic hepatitis B is approximately 90%. In contrast, only 6% to 10% of people older than 5 years who have acute hepatitis B develop chronic hepatitis B (Mary D. Nettleman, 2015).

### **1.9 Chronic Hepatitis B**

Chronic HBV hepatitis is found predominantly in males. Males are six times more likely to become carriers than females. Approximately 10% of patients contracting HBV as adults and 90% of those infected as neonates will not clear HBsAg from the serum within 6 months (Goldstein *et al.*, 2002).

Chronicity may follow an unresolved acute attack. The attack is usually mild. The patient with an explosive onset and deep jaundice usually recovers completely. Similarly, survivors of fulminant viral hepatitis seldom, if ever, develop progressive disease. After an attack, serum transaminase levels fluctuate with intermittent jaundice (Buti *et al.*, 2002).

The patient may be virtually symptom free with only biochemical evidence of continued activity, and may simply complain of fatigue and being generally unwell. Diagnosis may

even be made in a symptom-free patient after a routine medical check or at the time of blood donation (Candotti *et al.*, 2004).

Chronic hepatitis B is often a silent disease. Symptoms do not correlate with the severity of liver damage. Apparently, stable patients with chronic HBV disease may have a clinical relapse. This is marked by fatigue and rise in serum transaminase values. Relapse may be related to seroconversion from an HBeAg positive state to an HBeAg and HBVDNA negative one. Serconversion may be spontaneous in 10% to 15% of patients per annum (Yoshida *et al.*, 2004).

HBV-DNA can remain positive even when anti-HbeAb has developed (Carreno *et al.*, 2004). Spontaneous reactivation from HBeAg negative to HBeAg and HBV-DNA positive state has also been described. The clinical picture ranges from absence of manifestations to fulminant hepatic failure (Lai *et al.*, 2003a).

Some extra-hepatic conditions are associated with circulating immune complexes containing HBsAg. The accompanying chronic liver disease is usually mild and slowly progressive (Haushofer *et al.*, 2002).

### **1.9.1 Chronic Hepatitis B and Hepatocellular Carcinoma**

The history of HBV is influenced by the age at which the infection is acquired, integrity of the host's immunity, and exposure to environmental cofactors. Chronic infection with HBV is more frequent in men than in women, in neonates than in adults, and in immunocompromised patients than in immunocompetent ones (Wen *et al.*, 2002). The risk of chronicity decline 60% during the second year of life to 10% by 5 years of age (Wolters *et al.*, 2002).

In the immunocompetent patient, persistence of HBeAg-producing strains is associated with hepatic inflammation. Seroconversion to antiHBe is paralleled by exacerbation of hepatitis as a result of immunemediated liver cell necrosis and progressive clearance of infected hepatocytes and serum HBV DNA "healthy carriers" (Leung, 2002). The condition of healthy carriers is clinically a long-term benign situation. A prospective cohort study of 92 Italian healthy carriers showed that the prognosis for these subjects was excellent, with a low risk of developing cirrhosis or HCC over 10 years (Ohshiro *et al.*, 2002).

Conversely, HBeAg-seropositive patients with replicating HBV display various degrees of liver damage, from benign forms of chronic lobular hepatitis to more severe forms of active cirrhosis and HCC (Rodriguez *et al.*, 2003). Persistent HBV replication is instrumental in the progression of the disease to cirrhosis and HCC. Virus heterogeneity is another important factor in the natural history of HBV infection (Stephen, 2004).

Hepatocellular carcinoma (HCC) is a frequent sequela of chronic HBV infection. In endemic areas, the risk of developing HCC among individuals chronically infected with HBV is up to 100 times that of nonHBV carriers (Tanaka *et al.*, 2004). The risk to carriers, however, varies substantially from region to region because of factors not clearly understood (Tsai, 2004).

The classic work of Beasley, 1988 in adult Taiwanese civil service workers reported an incidence rate of 495 per 100,000 person-years in HBsAg-positive subjects McMahon *et al.*, 1990 studying a population-based cohort of Alaskan natives, have found an HCC incidence of 387 per 100,000 person-years in HBV carrier males of all ages. Wright (2004) have reported HCC incidence rates for a cohort of 1,069 HBV carriers in Toronto with an average follow up length of 26 months. He found HCC incidence rates of 657 per 100,000 person-years in males and 122 per 100,000 person-years in females (Zhang, 2004).

In a multicenter European study of 349 patients with compensated cirrhosis, secondary to chronic HBV infection, HCC developed in 9% during a mean follow up period of 6 years. The yearly incidence of cirrhosis among chronic HBV patients is 2.4% to 7%, with approximately

1.5% of cirrhotic developing HCC every year (Yang *et al.*, 2004).

### **1.9.2 Post Hepatitis B Cirrhosis**

Many patients with chronic HBV infection evolving over many years with established liver cirrhosis, with jaundice, ascites or portal hypertension. Encephalopathy is unusual at presentation (Honkoop and de Man, 2003). In many cases, cirrhosis is clinically silent. Development of hepatic cirrhosis in a patient with chronic HBV infection could be suspected if the patient has mild pyrexia, vascular spiders, palmer erythema, epistaxis or lower limb oedema (Guillevin *et al.*, 2004).

Firm hepatomegaly is common, but progressive hepatocyte destruction and fibrosis gradually reduce liver size as the disease progresses. Jaundice is usually mild when it first appears (Friedman, 2004). With disease progression, easy bruising becomes more common, endocrine changes are noticed, more readily in men, signs of portal hypertension including splenomegaly, collateral vessel formation, ascites, and upper gastrointestinal tract hemorrhage develop. Evidence of hepatic encephalopathy also becomes increasingly common with advancing disease (Ding *et al.*, 2004).

### **1.9.3 Risk of chronic disease**

The likelihood that infection with the virus becomes chronic depends upon the age at which a person becomes infected. Children less than 6 years of age who become infected with the hepatitis B virus are the most likely to develop chronic infections.

In infants and children:

- 80–90% of infants infected during the first year of life develop chronic infections;
- 30–50% of children infected before the age of 6 years develop chronic infections.

In adults:

- <5% of otherwise healthy persons who are infected as adults will develop chronic infection;
- 20–30% of adults who are chronically infected will develop cirrhosis and/or liver cancer.

## **1.10 Transmission of HBV**

Percutaneous exposure to blood, sexual transmission and peri-natal transmission are account for the majority of cases of HBV infections in humans (Wang *et al.*, 2002c).

Infection by faeces; urine, tears breast milk, bile or pancreatic juice has never been demonstrated even though HBsAg or HBV particles been detected in such fluids (Shang *et al.*, 2002).

### **1.10.1 Peri-natal transmission**

Transmission from mother to neonate may occur through contact with maternal blood and other infectious fluids during labour, colostrums and rarely through breast milk or

placental transmission (Thakur *et al.*, 2002b). Almost all (HBeAg) positive mothers transmit HBV to their infants who usually become chronic HBsAg/HBeAg carriers. This probably because of a tolerogenic effect of HBeAg, this crosses the placenta inducing immunologic tolerance in utero (Saab *et al.*, 2003).

In high-carriage rate areas, HBV infection is acquired by passage from the mother to the baby. The infection is usually not via the umbilical vein, but from the mother at the time of the birth and during close contact afterward. The risk of transmission increases as term approaches and is greater in acute than in chronic carriers (Villamil, 2003).

Antigenaemia develops in the baby within 2 months of birth and tends to persist (Tamori *et al.*, 2003). There is an inverse relationship between the risk of chronicity and the age of infection, the risks being 80% to 90% for infections before the age of 1 year and 20% to 50% for infections in early childhood (Tang *et al.*, 2003).

A curious, but yet not fully explained observation is that peri-natal transmission is much more common in Asia than in Africa (Song *et al.*, 2004). This finding may be because HBsAg positive women in Asia are much more likely to be HBeAg positive and to have higher levels of circulating HBV DNA than women in Africa. However, even when mothers in Africa are HBeAg positive, their babies do not become HBsAg positive until 6 months to one year of age, whereas in Asia, exposed babies tend to become HBsAg positive by 3 months after birth (Zhang, 2004).

### **1.10.2 Sexual contact**

HBV-DNA has been detected in seminal fluid, vaginal secretions and saliva suggesting that these fluids are likely to be infectious. Studies in patients attending clinics for sexually transmitted diseases have demonstrated a link between promiscuous sexual activity and the risk of hepatitis B infection and in terms of population risk, sexual transmission represents the most important route of transmission in the developed world (Ferraro *et al.*, 2003). Hepatitis B was previously considered a sexually transmitted disease predominantly related to homosexual activity. In recent years, however, changes in sexual practice among the homosexual community, prompted by health concerns over human immune deficiency virus, have slowed the spread of HBV among this population (Giannini *et al.*, 2003).

This decrease of homosexual transmission has highlighted the relative importance of heterosexual transmission and led to the increased recognition of HBV infection through heterosexual activity (Trifan and Stanciu, 2003).

In low prevalence areas, such as the United States, most infections (80% to 85%) occur in adults who are exposed through sexual contact to a chronically infected person (Papatheodoridis and Hadziyannis, 2004).

The Centers for Disease Control and Prevention CDC (2002) had a study of acute hepatitis B in sentinel countries (1992-1993) (such as Asian-Pacific Islanders, Alaskan natives, and Asian-Americans). The study showed that heterosexual contact with multiple partners or sexual contact with a person with hepatitis B in the 6 months preceding the acute case accounted for 41% of cases. History of homosexual contact was elicited from another 9% of participants. Infection is frequent in homosexuals and is related to duration of homosexual activity, number of sexual partners and anal contact (Marcellin *et al.*, 2003). Thus, sexual contact is the most frequent route of acquisition of hepatitis B in the United States and probably in other developed countries (Lee *et al.*, 2004).

### **1.10.3 Blood and blood products**

Post transfusion hepatitis B continues to be the most common cause of HBV infection; screening of the donor units for HBsAg by ELISA does not exclude all blood units infectious for HBV. Additional measures to ensure safety of blood supply should be sought (Mark, 2003).

Blood transfusion continues to cause hepatitis B in countries where donor blood is not screened for HBsAg. Transmission is more likely with blood from paid donors than from volunteer blood (Lin and Kirchner, 2004). In the U.S.A and other developed countries, transfusion acquired hepatitis B is rare because of the testing and elimination of HBVcontaminated donor blood (Park *et al.*, 2004).

### **1.10.4 Parental drug abuse**

Parental drug abusers develop hepatitis from using shared, unsterile equipments. The mortality may be very high in this group Multiple attacks are seen and chronicity is frequent (Papatbeodoridis *et al.*, 2002). Liver biopsy may show, in addition to acute or

chronic hepatitis, foreign material, such as a chalk, injected with the elicited drug (Rivero *et al.*, 2002).

### **1.10.5 Opportunities for parental infection**

Opportunities for parenteral infection include the use of unsterile instruments for dental treatment, ear piercing, subcutaneous injections, acupuncture and tattooing. Parenteral drug abusers develop hepatitis from using shared, unsterile equipment (Sherlock and Dooley, 2002).

