

Assessment of Knowledge and Attitude of Hepatitis B Among Secondary School and College Students in Bangladesh

A dissertation submitted to the Department of pharmacy, East West University, in partial fulfilment of the requirements for the degree of Bachelor of Pharmacy

Submitted by

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DECLARATION BY THE RESEARCH CANDIDATE

Myself, Faiza Hamid Jyoti, hereby declare that this dissertation entitled “**Assessment of Knowledge and Attitude of Hepatitis B Among Secondary School and College Students in Bangladesh**” submitted to the Department of Pharmacy, East West University, in partial fulfillment of the requirement for the degree of Bachelor of Pharmacy, is a genuine and authentic research work carried out by me under the guidance of **Nigar Sultana Tithi**, Senior Lecturer, Department of Pharmacy, East West University, Dhaka. I further certify that all sources of information of dissertation are duly acknowledged and the contents of this dissertation in full or in parts, have not been submitted to any other institute or University or any other degree.

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*This paper is Dedicated
to My beloved Parents and My
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Abstract

Hepatitis B is a silent epidemic as it is a potentially life-threatening liver infection caused by the hepatitis B virus. It is a major global health problem. It attacks the liver and can cause both acute and chronic disease. The main objective of the present study were to evaluate the knowledge of mode of transmission, prevention and attitudes of secondary school and college students regarding viral hepatitis B. A questionnaire based survey was carried out among 380 students in 16 school and college in Dhaka, Brahmanbaria and Munshiganj district of Bangladesh. The majority (62.63%) of the study population were aged between 15-17 years. Among the respondents 52.36% were female and 47.63% were Male. During the study it was found that 89.47% students have heard about Hepatitis B but only 12.37% students mentioned liver as the affected organ. Educational institute was identified as the major (58.42%) source of knowledge. Level of vaccination of the students was 52.36%. During assessing the knowledge of mode of transmission, 38.42% mentioned blood transfusion as route of transmission of Hepatitis B, 32.11% mentioned needles and sharps while only 28.38% said that the disease can be transmitted through unprotected sex. Misconception regarding the transmission include mosquito bite 15.79% and sharing toilet with infected person 15.53%. The ways of preventing Hepatitis B infection were knowledge and education (53.42%) and blood test before marriage (42.63%). Majority of the respondents showed negative attitude toward the infected person. The level of knowledge and awareness regarding the mode of transmission and prevention is low. Messages need to be incorporated in media campaigns, in addition with arranging seminar by the educational institutes and different types of health organization can increase knowledge and awareness about Hepatitis B virus and its infection.

Keywords: Hepatitis B, Knowledge, Awareness, Transmission, Prevention.

CHAPTER-1

Introduction

1.1 Overview

The term 'hepatitis' simply means inflammation of the liver. Hepatitis may be caused by a variety of viruses or other infections, medications, or a toxin such as alcohol. Hepatitis viruses that can cause injury to liver cells in addition to hepatitis B include the hepatitis A and hepatitis C viruses. These viruses are not related to each other or to the hepatitis B virus, and they differ in their structure, the ways they are spread among individuals, the severity of symptoms they can cause, the way they are treated, and the outcome of the infection. Other hepatitis viruses (hepatitis D, hepatitis E, and hepatitis G) cause disease much less commonly (Nettelman and Mortada, 2016).

It is estimated that 2 billion people worldwide have evidence of current or past hepatitis B infection, including more than 250 million chronic carriers and more than 600,000 deaths worldwide each year. According to the Centers for Disease Control (CDC), approximately 19,000 new cases of hepatitis B occurred in the United States in 2013. (Nettelman and Mortada, 2016).

According to National Liver Foundation of Bangladesh About 4%-7% of population have hepatitis B infection and about 3.5% of pregnant mothers in Bangladesh are carrying the hepatitis B virus. Those who have HbeAg, about 90% of them will transmit the virus to their offspring (National Liver Foundation of Bangladesh, 2016)

1.2 Types of Hepatitis

There are 5 main hepatitis viruses, referred to as types A, B, C, D and E. These 5 types are of greatest concern because of the burden of illness and death they cause and the potential for outbreaks and epidemic spread. In particular, types B and C lead to chronic disease in hundreds of millions of people and, together, are the most common cause of liver cirrhosis and cancer.

Hepatitis A and E are typically caused by ingestion of contaminated food or water. Hepatitis B, C and D usually occur as a result of parenteral contact with infected body fluids. Common modes of transmission for these viruses include receipt of contaminated blood or blood products, invasive medical procedures using

contaminated equipment and for hepatitis B transmission from mother to baby at birth, from family member to child, and also by sexual contact.

Acute infection may occur with limited or no symptoms, or may include symptoms such as jaundice (yellowing of the skin and eyes), dark urine, extreme fatigue, nausea, vomiting and abdominal pain.

1.2.1 Hepatitis A virus (HAV)

It 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)

It 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)

It 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)

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)

It 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, 2016).

1.3 Geographical Distribution

Hepatitis B is a potentially life-threatening liver infection caused by the hepatitis B virus. It is a major global health problem. It can cause chronic infection and puts people at high risk of death from cirrhosis and liver cancer.