### **1.11 Diagnosis**

It is not possible, on clinical grounds, to differentiate hepatitis B from hepatitis caused by other viral agents and, hence, laboratory confirmation of the diagnosis is essential. A number of blood tests are available to diagnose and monitor people with hepatitis B. They can be used to distinguish acute and chronic infections.

Laboratory diagnosis of hepatitis B infection focuses on the detection of the hepatitis B surface antigen HBsAg. WHO recommends that all blood donations are tested for hepatitis B to ensure blood safety and avoid accidental transmission to people who receive blood products.

Acute HBV infection is characterized by the presence of HBsAg and immunoglobulin M (IgM) antibody to the core antigen, HBcAg. During the initial phase of infection, patients are also seropositive for hepatitis B e antigen (HBeAg). HBeAg is usually a marker of high levels of replication of the virus. The presence of HBeAg indicates that the blood and body fluids of the infected individual are highly contagious.

Chronic infection is characterized by the persistence of HBsAg for at least 6 months (with or without concurrent HBeAg). Persistence of HBsAg is the principal marker of risk for developing chronic liver disease and liver cancer (hepatocellular carcinoma) later in life (World Health Organization, 2015).

### **1.12 Treatment**

There is no specific treatment for acute hepatitis B. Therefore, care is aimed at maintaining comfort and adequate nutritional balance, including replacement of fluids lost from vomiting and diarrhea. Chronic hepatitis B infection can be treated with drugs,

including oral antiviral agents. Treatment can slow the progression of cirrhosis, reduce incidence of liver cancer and improve long term survival.

WHO recommends the use of oral treatments - tenofovir or entecavir, because these are the most potent drugs to suppress hepatitis B virus. They rarely lead to drug resistance as compared with other drugs, are simple to take (1 pill a day), and have few side effects so require only limited monitoring.

However, in most people, the treatment does not cure hepatitis B infection, but only suppresses the replication of the virus. Therefore, most people who start hepatitis B treatment must continue it for life.

Treatment using interferon injections may be considered in some people in certain high-income settings, but its use is less feasible in low-resource settings due to high cost and significant adverse effects requiring careful monitoring.

There is still limited access to diagnosis and treatment of hepatitis B in many resource-constrained settings, and many people are diagnosed only when they already have advanced liver disease. Liver cancer progresses rapidly, and since treatment options are limited, the outcome is in general poor. In low-income settings, most people with liver cancer die within months of diagnosis. In high-income countries, surgery and chemotherapy can prolong life for up to a few years. In high-income countries, liver transplantation is sometimes used in people with cirrhosis, with varying success (World Health Organization, 2015).

### **1.13 Prevention**

The hepatitis B vaccine is the mainstay of hepatitis B prevention. WHO recommends that all infants receive the hepatitis B vaccine as soon as possible after birth, preferably within 24 hours? The birth dose should be followed by 2 or 3 doses to complete the primary series. In most cases, one of the following two options is considered appropriate:

□ a 3-dose schedule of hepatitis B vaccine, with the first dose (monovalent) being given at birth and the second and third (monovalent or combined vaccine) given at the same time as the first and third doses of diphtheria, pertussis (whooping cough), and tetanus – (DTP) vaccine; or

□ 4 doses, where a monovalent birth dose is followed by three monovalent or combined vaccine doses, usually given with other routine infant vaccines.

The complete vaccine series induces protective antibody levels in more than 95% of infants, children and young adults. Protection lasts at least 20 years and is probably lifelong. Thus, WHO does not recommend booster vaccination for persons who have completed the 3 dose vaccination schedule.

All children and adolescents younger than 18 years-old and not previously vaccinated should receive the vaccine if they live in countries where there is low or intermediate endemicity. In those settings it is possible that more people in high-risk groups may acquire the infection and they should also be vaccinated. They include:

□ People who frequently require blood or blood products, dialysis patients, recipients of solid organ transplantations; people interned in prisons; persons who inject drugs.

□ Household and sexual contacts of people with chronic HBV infection people with multiple sexual partners.

□ Health care workers and others who may be exposed to blood and blood products through their work and travellers who have not completed their hepatitis B vaccination series, who should be offered the vaccine before leaving for endemic areas.

The vaccine has an excellent record of safety and effectiveness. Since 1982, over 1 billion doses of hepatitis B vaccine have been used worldwide. In many countries where 8–15% of children used to become chronically infected with the hepatitis B virus, vaccination has reduced the rate of chronic infection to less than 1% among immunized children.

As of 2013, 183 Member States vaccinate infants against hepatitis B as part of their vaccination schedules and 81% of children received the hepatitis B vaccine. This is a major increase compared with 31 countries in 1992, the year that the World Health Assembly passed a resolution to recommend global vaccination against hepatitis B. Furthermore, as of 2013, 93 Member States have introduced the hepatitis B birth dose vaccine.

In addition, implementing of blood safety strategies, including quality-assured screening of all donated blood and blood components used for transfusion, can prevent transmission

of HBV. Safe injection practices, eliminating unnecessary and unsafe injections, can be effective strategies to protect against HBV transmission. Furthermore, safer sex practices, including minimizing the number of partners and using barrier protective measures (condoms), also protect against transmission (World Health Organization, 2015).

# **Chapter 2**

## **Literature Review**

## **2.1 Knowledge, Attitudes and Practice of Iranian Medical Specialists regarding Hepatitis B and C**

Health care workers (HCWs) are at risk of contracting and spreading hepatitis B virus (HBV) and hepatitis C virus (HCV) to others. In this study a 29-item questionnaire (reliability coefficient = 0.7) was distributed at two national/regional congresses and two university hospitals in Iran to evaluate knowledge, attitudes and behavior of physicians concerning HBV and HCV. Knowledge about routes of transmission of HBV and HCV, prevalence rate and seroconversion rates secondary to a needlestick injury was moderate to low. Concern about being infected with HBV and HCV was  $69.4 \pm 2.1$  and  $76.3 \pm 2$  (out of 100), respectively. Complete HBV vaccination was done on 88.1% of the participants. Sixty percent had checked their hepatitis B surface antibody (anti-HBs), and 83.8% were positive. Only 24% of the surgeons often used double gloves and 28% had reported a needlestick. There was no significant correlation between the different specialties and concern about HBV and HCV; the underreporting of needlestick injuries; and correct knowledge of post-needlestick HBV infection. Although participants were afraid of acquiring HBV and HCV, knowledge about routes of transmission, prevalence, protection and post-exposure seroconversion rates was unsatisfactory. By making physicians aware of possible post-exposure prophylaxis, the underreporting of needlestick injuries could be eliminated. Continuous training about HBV and HCV transmission routes, seroconversion rates, protection, as well as hepatitis B vaccination and checking the anti-HBs level, is a matter of necessity (Ali *et al.*, 2010).

## **2.2 A cross sectional assessment of knowledge, attitude and practice towards Hepatitis B among healthy population of Quetta, Pakistan**

A cross sectional, descriptive study was undertaken on one thousand healthy individuals (aged 18 years and above) by distributing 1000 questionnaires. 780 were returned with a response rate of 78.0%. Four hundred and twenty (53.8%) respondents were male with mean age of  $32.76 \pm 9.40$  year. Two hundred and eight (26.7%) had intermediate level of education and 354 (45.4%) were unemployed. Mean scores for knowledge, attitude and practice were  $8.74 \pm 2.7$ ,  $3.72 \pm 1.2$  and  $2.76 \pm 1.1$  respectively. Significant and positive linear correlations between knowledge-attitude ( $r=0.296$ ,  $p<0.01$ ) knowledge-practice ( $r=0.324$ ,  $p<0.01$ ) and attitude-practice ( $r=0.331$ ,  $p<0.01$ ) were observed. Area of

residence (locality) was the only variables significantly associated with mean KAP of the study respondents (ul Haq *et al.*, 2012).

### **2.3 Knowledge, attitude and practice of health care workers toward Hepatitis B virus infection, Sudan**

This study was set out to assess health care providers' knowledge, attitude and practice towards hepatitis B virus infection (HBV) in four public hospitals in Wad Medani, Sudan. Anonymous pre-tested questionnaire was completed by 295 different health care providers. The response rate was 100%. The study revealed that, 97.2% of doctors, 98.6% of nurses, 94.8% of laboratory technicians and 95.7% of other paramedical knew that HBV transmitted via blood. For hygienic precautionary measure; the current study disclosed that (81%) of the responding providers were routinely used to recap needles after use and only (33%) of doctors were always wearing gloves. Gloves were not readily available in all units where there is a high risk of infectious occupational exposure. More than 50% ( $p < 0.001$ ) of health care workers were not vaccinated against HBV. Healthcare workers had poor knowledge about Universal Standard Precautions Guidelines, and do not fully appreciate their occupational risk regarding hepatitis B infection. Set of recommendations was proposed for formulation and implementation of standard precautions guidelines (Bakry *et al.*, 2012).

### **2.4 Viral hepatitis in Germany: poor vaccination coverage and little knowledge about transmission in target groups**

In Germany, vaccination against hepatitis B is recommended for infants, children and adolescents since 1995 and for specific target groups since 1982. Little is known about knowledge about viral hepatitis and attitudes toward hepatitis B vaccination-factors likely to influence vaccine uptake. In order to estimate vaccination coverage in adult target groups and in the overall adult population and to assess knowledge and attitudes a nationwide cross-sectional telephone survey among 412 persons in November 2004 was conducted. Vaccination coverage (VC) standardized for age, sex and residence was 29.6% in the general population and 58.2% in target groups for hepatitis B vaccination. Particular gaps in vaccine coverage were detected among health care workers (vc: 69.5%) and chronically ill persons (vc: 22.0%). Knowledge on risk factors and transmission was

far below expectations, whereas the acceptance of vaccination in the majority of the population (79.0%) was good (Schenkel *et al.*, 2008).

## **2.5 Prevalence and risk factors of hepatitis B and C virus infections in an impoverished urban community in Dhaka, Bangladesh**

Viral hepatitis is a serious global public health problem affecting billions of people globally, and both hepatitis B virus (HBV) and hepatitis C virus (HCV) infections are rapidly spreading in the developing countries including Bangladesh due to the lack of health education, poverty, illiteracy and lack of hepatitis B vaccination. Also there is lack of information on their prevalence among the general population. So, a population-based serological survey was conducted in Dhaka to determine the prevalence and risk factors of HBV and HCV infections. From June 2005-November 2006, 1997 participants were screened for HBsAg, anti-HBc and anti-HCV, 738 (37%) were males with mean (SD) age of 24 (14) years. HBV-seropositivity was documented in 582 (29%) participants: 14 (0.7%) were positive for HBsAg, 452 (22.6%) for anti-HBc and 116 (5.8%) for both HBsAg and anti-HBc. Four (0.2%) participants were positive for anti-HCV, and another five (0.3%) for both anti-HBc and anti-HCV. Ninety-six/246 (39%) family members residing at same households with HBsAg positive participants were also HBV-seropositive [74 (30.1%) for anti-HBc and 22 (8.9%) for both HBsAg and anti-HBc], which was significantly higher among family members (39%) than that of study participants (29%) (OR 1.56;  $p < 0.001$ ). In bivariate analysis, HBV-seropositivity was significantly associated with married status (OR 2.27;  $p < 0.001$ ), history of jaundice (OR 1.35;  $p = 0.009$ ), surgical operations (OR 1.26;  $p = 0.04$ ), needle-stick injuries (OR 2.09;  $p = 0.002$ ), visiting unregistered health-care providers (OR 1.40;  $p = 0.008$ ), receiving treatment for sexually transmitted diseases (STD) (OR 1.79;  $p = 0.001$ ), animal bites (OR 1.73;  $p < 0.001$ ); ear-nose-body piercing in females (OR 4.97;  $p < 0.001$ ); circumcision (OR 3.21;  $p < 0.001$ ), and visiting community barber for shaving in males (OR 3.77;  $p < 0.001$ ). In logistic regression analysis, married status (OR 1.32;  $p = 0.04$ ), surgical operations (OR 1.39;  $p = 0.02$ ), animal bites (OR 1.43;  $p = 0.02$ ), visiting unregistered health-care providers (OR 1.40;  $p = 0.01$ ); and ear-nose-body piercing in females (OR 4.97;  $p < 0.001$ ) were significantly associated with HBV-seropositivity (Ashraf *et al.*, 2010).