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 of Western Europe and North America is chronically infected (World Health Organization, 2016).

1.4 Structure and Molecular Virology of Hepatitis B Virus

The hepatitis B virus is a DNA virus, meaning that its genetic material is made up of deoxyribonucleic acids. It belongs to a family of viruses known as *Hepadnaviridae*. The virus is primarily found in the liver but is also present in the blood and certain body fluids.

Hepatitis B virus consists of a core particle (central portion) and a surrounding envelope (outer coat). The core is made up of DNA and the core antigen (HBcAg). The envelope contains the surface antigen (HBsAg). These antigens are present in the blood and are

markers that are used in the diagnosis and evaluation of patients with suspected viral hepatitis (Lee and Ahn, 2011).

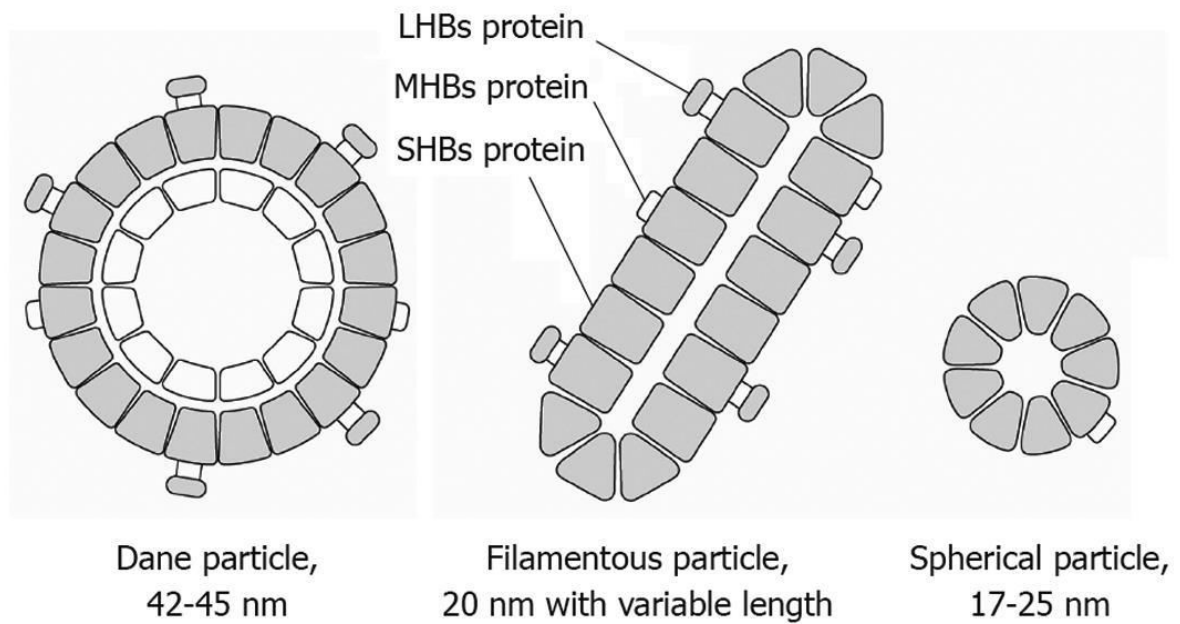


Figure 1.1: Schematic model of hepatitis B surface antigen structure. Three forms of hepatitis B surface (HBs) antigen (Dane particle, filamentous particle and spherical particle) are visualized in serum by electron microscopy. These are composed of small, middle and large hepatitis B surface proteins. LHBs: Large HBs proteins, MHBs: Middle HBs Proteins, SHBs: Small HBs proteins) (Lee and Ahn, 2011).

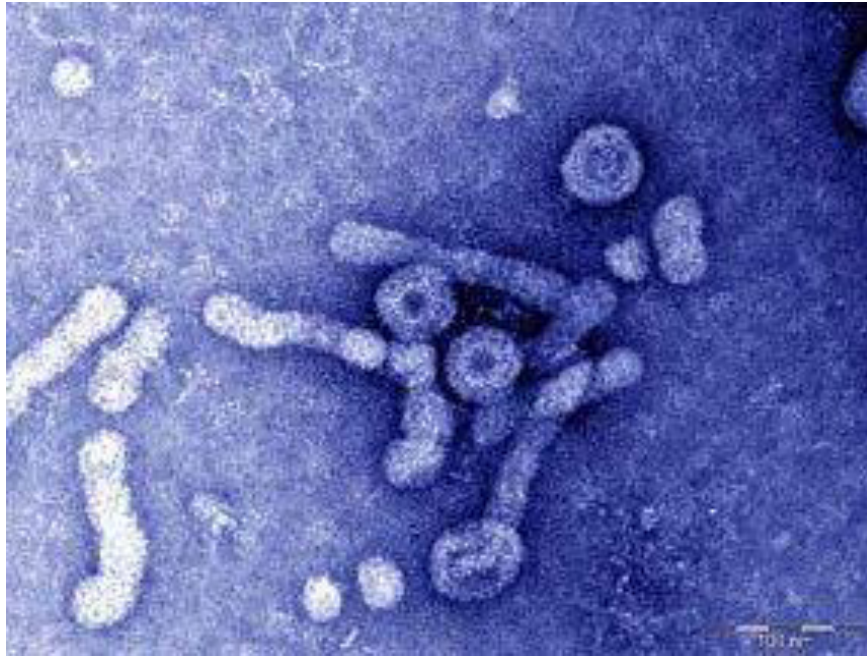


Fig 1.2: Electron microscopic presentation of HBV particles. The round 42 nm particles represent infectious virions (Dane particle). The small empty spheres and the filaments are non-infectious. The preparation was enriched in virus particles (Guptan *et al.*, 2002).

1.5 Hepatitis B Virus Cause Liver Injury

The hepatitis B virus reproduces in liver cells, but the virus itself is not the direct cause of damage to the liver. Rather, the presence of the virus triggers an immune response from the body as the body tries to eliminate the virus and recover from the infection. This immune response causes inflammation and may seriously injure liver cells. Therefore, there is a balance between the protective and destructive effects of the immune response to the hepatitis B virus (Nettelman and Mortada, 2016).

1.6 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.

1.6.1 Symptoms of Acute Hepatitis B

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 "fulminant hepatitis." Patients with fulminant hepatitis are at risk of developing bleeding problems and coma resulting from the failure of the liver. Patients with fulminant hepatitis should be evaluated for liver transplantation (Nettelman and Mortada, 2016).

1.6.2 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 (Nettelman and Mortada, 2016).

1.7 Chronic Hepatitis B

The liver is a vital organ that has many functions. These include a role in the immune system, production of clotting factors, producing bile for digestion; storing nutrients including sugars, fats and minerals for use by the body later; processing medications; and breaking down toxic substances. Patients with chronic hepatitis B develop symptoms in

proportion to the degree of abnormalities in these functions. The signs and symptoms of chronic hepatitis B vary widely depending on the severity of the liver damage. They range from few and relatively mild signs and symptoms to signs and symptoms of severe liver disease (cirrhosis or liver failure).

Most individuals with chronic hepatitis B remain symptom free for many years or decades. During this time, the patient's liver function blood tests usually are normal or only mildly abnormal. Some patients may deteriorate and develop inflammation or symptoms, putting them at risk for developing cirrhosis (Nettelman and Mortada, 2016).

1.8 Complications of Hepatitis B

Infection due to hepatitis b virus can cause various complications. It is a leading infectious cause of death.

1.8.1 Cirrhosis of The Liver Due to Hepatitis B

Inflammation from chronic hepatitis B can progress to cirrhosis (severe scarring) of the liver. Significant amounts of scarring and cirrhosis lead to liver dysfunction. Symptoms may include weakness, fatigue, loss of appetite, weight loss, breast enlargement in men, a rash on the palms, difficulty with blood clotting, and spider-like blood vessels on the skin.

Decreased absorption of vitamins A and D can cause impaired vision at night and thinning of bones (osteoporosis). Patients with liver cirrhosis also are at risk of infections because the liver plays an important role in the immune system.

1.8.2 Advanced Cirrhosis of the Liver Due to Hepatitis B

In patients with advanced cirrhosis, the liver begins to fail. This is life-threatening condition.

Several complications occur in advanced cirrhosis:

- Confusion and even coma (encephalopathy) results from the inability of the liver to detoxify certain toxic substances.

- Increased pressure in the blood vessels of the liver (portal hypertension) causes fluid to build up in the abdominal cavity (ascites) and may result in engorged veins in the swallowing tube (esophageal varices) that tear easily and may cause massive bleeding.
- Portal hypertension can also cause kidney failure or an enlarged spleen resulting in a decrease of blood cells and the development of anemia, increased risk of infection and bleeding.
- In advanced cirrhosis, liver failure also results in decreased production of clotting factors. This causes abnormalities in blood clotting and sometimes spontaneous bleeding.
- Patients with advanced cirrhosis often develop jaundice because the damaged liver is unable to eliminate a yellow compound, called bilirubin (Nettelman and Mortada, 2016).

1.8.3 Hepatitis B Virus and Primary Liver Cancer (Hepatocellular Carcinoma)

Patients with chronic hepatitis B are at risk of developing liver cancer. The way in which the cancer develops is not fully understood. Symptoms of liver cancer are nonspecific. Patients may have no symptoms, or they may experience abdominal pain and swelling, an enlarged liver, weight loss, and fever. The most useful diagnostic screening tests for liver cancer are a blood test for a protein produced by the cancer called alpha-fetoprotein and an ultrasound imaging study of the liver. These two tests are used to screen patients with chronic hepatitis B, especially if they have cirrhosis or a family history of liver cancer (Nettelman and Mortada, 2016).

1.8.4 Hepatitis B Virus Involvement of Organs Outside of the Liver (Extra-Hepatic)

Rarely, chronic hepatitis B infection can lead to disorders that affect organs other than the liver. These conditions are caused when the normal immune response to hepatitis B mistakenly attacks uninfected organs.

Among these conditions are:

- Polyarteritis nodosa: a disease characterized by inflammation of the small blood vessels throughout the body. This condition can cause a wide range of symptoms, including muscle weakness, nerve damage, deep skin ulcers, kidney problems, high blood pressure, unexplained fevers, and abdominal pain.
- Glomerulonephritis: another rare condition, which is inflammation of the small filtering units of the kidney (Nettelman and Mortada, 2016).