## **2.6 Health workers' knowledge, attitude and behavior towards hepatitis B infection in Southern Nigeria**

Globally, it is estimated that approximately 400 million individuals are chronic carriers of hepatitis B virus and more than a million people die annually from HBV-related causes. This descriptive cross-sectional study was carried out at Irrua Specialist Teaching Hospital in Edo state, Nigeria, to determine health workers knowledge, attitude and behavior towards hepatitis B infection using a structured questionnaire. Two hundred respondents from the different cadres of health workers in the hospital were recruited by stratified sampling into the study. More than three-quarters of the respondents (81%) had ever heard of hepatitis B infection prior to the study. Of those that were aware of hepatitis B infection, 92% mentioned blood and blood products as route of transmission of Hepatitis B, 68.5% mentioned needles and sharps while only 37% said that the disease can be transmitted through sexual intercourse. Incorrectly identified routes of transmission by the respondents include faeco-oral transmission (14.2%) and transmission through drinking contaminated water (9.3%). On ways of preventing Hepatitis B infection, correctly identified preventive measures include vaccination by a majority (77.2%) of the respondents. More than three quarters of the respondents (80.9%) said that Hepatitis B can be acquired as a nosocomial infection from the hospital while 69.8% said that Hepatitis B infection is widely transmitted like HIV/AIDS. A little more than three-quarters of the respondents (75.5%), were aware of the existence of Hepatitis B vaccine prior to the study. Only 70.2% have actually ever received Hepatitis B vaccine, out of which only 59.4% completed the vaccination schedule. Poor compliance of Health workers to hepatitis B vaccination is an issue that deserves serious attention. There is a need for health education campaigns for health workers so that they can understand the risks that they are exposed to based on the nature of their work (Samuel *et al.*, 2009).

## **2.7 Knowledge, attitudes and practices among people with chronic hepatitis B attending a hepatology clinic in Malaysia: A cross sectional study**

Hepatitis B (HBV) is the leading cause of cirrhosis and hepatocellular carcinoma worldwide. This study assessed the knowledge, attitudes and practices of people with chronic HBV and the associated factors in outpatient adult hepatology clinic at a tertiary hospital in Kuala Lumpur. The response rate was 89% (n = 483/543). Participants had a

mean age of 46.3 ( $\pm$ 14.7) years and the mean duration of HBV from time of diagnosis was 12.2 ( $\pm$ 8.8) years. The mean knowledge score was 12.57/20 (standard deviation:  $\pm$ 4.4, range: 0–19). Participants aged 30–39 years, with higher educational attainment, employed in professional jobs, longer duration of diagnosis and those without cirrhosis had significantly higher knowledge scores. Age, education level and duration of diagnosis were significant predictors of the knowledge score on standard multiple regression analysis. More than half of the participants were worried of spreading HBV infection to family and friends and worried since the diagnosis. A third of the participants (33.5%) were embarrassed to reveal their diagnosis to the public but most of them (93.6%) would inform their family. Those who reported feeling worried since their diagnosis were more likely to be middle-aged, of Malay ethnicity, have shorter duration of diagnosis of less than 10 years and have received therapy. About half of the participants (50.6%) did not share dining utensils and the majority (93.2%) believed that HBV can be transmitted by sharing of eating and drinking utensils. Older patients were significantly less likely to share utensils. Those who felt worried since diagnosis had significant higher knowledge of HBV (Mohamed *et al.*, 2012).

## **2.8 Assessment of Knowledge and Practice towards Hepatitis B among Medical and Health Science Students in Haramaya University, Ethiopia**

Hepatitis B (HB) is a serious infection that affects liver and caused by hepatitis B virus (HBV). HB is a serious global public health problem and the health professionals are most at risk. It is contagious and easy to be transmitted from one infected individual to another by blood to blood contact, mother to child, unprotected sexual intercourse, sharing of eating utensils and other barber shop and beauty salon equipment. The aim of this study was to assess knowledge and practices about transmissions and prevention of hepatitis B among medical and health science students on clinical attachment in Haramaya University. A cross sectional study was conducted among 322 health science and medical students who are starting clinical attachment (year II, III, IV, V and VI) from February 1–15, 2013. Self-administered structured questionnaire was used to collect information. Out of 322 distributed questionnaires, 322 were returned with a response rate of 100.0%. Majority of the students (91%) were in the age group 20–24 and 232 (72%) of the respondents were male. Majorities (95.3%) of students were not fully vaccinated against Hepatitis B and 48.4% of the students were not aware about the availability of post

exposure prophylaxis for HB. Mean scores for knowledge and practice were  $11.52 \pm 2.37$  and  $2.76 \pm 1.1$  respectively. Significant and positive linear correlations between knowledge-practice ( $r=0.173$ ,  $p=0.002$ ) was observed. Study department was significantly associated with mean knowledge and practice of study respondents. This study indicates that lack of awareness about Hepatitis B, its route of transmission and modes of prevention among the medical students entering into the profession. Similarly, 95.3% the students were not fully vaccinated against Hepatitis B, which makes them vulnerable to the disease (Mesfin and Kibret, 2013).

## **2.9 Knowledge, Attitudes and Practices of Barbers Regarding Hepatitis B and C Viral Infection in Sana'a City, Yemen**

There is strong evidence that razors, barber's scissors, nail files and body piercing instruments are risk factors for transmission of hepatitis B and C. to investigate the knowledge, attitudes and practices regarding hepatitis B and C virus among barbers in Sana'a city. KAP study was conducted from July–September 2011. Two hundred and thirty four barbershops were surveyed. Out of 234 barber shops, 73.1% heard about viral hepatitis B and C. The awareness of modes of transmission of hepatitis and the different sources/risk factors were moderate, ranging from 51.6% who knew that hepatitis can be transmitted through sexual transmitted to 82.1% who knew that hepatitis can be transmitted through blood transfusion. 54.9% of barbers did not agree that it was essential to have periodic tests for HBV and HCV; however, 67.5% would themselves like to be tested for these infections. 32% washed their hands before attending each client, 59% cleaned instruments with disinfectant between clients, 96.1% washed razors with tap water before use on a new client, 92.6% also washed their razors with an antiseptic solution after every use, 87% used a new blade on new clients and 55% used disinfectants for skin cuts. In Yemen, a large number of barbers are shaving clients with an old style razor with a permanent blade. There is moderate awareness about the various modes of transmission of hepatitis among the barbers (Al-Rabeei, Al-Thaifani and Dallak, 2011).

## **2.10 The Knowledge, Attitude and Practices regarding HBV Infection of Married Women in the Reproductive Age Group living in different districts of Bangladesh**

The present study was conducted to know the knowledge, attitude, and practices of 300 married women in reproductive age group living in different districts in Bangladesh, regarding HBV infection. Only 20% women were aware and 50% had micro concept about the mode of transmission of HBV. 4% of women, 30% of children up to 5 years and 15% of children above 5 years were fully immunized with hepatitis B vaccine. 80% of children up to 5 years and 75% of children above 5 years were fully immunized as per universal immunization program (Rahman and Mannan, 2010).

## Significance of study

Hepatitis is an inflammation of the liver and may be caused by the virus Hepatitis B (HBV). Hepatitis B is a global problem, with 66% of all the world population living in areas where there are high levels of infection. There are more than 2 billion people worldwide; having evidence of recent or past HBV infection and 350 million are chronic carriers of hepatitis B infection. In South East Asian Region there are estimated 80 million HBV carriers (about 6% of the total population)

India has the intermediate endemicity of hepatitis B, with hepatitis B surface antigen prevalence between 2% and 10% among the population studied. The number of carriers in India has been estimated to be over 40 million (Indian Medical Gazette, 2012).

Hepatitis B is an acute systemic infection with major pathology in the liver caused by HBV. The life time risk of complications such as chronic hepatitis, cirrhosis and hepatocellular carcinoma in subjects with chronic HBV infection is a major concern for health care personnel (Barker *et al.* 1970, Ozaras, 2009).

As it is a global issue and in our country, the incidence of diseases caused by hepatitis B, is increasing day by day. There are several studies conducting and ongoing on knowledge and awareness in different countries around the world. As far as our knowledge there is no major significant studies regarding this topic. Main reasons for choosing this topic for the study was to identify the current stage of knowledge of mode of transmission, mode of prevention and control and attitude towards infected person among the different university students of Bangladesh.

### **Aims of the study**

Aims of the study were:

- To determine the knowledge level of University students in Bangladesh about Hepatitis B
- Their perception of risk factor of Hepatitis B.
- Their attitude towards Hepatitis B infected person.

# **Chapter 3**

## **Methodology**

### **3.1 Type of the Study**

It was a survey based study.

### **3.2 Study Population**

In this study, University students were the study population. The study was carried out on 1003 Students of different universities inside Dhaka city.

University including:

1. East West University
2. Dhaka University
3. Jahangirnagar University
4. Jagannath University
5. North South University
6. Ahsanullah University of Science and Technology
7. Southeast University
8. ASA University
9. Green University of Bangladesh
10. Bangladesh University
11. Uttara University

### **3.3 Inclusion Criteria**

- University Students
- Both males and females
- Different discipline

### **3.4 Exclusion Criteria**

- Anyone without University student.

### **3.5 Data Collection Method**

The data was collected through questionnaire that is formed in English language. It is a questionnaire consists of multiple choice type questions. The data was collected by both face to face interview and by questionnaire supply.

### **3.6 Development of the Questionnaire**

The questionnaire was developed based on different findings in available journal and research paper. Also from the observation of different behavior of Bangladeshi people.

### **3.7 Sampling Technique**

In this study random sampling was followed.

### **3.8 Data collecting period**

The duration of the study was about five months that started from January, 2016 up to May, 2016.

### **3.9 Data Analysis**

After collecting, all the data were checked and analyzed with the help of Microsoft Excel 2007.