1.8.5 Co-infection With hepatitis B virus and Hepatitis C virus

Hepatitis C is caused by a virus that is spread through contaminated needles or blood products and, less commonly, through sexual intercourse. About 10% of patients with chronic hepatitis B also are co-infected chronically with hepatitis C virus (HCV). The two viruses interfere with each other and one usually predominates. If hepatitis C is the predominant infection, treatment is directed against the hepatitis C. Patients infected with both viruses are at higher risk for complications of liver disease. There is no effective vaccine against hepatitis C. People with hepatitis C should be vaccinated against hepatitis B to prevent co-infection (Nettelman and Mortada, 2016) .

1.8.6 Co-Infection with Hepatitis B Virus and HIV

The human immunodeficiency virus (HIV) and hepatitis B virus are transmitted in similar ways, and it is not uncommon for an individual to have both infections. People with HIV who acquire hepatitis B are more likely to become chronically infected with hepatitis B than people who do not have HIV. The reason for this is thought to be that HIV suppresses the immune system and impairs the ability of the body to eliminate the hepatitis B virus. Some nucleoside/nucleotide analogues (a class of antiretroviral drugs) are used to treat both HIV and hepatitis B, although dosages may vary in the two different infections. Stopping one of these agents when the HIV regimen is adjusted may cause hepatitis to flare (Nettelman and Mortada, 2016).

1.9 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).

1.9.1 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)

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).

1.9.2 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).

1.9.3 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).

1.9.4 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).

1.9.5 Peri-natal Transmission

Mother-to-child transmission of HBV can occur via three modalities: intrauterine transmission; transmission during delivery; and postpartum transmission.

Intrauterine transmission accounts for only a minority of cases of HBV transmission. It can occur in two ways: HBV can reach the fetus by crossing the placental barrier; and

during its passage, HBV can infect and replicate in all types of placental cells before it reaches the fetus. It is noteworthy that the percent of infected cells decreases from the maternal side (43.6%) to the fetus side (18.8%) of the placenta. Finally, HBV may reach the fetus through transplacental leakage of the maternal blood into fetal circulation, a condition that is associated with prolonged threatened preterm labor or threatened abortion due to increased uterine contractions.

Transmission of HBV during delivery is the most frequent method of vertical transmission. It is mostly due to newborn contact with the mother's infected secretions or blood at the time of delivery. A proportion of babies (as high as 34%) may acquire infection after birth due to close contact with the mother (Gentile and Borgia, 2014)

1.10 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).

1.11. Treatment of Hepatitis B

1.11.1 Treatment of Acute HBV Infection

Acute infection with hepatitis B usually does not require treatment. In rare cases, however, the infection may cause life-threatening liver failure. Patients with liver failure due to acute hepatitis B should be evaluated for liver transplantation.

1.11.2 Treatment of Chronic HBV Infection

If a person is chronically infected with hepatitis B and has few signs or symptoms of complications, medications usually are not used. These patients are watched carefully and

given periodic blood tests. One test measures the 'viral load,' that is, the amount of viral DNA in the blood. Doctors will recommend treatment if there are signs that the virus is beginning to cause damage or if the viral load is high. Another reason to prescribe medication is if the patient has a positive test for the Hepatitis B e-antigen (HBeAg) in the blood. HBeAg is associated with an increased risk of progression of liver disease and its complications.

In chronic hepatitis B, the goal of treatment is to reduce the risk of complications including cirrhosis and liver failure. Medications do not cure the disease, but they can prevent or delay complications and symptoms. People who have a good response to treatment can still transmit the virus. Doctors follow blood tests that measure viral load and liver function and they may recommend liver biopsies to evaluate if the medications are working.

The medications in current use for chronic hepatitis B include the interferons and nucleoside/nucleotide analogues. New agents are being developed although they are still under investigation and considered experimental. There are no accepted guidelines that tell how every patient should be treated. As a result, treatment is individualized(Nettelman and Mortada, 2016).

1.12 Prevention of Hepatitis B

Hepatitis B is a preventable disease. Vaccination and post-exposure prophylaxis have significantly reduced rates of infection. Risk can also be reduced by avoiding unprotected sex, contaminated needles, and other sources of infection.

1.12.1 Vaccination for Hepatitis B

The hepatitis B vaccine contains a protein (antigen) that stimulates the body to make protective antibodies. Examples of hepatitis B vaccines available in the United States include hepatitis B vaccine-injection (Engerix-B, Recombivax-HB). Three doses (given at 0, 1, and 6 months) are necessary to assure protection. There are also combination vaccines on the market that provide protection against hepatitis B and other diseases.

Examples include:

- Hepatitis-b-hepatitis-a vaccine - injection (Twinrix), which provides protection against both hepatitis A and hepatitis B.
- Haemophilus B/hepatitis B vaccine - injection (Comvax) provides protection against hepatitis B and Haemophilus influenzae type b (a cause of meningitis).
- Pediarix provides protection against hepatitis B, tetanus, pertussis (whooping cough), and polio.

Hepatitis B vaccines are effective and safe. Up to 95% of vaccinated individuals form effective antibodies and are protected from hepatitis B when they get full three-dose series of vaccine. In healthcare workers, high-risk public safety workers, dialysis patients, and sexual partners of infected people, a blood test for antibodies is recommended after vaccination to ensure that the person produced antibodies. For the few who do not form antibodies, revaccination may improve response, especially in infants. However, a small proportion of individuals will never respond to hepatitis B vaccination. Side effects from the vaccine are usually mild and include soreness at the site of injection. The risk of serious allergic reactions (anaphylaxis) is less than one per million doses. Vaccination has reduced the number of new cases of hepatitis B by more than 75% in the United States (Nettelman and Mortada, 2016).

1.12.2 Hepatitis B Immune Globulin (HBIG)

HBIG is a product that contains antibodies against hepatitis B. When injected, it provides temporary protection against hepatitis B. HBIG is used when people have had significant exposure to the virus. An example would be an accidental needle stick in an unvaccinated health care worker from a needle contaminated with blood from a person with hepatitis B. HBIG should be given as soon as possible after exposure, preferably within seven days. People who need HBIG should also receive hepatitis B vaccine. HBIG also is given to patients with hepatitis B following liver transplantation to suppress the hepatitis B virus in the transplanted liver (Nettelman and Mortada, 2016).

1.12.3 Prevention of Hepatitis B Virus from Mother to Newborn infant

Infected mothers can pass hepatitis B to their newborn infants. All pregnant women should have blood tested to determine if they are infected. Infants born to infected mothers should receive HBIG and hepatitis B vaccine at birth. This is 85% to 95% effective in eliminating the risk of hepatitis B in the infant (Nettelman and Mortada, 2016).

CHAPTER-2

Literature Review

Literature Review

To assess the knowledge and attitudes regarding hepatitis viruses among secondary-school students in Menoufia governorate a cross-sectional study based on the multistage stratified random-sampling technique was done. Ashmoun district was selected randomly from nine districts of Menoufia governorate; one rural school (Shanshour school) and one urban school (Amin El Kholy school) were selected from Ashmoun district, and 640 students aged between 16 and 18 years were selected randomly from students attending both schools. The mean age of the participants was 17.25 ± 0.84 years (mean \pm SD). A total of 180 participants were male (30%) and 420 (70%) were female. The mean of the total score of students' KAP with regard to viral hepatitis were 58.11 ± 9.3 , 13.07 ± 2.86 , and 7.99 ± 2.84 , respectively. Although 78 and 75% of the students had fair knowledge and attitude, respectively regarding viral hepatitis, only 31% had fair practice for self-protection. The sex, the socioeconomic status, and the source of knowledge constituted significant determinants of their knowledge. There was no relation between students' knowledge and attitude regarding viral hepatitis and their practice for self-protection against it (Salem *et al.*, 2015)

In another study done by Boakye, 2015 for Assessing the Knowledge and Perception on Hepatitis B among Senior High School Students in Dunkwa-On-Offin. showed that the participants had general knowledge of HVB, but only 22% knew that HBV could spread through unprotected sex. Kwame (2015) found that, major source of information is media (77%) Kwame (2015) found that only 35.5% knew HBV could cause liver cancer. most of the students perceived that there is efficient treatment of Hepatitis B Virus infection (68%) (Boakye, 2015)

A cross sectional study was done to evaluate the knowledge of Hepatitis A and Hepatitis B among the students of Chittagong Medical College. A total of 125 students, 25 each from first year to fifth year is was selected by stratified and simple random sampling. About 6.4% and 87% of the students were aware for vaccination against Hepatitis A and Hepatitis B respectively. None of the students took vaccine against Hepatitis A whereas two-third of the students took vaccine against Hepatitis B (Pantha and Pantha, 2011)

A study was conducted among 300 nurses both from public and private hospitals using a pretested structured questionnaire adopting a purposive sampling technique. The mean

age of the respondents was 29.7 ± 5.8 and majority of them (83.7%) were holding Diploma degrees with (83.3%) designated as staff nurse. About 59.7% were married and 94.3% were females. One third of the respondents (34.3%) were from public institution and 65.7% from private institution. It was revealed from the study that (67.3%) of the respondents had adequate level of knowledge on Hepatitis B but only half of them (49.3%) had good level of preventive practices. Bivariate analysis showed association between institution, income, age, religion, knowledge and level of preventive practice ($P < 0.05$). In conclusion it can be said that compared to knowledge of the respondents on Hepatitis B, their preventive practices were low. Appropriate educational and health promotion programs should be implemented to increase the level of preventive practices on Hepatitis B among the nurses (Mehriban et al., 2014)

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).

A 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).

In another 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).

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%) (Schenkel *et al.*, 2008).

Significance of the Study

Hepatitis B is a serious global health problem. It is a common viral infection that attacks the liver and can cause both acute and chronic disease. It is more contagious than HIV. The virus is transmitted through contact with the blood or other body fluids of an infected person. An estimated 240 million people are chronically infected with hepatitis B (defined as hepatitis B surface antigen positive for at least 6 months). More than 686 000 people die every year due to complications of hepatitis B, including cirrhosis and liver cancer (WHO, 2016).