# **Chapter 4**

## **Results**

#### 4.1 .1 Age Distribution

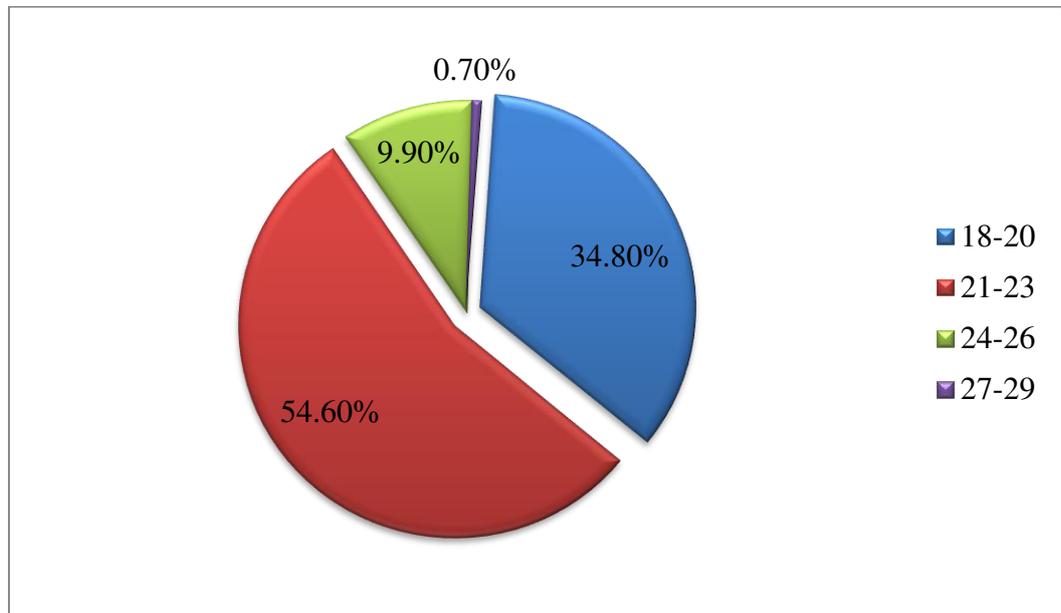


Fig 4.1 .1: Age Distribution

Among the respondents 54.6% students were in the age range of 21-23, 34.8% were in the age range of 18-20, 9.90% were in 24-27. Only 0.7% students were in 27-29 years.

#### 4.1.2 Gender Distribution

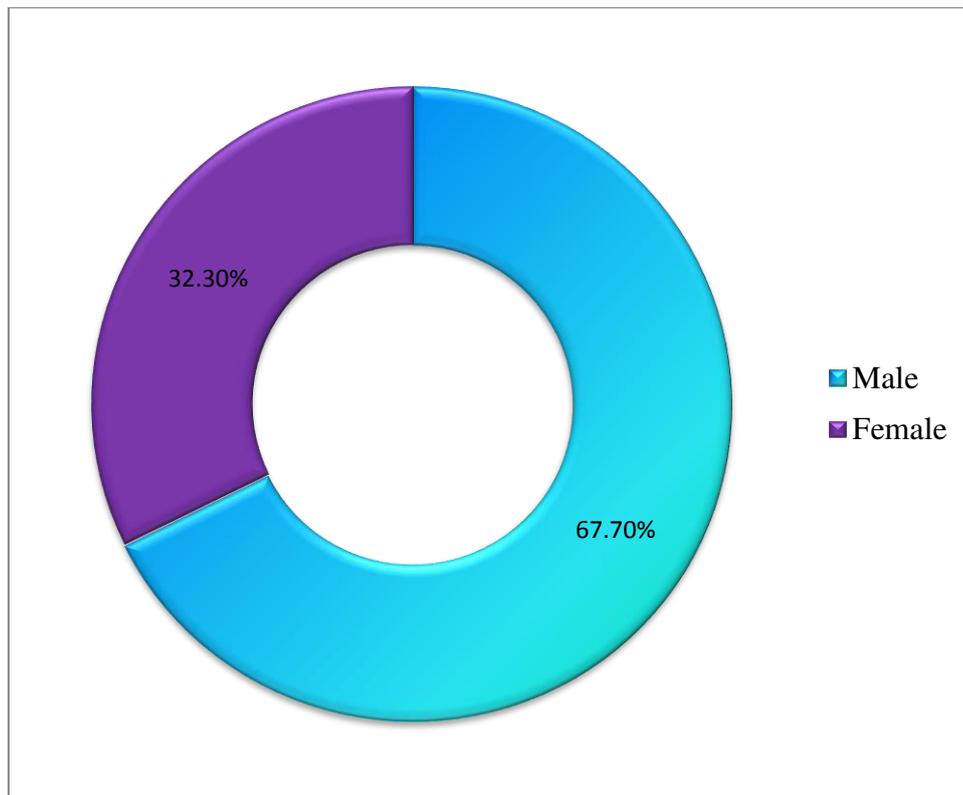


Fig 4.1.2 Gender Distribution

In this study 67.7% students were male and 32.3% students were female.

### 4.1.3 Department distribution

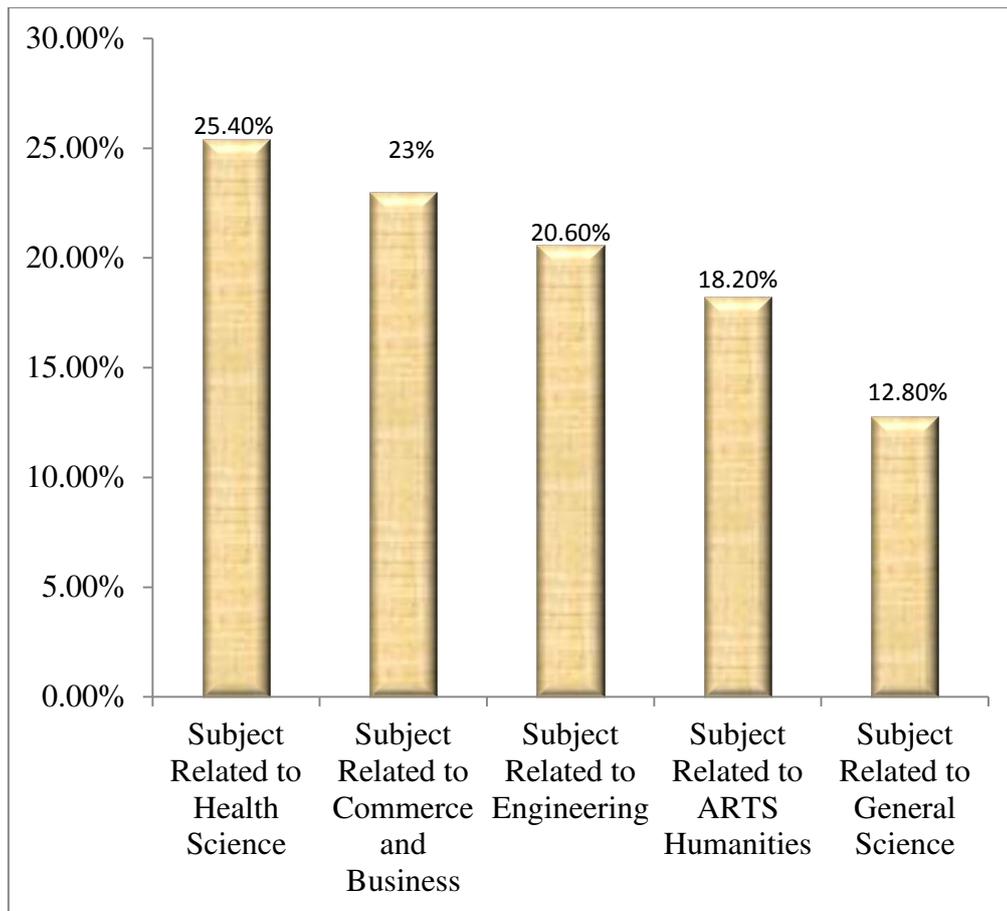


Fig 4.1.3: Department Distribution

The study showed that 25.4% students were from Health science subjects, 23% were from Commerce and Business, 20.6% from subject related to Engineering, 18.2% from Arts and Humanities, 12.8% from General Science subject.

#### 4.1.4 Year of study

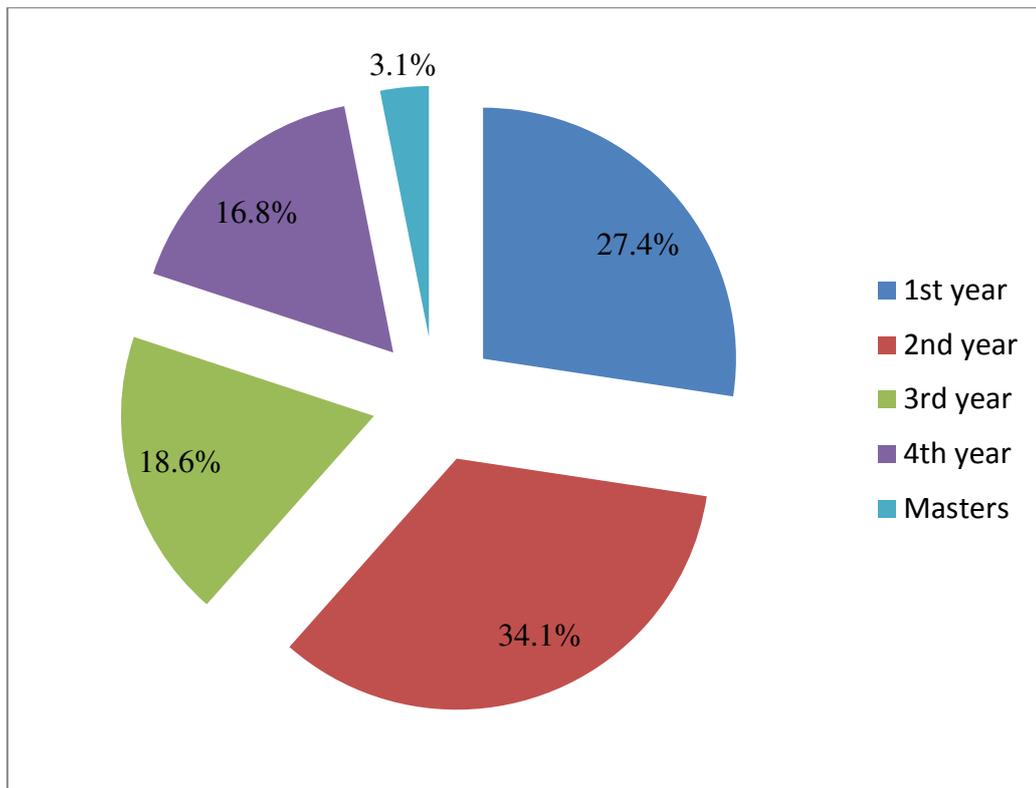


Fig 4.1.4: Year of study

Majority of the students of the survey studied in 2<sup>nd</sup> year (34.1%), whereas 1<sup>st</sup> year (27.4%) and 3<sup>rd</sup> year (18.6%) students were comparatively less. Only a few were studying master degree (3.1%).

#### 4.1.5 Marital status

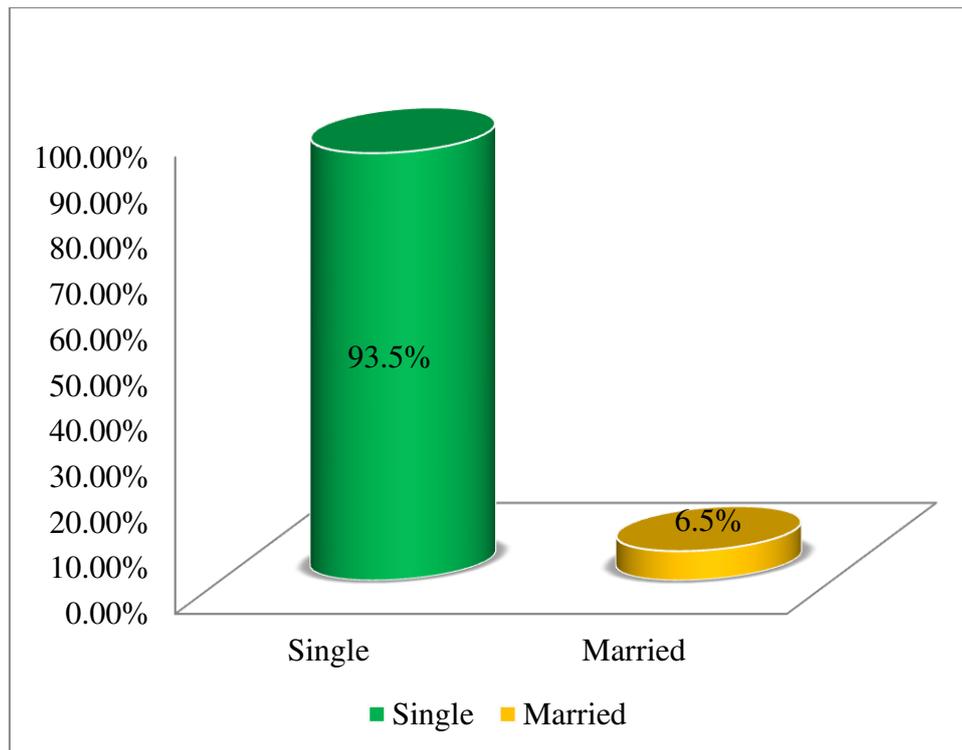


Fig 4.1.5: Marital status

This graph showed that among respondents 93.5% were single and 6.5% were married.

## 4.2 Knowledge about Hepatitis B

### 4.2.1 Heard about Hepatitis B

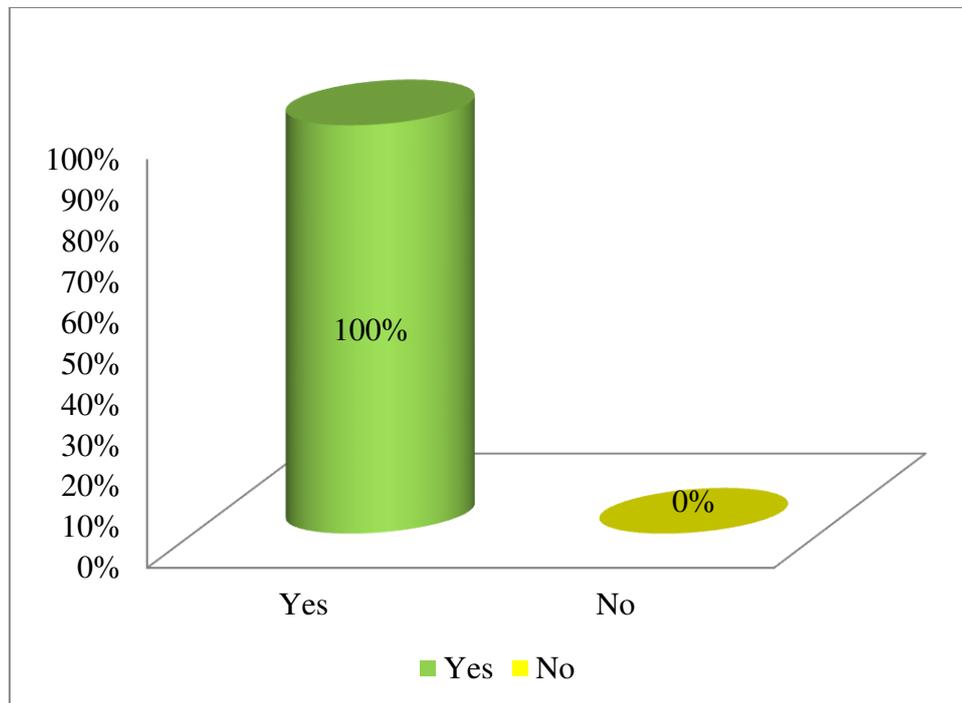


Fig 4.2.1: Heard about Hepatitis B

During the study it was found that 100% students have heard about Hepatitis B.

#### 4.2.2 Source Of information

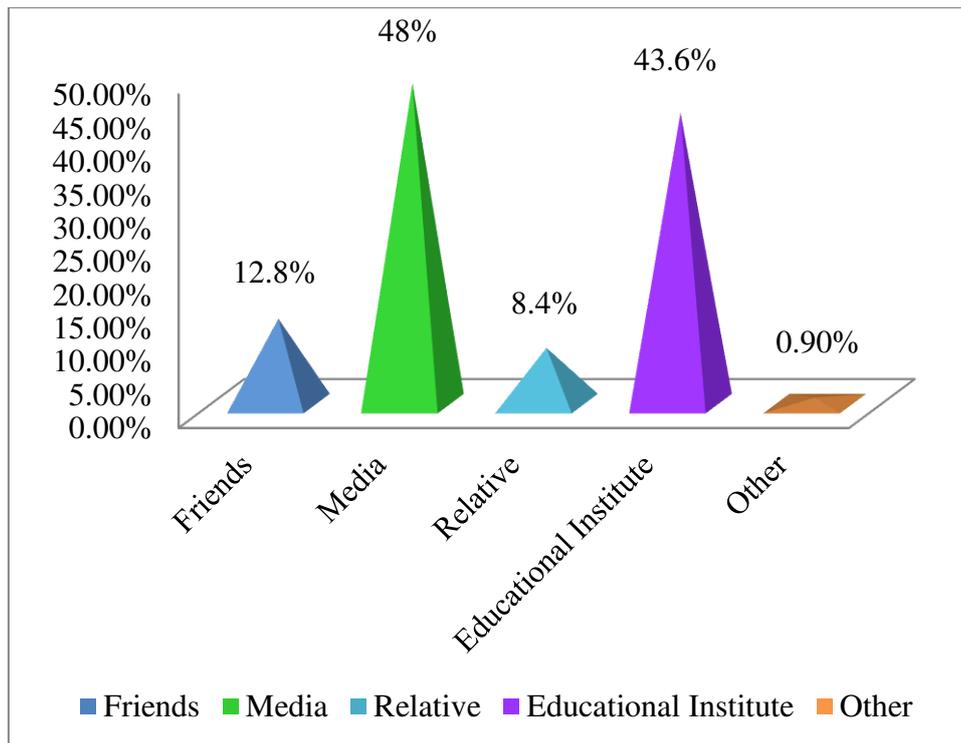


Fig 4.2.2: Source Of information

In this observation it was found that 48% students gained information from media, 43.6% from Educational institute, 12.8%, 8.4%, 0.90%, students heard it from friends, relative and other sources respectively.

#### 4.2.3.1 Awareness about affected organ

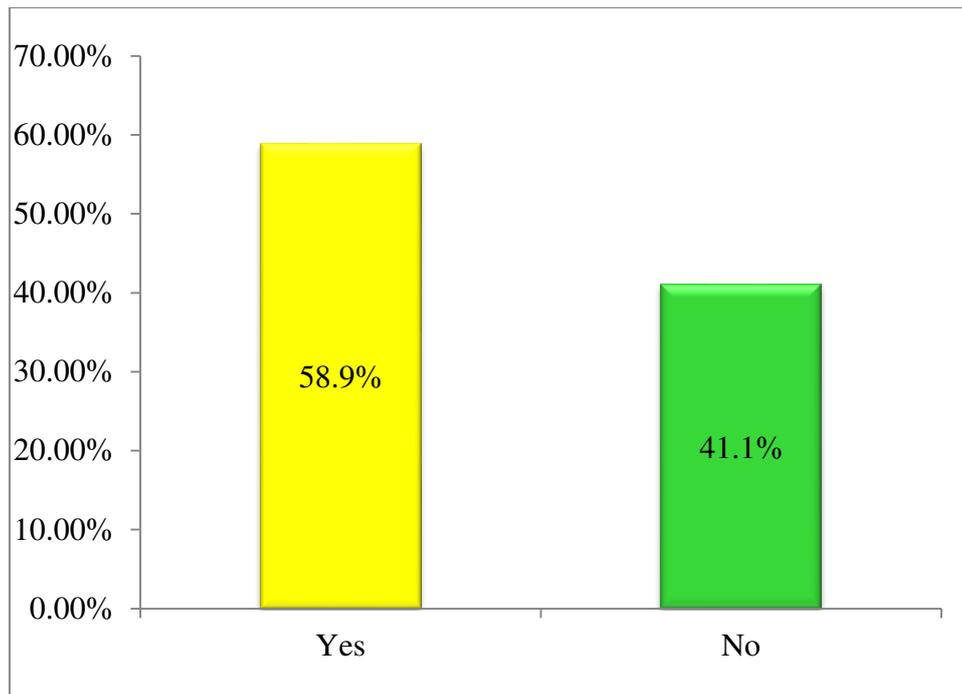


Fig 4.2.3.1: Awareness about affected organ

Most (58.9%) of the students were aware about the organ that is affected by Hepatitis B, whereas the rest did not have the idea about the organ affected.