Hepatitis B is an important occupational hazard for health workers and adolescents are thought to be at risk because of their unawareness. The frequency of hepatitis B is increasing progressively worldwide. According to National Liver Foundation of Bangladesh About 4%-7% of population have hepatitis B infection and about 3.5% of pregnant mothers in Bangladesh are carrying the hepatitis B virus. Those who have HbeAg about 90% of them will transmit the virus to their offspring (National Liver Foundation of Bangladesh, 2016).

To decrease the transmission of HBV in Bangladesh it is important to increase the populations' knowledge about the disease, the vaccine, mode of transmission and prevention. Several studies were conducted on among some universities, medical college students and nurses but knowledge and perception of HBV of secondary school students has never been explored. The current study aimed to assess the knowledge and awareness of HBV among the school and college students of Bangladesh. The study was conducted in Dhaka, B.Barua and Munshiganj district. Findings from this study can be very useful to evaluate the knowledge of mode of transmission, prevention and attitudes of secondary school and college students regarding viral hepatitis B.

Objective of the study

Objectives of the study were:

- To determine the knowledge level of school and college students in Bangladesh about Hepatitis B
- Their perception of correct mode of transmission of Hepatitis B.
- Misconception about the mode of transmission of Hepatitis B
- Their perception of mode of preventions and control
- Their attitude towards Hepatitis B infected person.

CHAPTER-3

Methodology

Methodology

Type of the Study

It was a survey based study.

Study Area and Population

In this study, School and college students were the study population. The study was carried out on 380 Students of 16 school and college of Dhaka, Brahmanbaria and Munshiganj District .

Inclusion Criteria

- Students of class 8-12
- Both males and females
- Any discipline

Exclusion Criteria

- Students unwilling to take part in the survey

Data Collection Method

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

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.

Sampling Technique

In this study convenient sampling was followed.

Data Analysis

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

CHAPTER-4

Results

4.1 Age Distribution

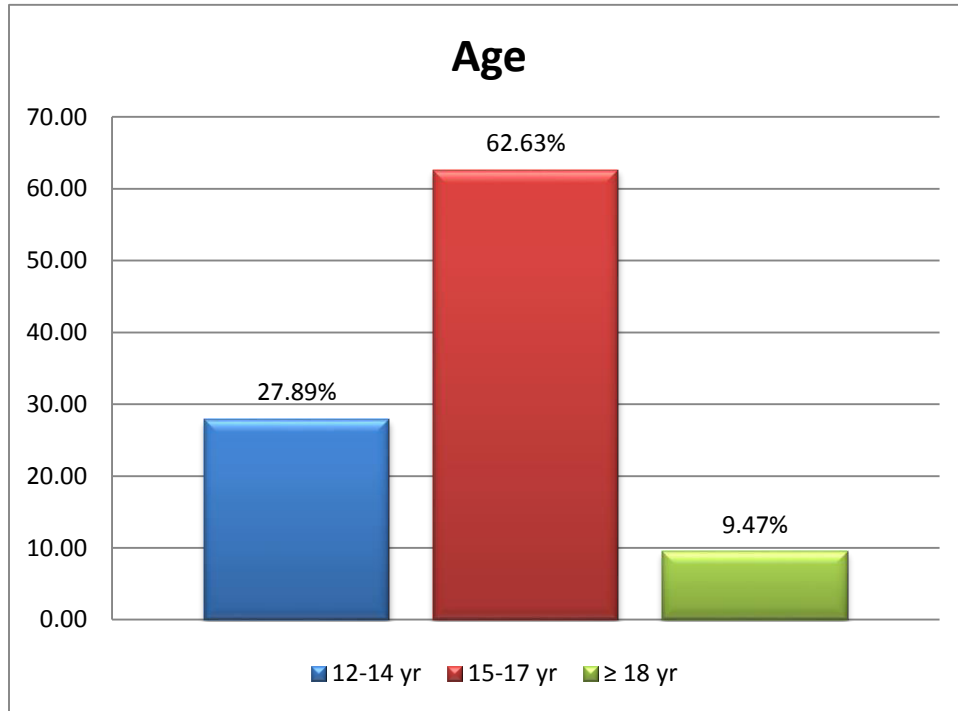


Figure 4.1: Age distribution of students

Majority 62.63% of the students among 380 respondents were in the age group of (15-17) years and 9.47% students having 18 or more years were participated in this study.