#### 4.2.3.2 Knowledge about affected organ

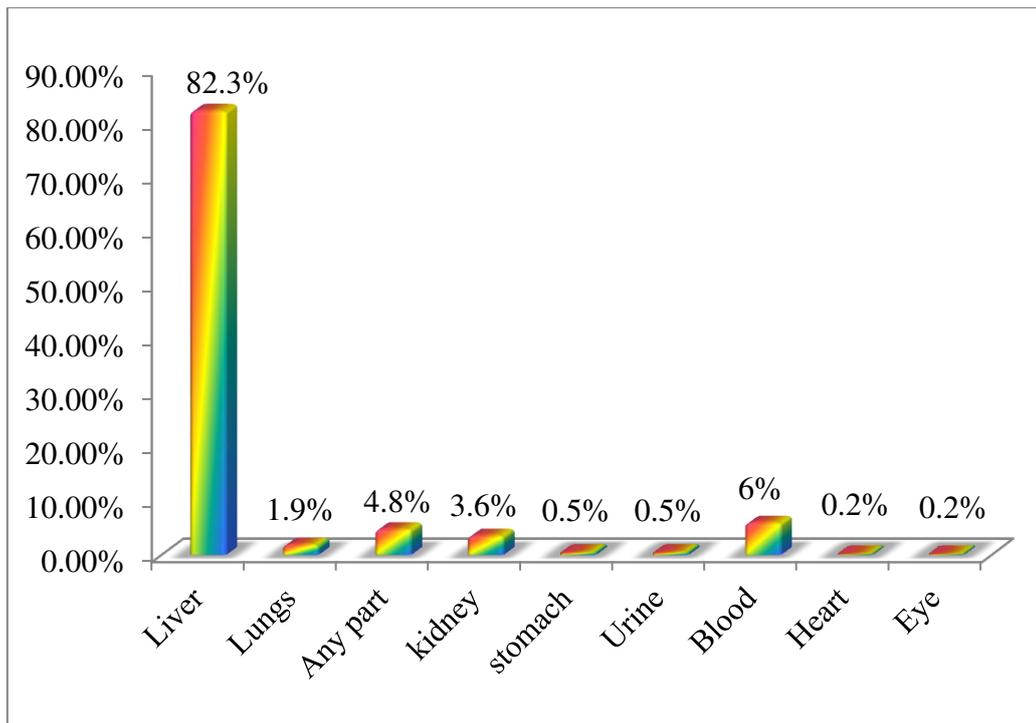


Fig 4.2.3.2: Knowledge about affected organ

In the study, among 58.9% students, majority (82.3%) of the students said that liver was the affected organ, whereas only 17.7% students said that lungs, any part of the body, kidney, stomach, urine, blood, heart and eye is the affected organ of Hepatitis B.

#### 4.2.4 Knowledge about virus that causes Hepatitis B

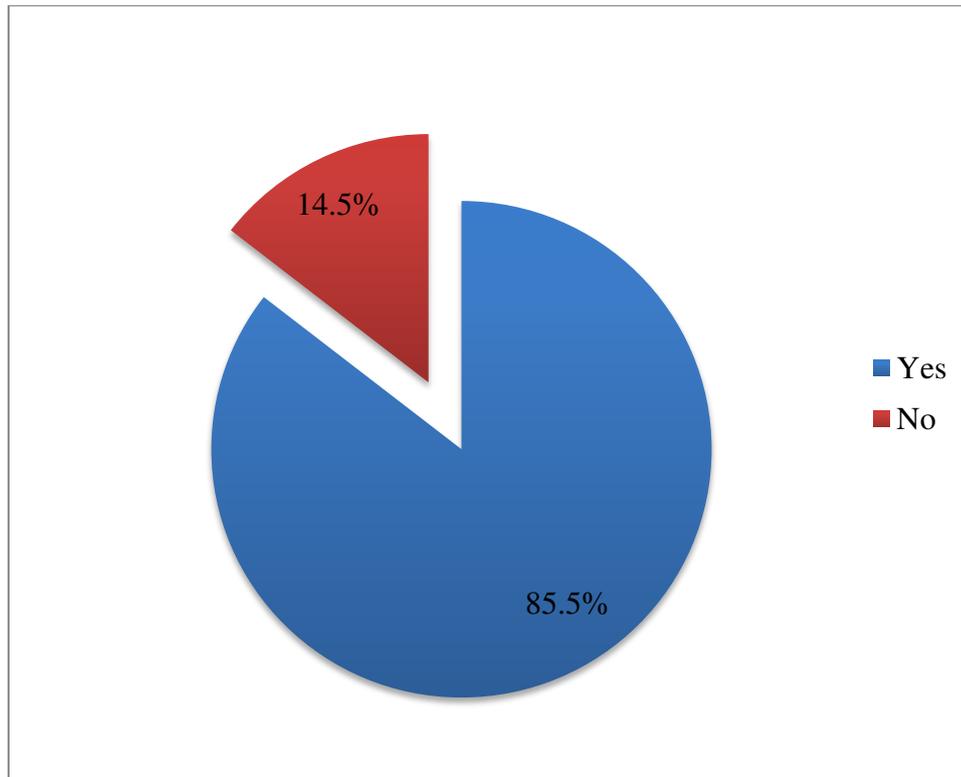


Fig 4.2.4: Knowledge about virus that causes Hepatitis B

In this study It was observed that majority of the students (85.5%) said that Hepatitis B is caused by virus and only a few (14.5%) students don't know about this.

#### 4.2.5 Knowledge about treatment

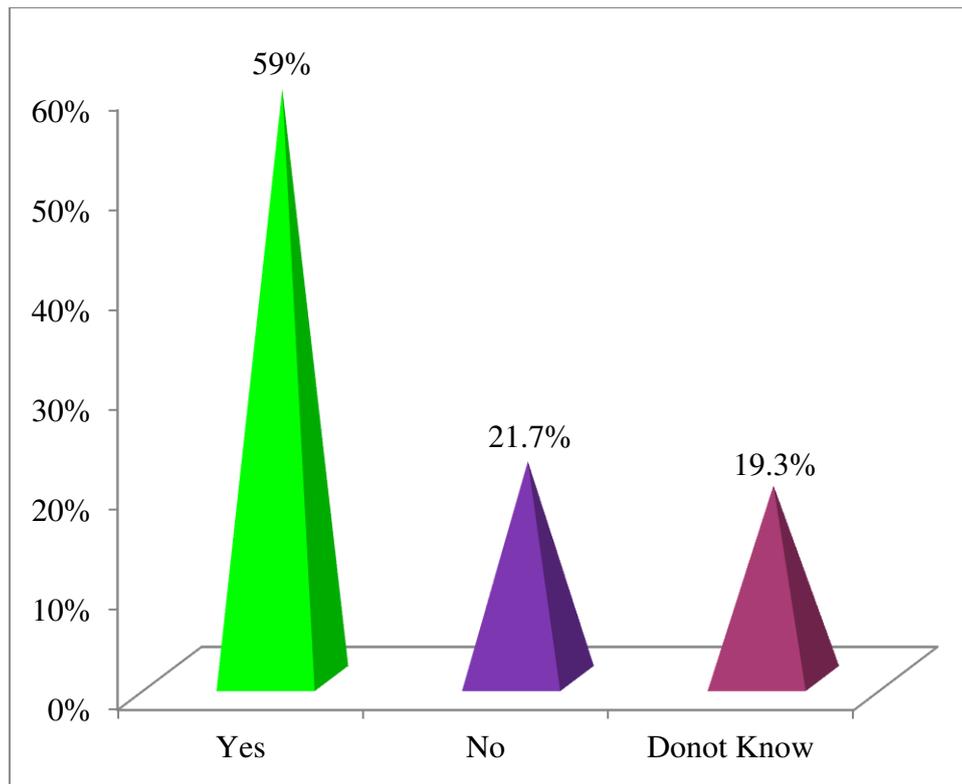


Fig 4.2.5: Knowledge about treatment

The study showed that 59% of the students answered that they think that it was treatable, 21.7% students thought that it was not treatable and 19.3% had no knowledge about it.

#### 4.2.6 Knowledge about availability of vaccine

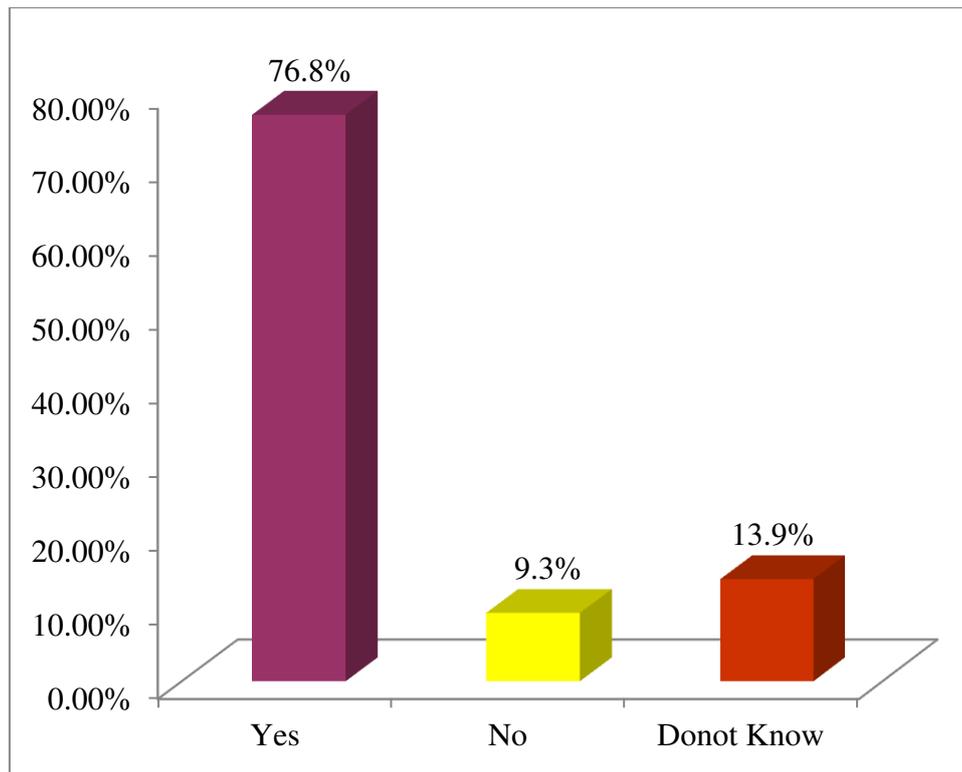


Fig 4.2.6: Knowledge about availability of vaccine

Among the respondents, 76.8% students said that Hepatitis B vaccine was available, 9.3% disagreed with the availability and 13.9% students didn't know about it.

#### 4.2.7.1 Information about vaccine taken

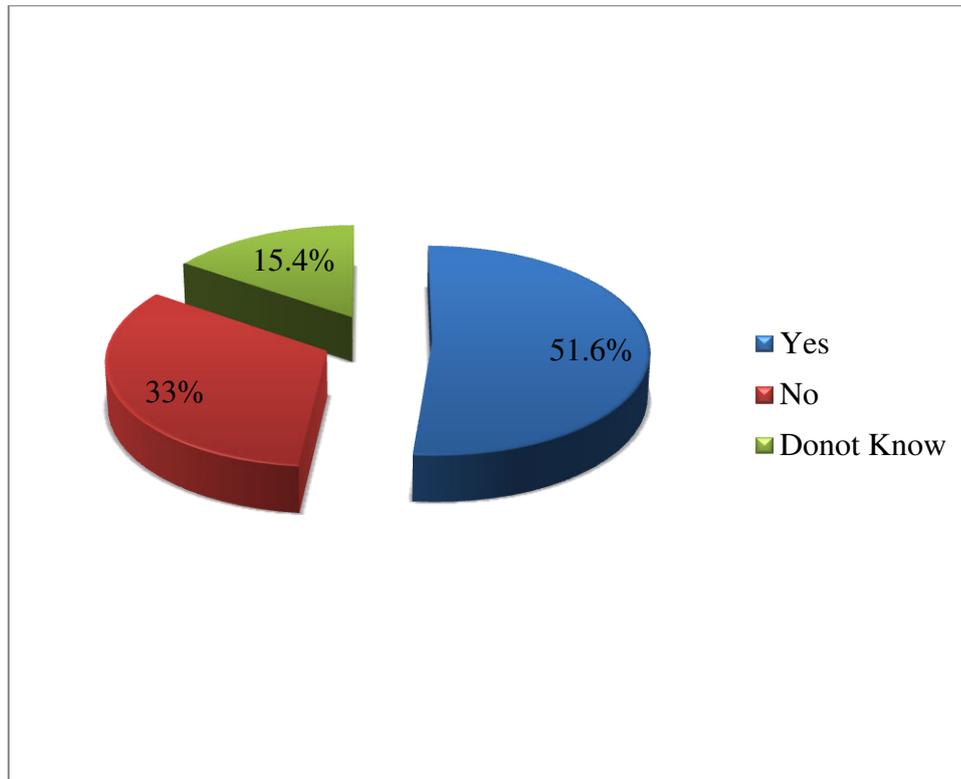


Fig 4.2.7.1: Information about vaccine taken

During the study it was found that 51.6% students took vaccine, 33% students didn't take vaccine and 15.4% students didn't know whether they took vaccine or not.