4.2 Gender Distribution

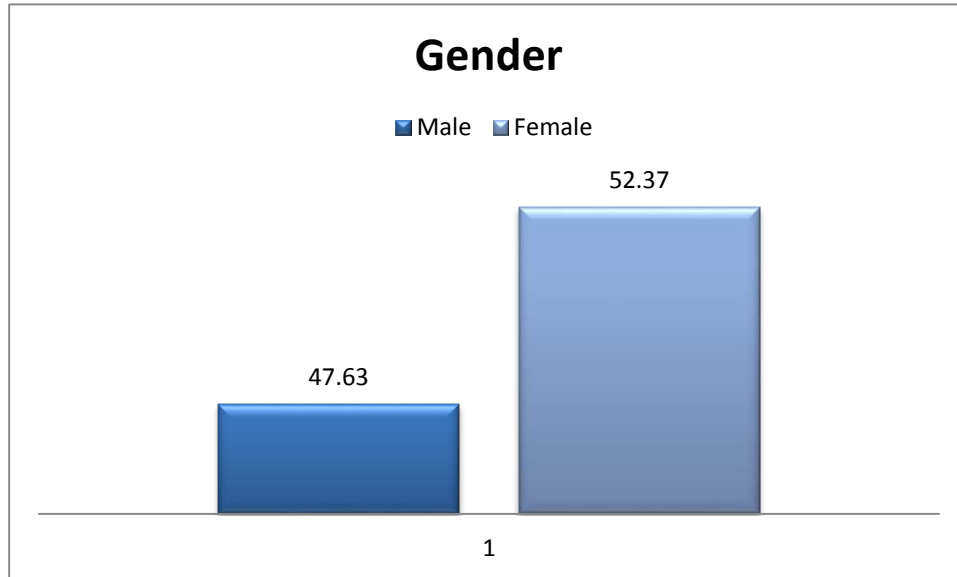


Figure 4.2: Number of male and female students

Around 380 students who are school and college going, 52.37% students are female and 47.63% are male. A graphical value has been shown for that. Here's highest value has shown for female students and lowest value is for male students. We consider here both male and female.

4.3 Class

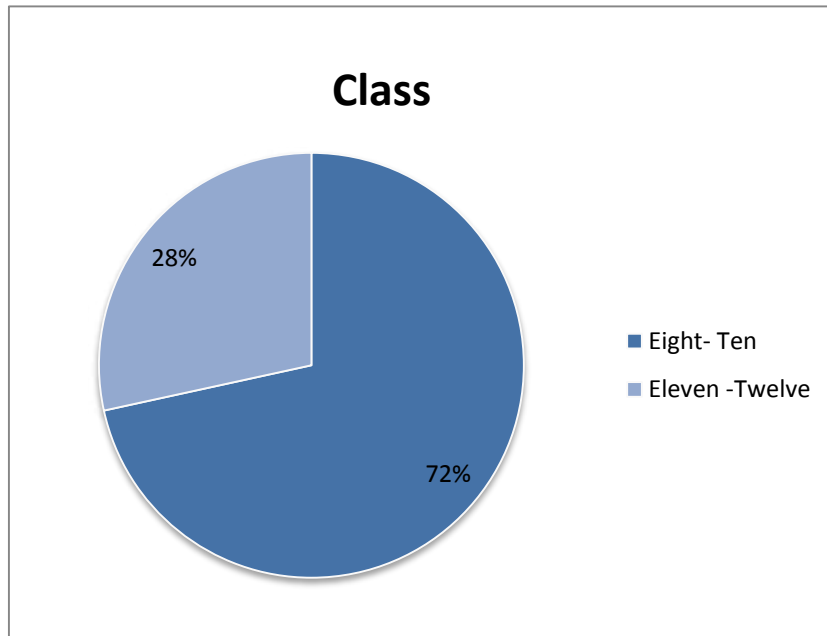


Figure 4.3: Distribution of class between students

Here the majority students 72% were from class Eight-Ten and 28% students were from class Eleven- Twelve who were participated here.

4.4 Group

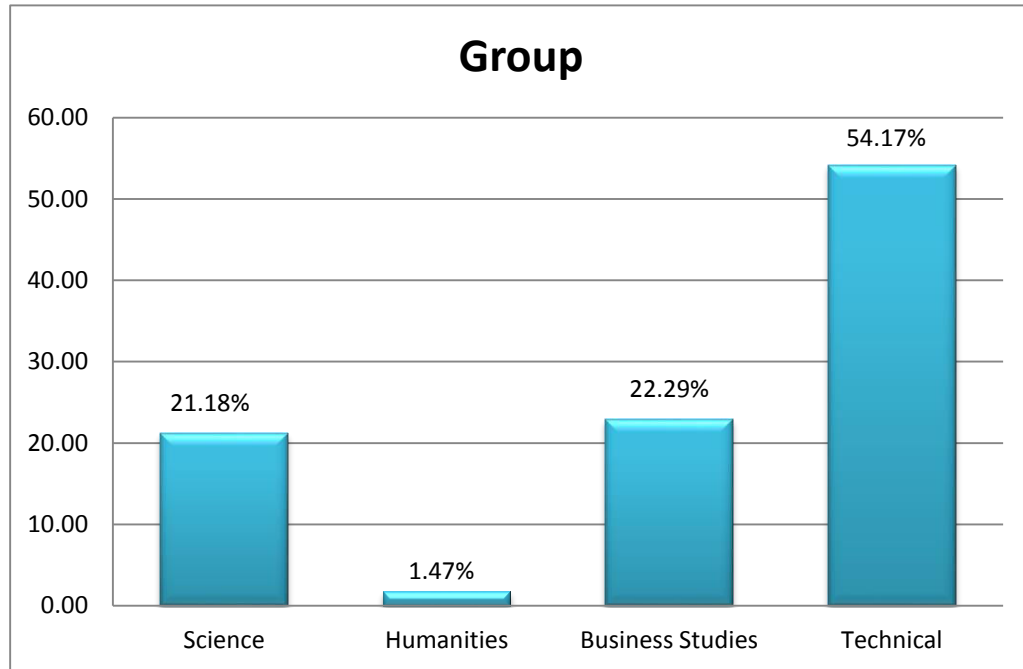


Figure 4.4: Students having different group of class

Among 380 students, majority 54.17% were from technical group, 22.29% from business studies, 21.18% from science, 1.74% were from humanities background. The study was conducted between 380 students but class eight has no groups. So, this graph has shown groups of class nine- twelve.