#### 4.2.7.2 Reason behind not taking vaccine

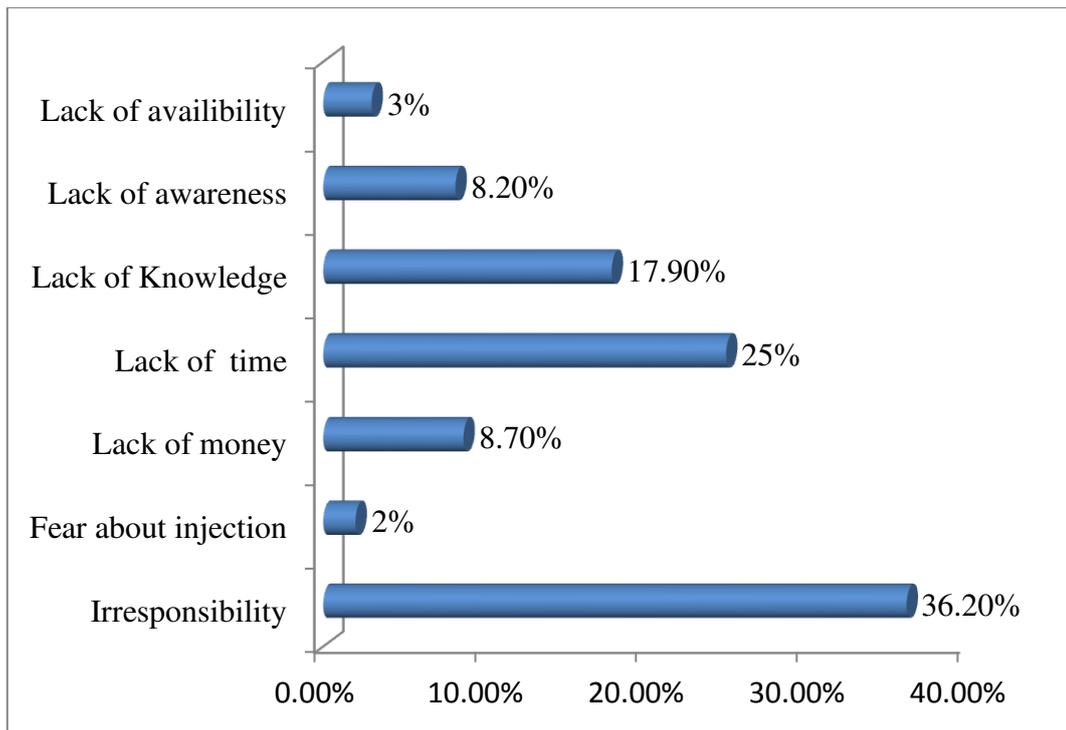


Fig: 4.2.7.2 Reason behind not taking vaccine

The population who did not take vaccine, specify some reasons for that. Most of them (36.2%) did not take vaccine for irresponsibility, 25% for lack of time and 17.9% for lack of knowledge. Few of them also indicated lack of money, lack of awareness, lack of availability, fear of injection.

#### 4.2.8 Hepatitis B infection among the family members of the respondents

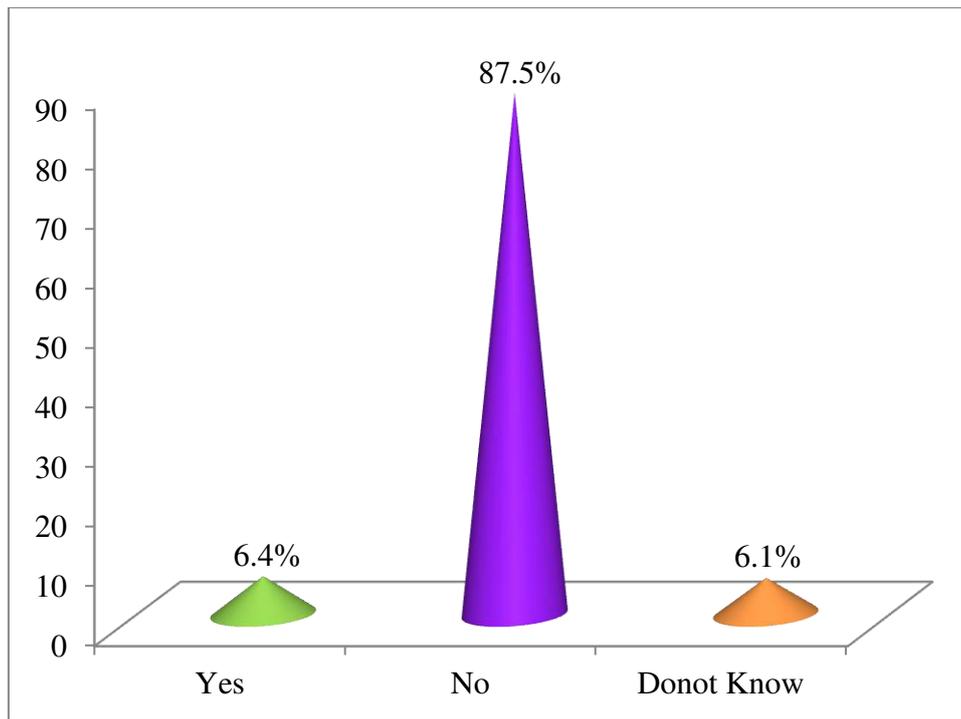


Fig 4.2.8: Hepatitis B infection among the family members of the respondents

Among the population 6.4% confirmed that they have the Hepatitis B patient in their family, where's 87.5% responded they their family is free from Hepatitis B and 6.1% population is not confirmed on the question.

#### 4.2.9 Mode of transmission of Hepatitis B

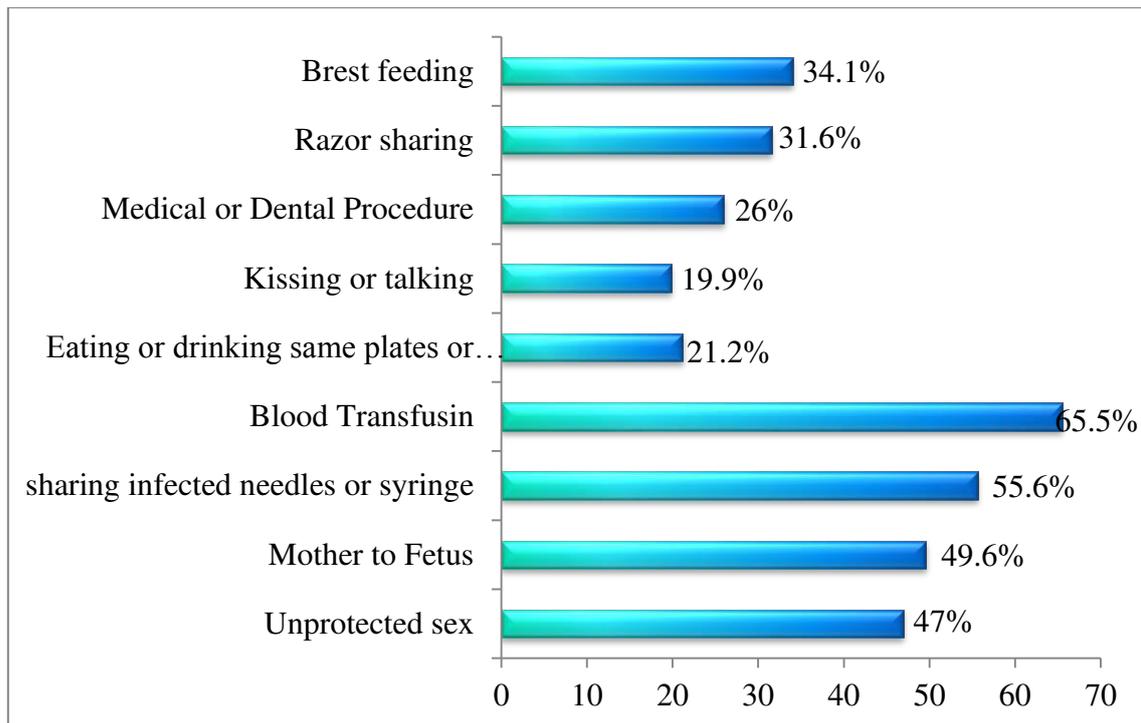


Fig4.2.9: Mode of transmission of Hepatitis B

From the students 47% supported that “Hepatitis B can be transmitted by unprotected sex”. About 49.6% Students said Hepatitis B can be transmitted mother to fetus. 55.6% marked sharing infected needles or syringe as a way of mode of transmission. 65.5% claimed “by blood transfusion HIV can be transmitted”. 21.2%, 19.9%, 26.0%, 31.6% and 34.1% population informed Hepatitis B can be transmitted by eating and drinking in same plates, kissing or talking, medical procedure, razor sharing and Breast feeding respectively.

#### 4.2.10 Misconception about mode of transmission of Hepatitis B

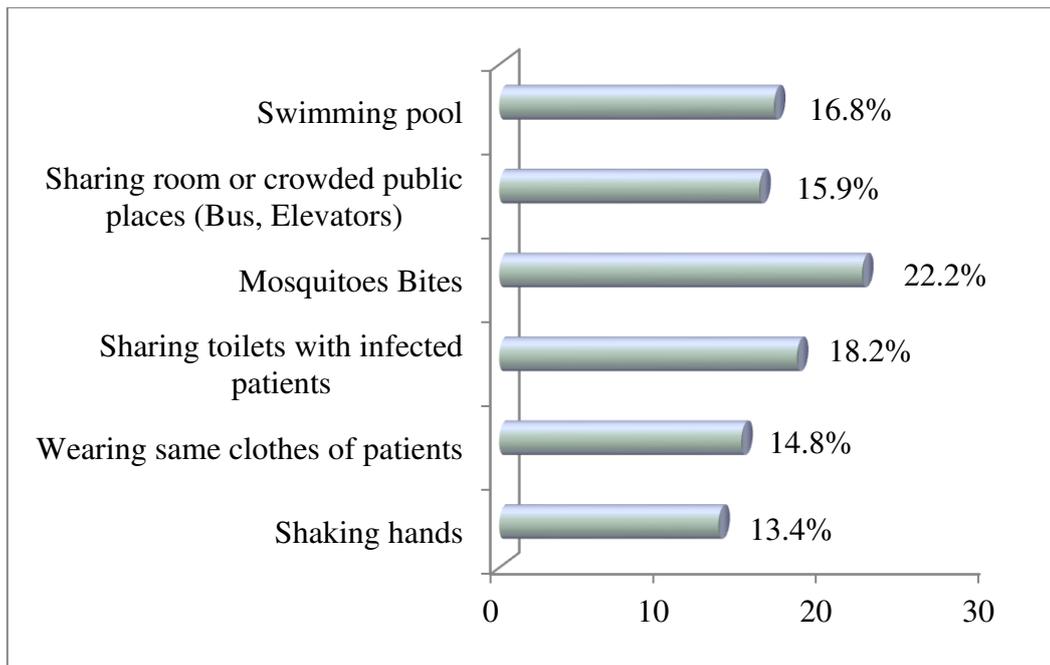


Fig 4.2.10 Misconception about mode of transmission of Hepatitis B

Some of the students didn't have clear concept about mode of transmission of Hepatitis B, 13.4% confirmed by shaking hand Hepatitis B can be transmitted. 14.8% said by wearing clothes of patients can be transmitted. 18.2% responders said by Mosquitoes bites can be transmitted. 15.9% said by sharing toilet with infected person Hepatitis B can be transmitted. And 16.8% transmission did by swimming pools.

#### 4.2.11 Prevention and control of hepatitis B

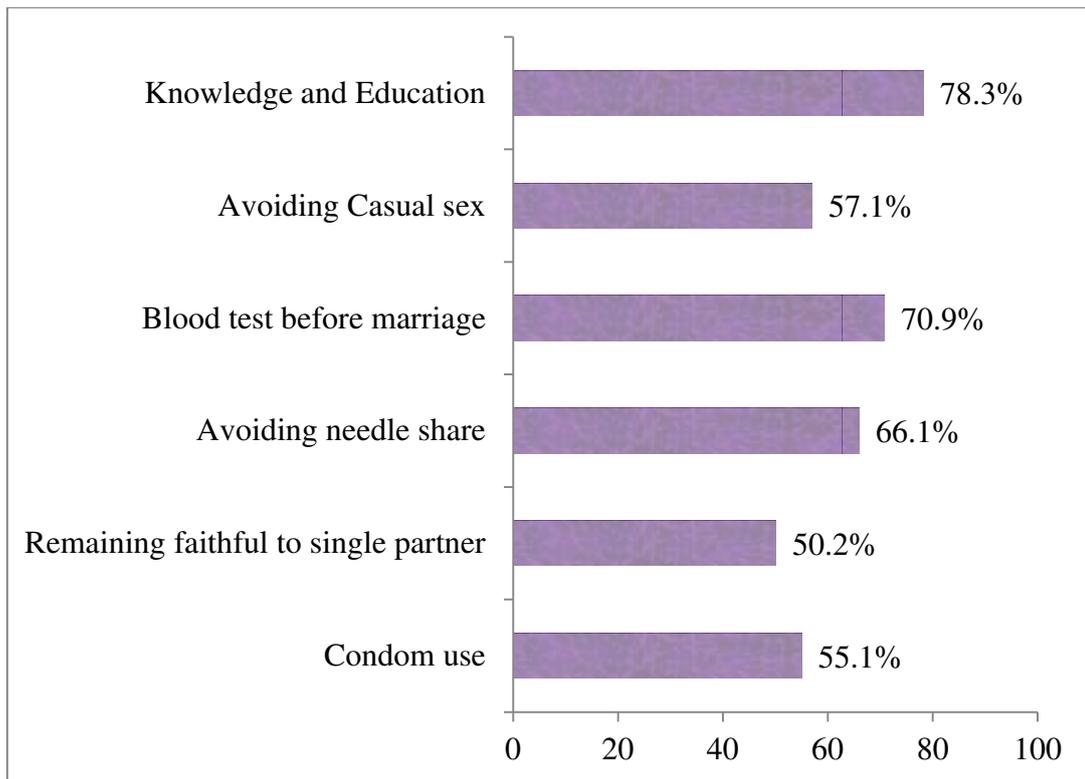


Fig 4.2.11: Prevention and control of hepatitis B

Among the respondents most of the students (78.3%) said “Knowledge and education is the prevention and control method”. 55.1%, 50.2%, 66.1%, 70.9%, 57.1% marked condom use, remaining faithful to single partner, avoiding needle share, blood test before marriage, avoiding casual sex respectively as the control and prevention method.

#### 4.2.12 Attitude towards infected person

Table 4.2: Attitude towards infected person

Attitude toward infected person	Yes	No	Do not Know
Taking care	88.3%	5.2%	6.5%
Continuing relationship	85%	7.5%	7.5%
If he/ she is a shopkeeper, Would you like to buy food from him/ her?	85.7%	7.6%	6.7%
If he/ she is a student, Would you be positive about his/ her presence in school?	89.6%	4.1%	6.3%
If he/ she is a teacher, Would you be positive about his/ her presence in school?	88.4%	4.8%	6.8%

During the study, most of the students have positive *attitude towards* Hepatitis B infected person. Majority (88.3%) were positive *in* take care, only few didn't want to do that. Somebody didn't have any opinion about caring. 85% students want to continue relationship, 7.5% didn't know about continuing relationship. If the shopkeeper is infected most of the students were positive in buying food from him, some didn't buy. Most of the respondents have good attitude about the presence of infected student (89.6%) and infected teacher (88.4%) in the school.

# **Chapter 5**

## **Discussion and**

### **Conclusion**

## Discussion

Hepatitis B (HB) is a serious global public health problem which affects liver and caused by hepatitis B virus (HBV). It is contagious and easy to be transmitted from one infected individual to another by blood to blood contact, mother to child, unprotected sexual intercourse, and other barber shop and beauty salon equipment. Hepatitis B virus infections are rapidly spreading in the developing countries including Bangladesh due to the lack of health education, poverty, illiteracy and lack of hepatitis B vaccination.

The study was carried out on 1003 universities students. In this study a 17-item questionnaire was distributed. Most of our study population were aged range is 21-23 years. Mesfin and Kibret, (2013), in their study found most of the population was aged between 20-24 years. Most of our study populations were male (67.70%). Mesfin and Kibret (2013) found 72 respondents were to be male.

Among the respondents of our study 25.40% students were from subjects related to health science, Rest of the students were from other discipline like commerce and business (23%), engineering (20.60%), arts and humanities (18.20%) and subject related to general science (12.80%). Majority of the students of the survey studied in 2<sup>nd</sup> year (34.1%), whereas 1<sup>st</sup> year (27.4%) and 3<sup>rd</sup> year (18.6%) students were comparatively less, few from masters (3.1%). Among them 93.5% were single and 6.5% were married. Bakry et al., (2012) in their study the response rate was 100%.The study revealed that, 97.2% of doctors, 98.6% of nurses, 94.8% of laboratory technicians.

During the study it was found that 100% students have heard about Hepatitis B. Most of them (48%) got information from the media and educational institute (43.6%). It was found that 58.9% students were aware about the affected organ. Among them most (82.2%) of the students mentioned liver as the affected organ and few of them said other part of the body including kidney, stomach, urine, blood, heart and eye. Samuel et al., (2009) said more than three-quarters of the respondents (81%) had ever heard of hepatitis B infection.

In this study, majority of the students (85.5%) said that Hepatitis B is caused by virus. The study showed that 59% of the students answered that it was treatable. Twenty one point seven percent students thought that it was not treatable and 19.3% had no

knowledge about it. Samuel et al., (2009) showed that 77.2% of the respondents thought Hepatitis B infection can be treated through vaccination. Schenkel et al., (2008) observed that among population little is known about knowledge about viral hepatitis.

Information regarding vaccine availability were obtained from the students. 76.8% students said that Hepatitis B vaccine was available, 9.3% disagreed with the availability and 13.9% students didn't know whether it is available or not. Samuel et al., (2009) in their study 75.5% were aware of the existence of Hepatitis B vaccine.

Among students 51.6% students took vaccine, 33% students didn't take vaccine and 15.4% students didn't know whether they took vaccine or not. Samuel et al., (2009) found on their survey that only 70.2% have actually ever received Hepatitis B vaccine, out of which only 59.4% completed the vaccination schedule. The population who did not take vaccine specify irresponsibility (36.2%), lack of time (25%) , lack of knowledge (17.9%), lack of money (8.7%), lack of awareness (8.2), lack of availability (3%), fear of injection (2%). Among the population 87.5% confirmed that they have no Hepatitis B patient in their family.

Higher percentage of our study population had correct knowledge about the mode of transmission. 47% students supported that "Hepatitis B can be transmitted by unprotected sex" where 49.6% Students said mother to foetus, 55.6%% marked sharing infected needles or syringe as a way of mode of transmission, 65.5% claimed "by blood transfusion it can be transmitted". Among respondents 21.2%, 19.9%, 26.0%, 31.6% and 34.1% population informed Hepatitis B can be transmitted by eating and drinking in same plates, kissing or talking, medical procedure, razor sharing and Breast feeding respectively. Samuel et al., (2009) in their survey 92% mentioned blood and blood products as route of transmission of Hepatitis B, 68.5% mentioned needles and sharps while only 37% said that the disease can be transmitted through sexual intercourse.

According to the study among the attendance some of the students didn't have clear concept about mode of transmission of Hepatitis B. In the study 13.4% confirmed by shaking hand Hepatitis B can be transmitted, 14.8% said by wearing clothes of patients. 18.2% responders said by Mosquitoes bites, 15.9% said by sharing toilet with infected person Hepatitis B can be transmitted. And 16.8% transmission did by swimming pools. Samuel et al., (2009) showed incorrectly identified routes of transmission by the

respondents include faeco-oral transmission (14.2%) and transmission through drinking contaminated water (9.3%).

Most of the respondents (78.3%) of the study said knowledge and education can control and prevent the incidence of the diseases and 70.9% agree to do blood test before marriage.

About 90% of the students have positive attitudes towards the infected person. They agree to care (88.3%), agree to continue relationship (85%), and agree to buy goods from positive seller. 89.6% said that they would be present in the school if the teacher is infected. Among the population 88.4% students gave a positive attitude about the presence of a infected teacher in school.

## **Conclusion**

Hepatitis B virus remains a major cause of morbidity and mortality in Bangladesh and we have a long way to go before we may bid farewell to this deadly menace. In our country the incidence of diseases caused by hepatitis b, is increasing. Knowledge of Hepatitis B virus among the university students is not satisfactory. Most of the respondents don't take vaccine which may increase the degree of infection. Proper vaccination can decrease the number of infection. The graduating students don't have sufficient knowledge about the mode of transmission. By increasing the knowledge about the mode of transmission may decrease the incidence and intensity of the disease. Different types of seminar on Hepatitis B, arranged by university can increase the students level of knowledge and awareness. Government and different health related organization should take necessary steps to increase knowledge and awareness about Hepatitis B virus and its infection.

# **Chapter 6**

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