4.5 Marital Status

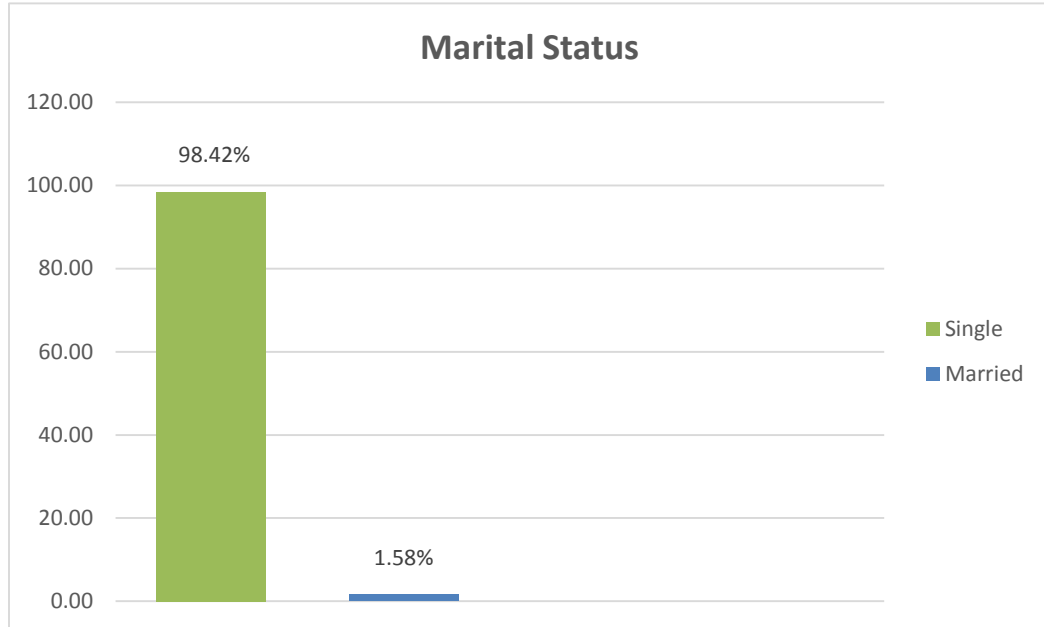


Figure 4.5: Marital status of students

As this study were done between school and college students, majority 98.42% students were single and 1.58% students were married. Here none was separated and widowed.

4.6 Heard About the Term Hepatitis B

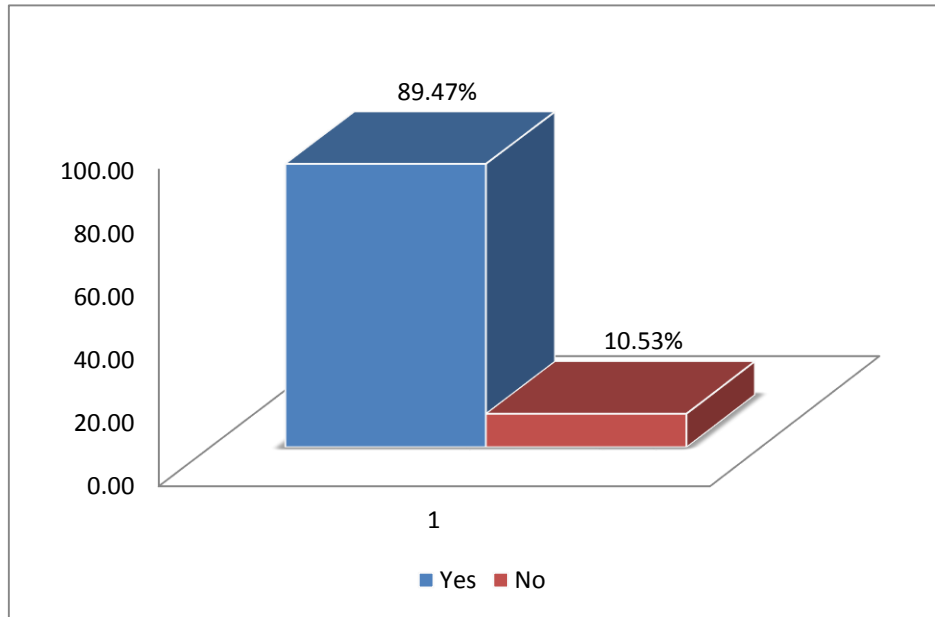


Figure 4.6: Heard about Hepatitis B

During the study it was found that 89.47% students have heard about Hepatitis B and 10.53% students did not hear the term hepatitis B.

4.7 Source of Knowledge

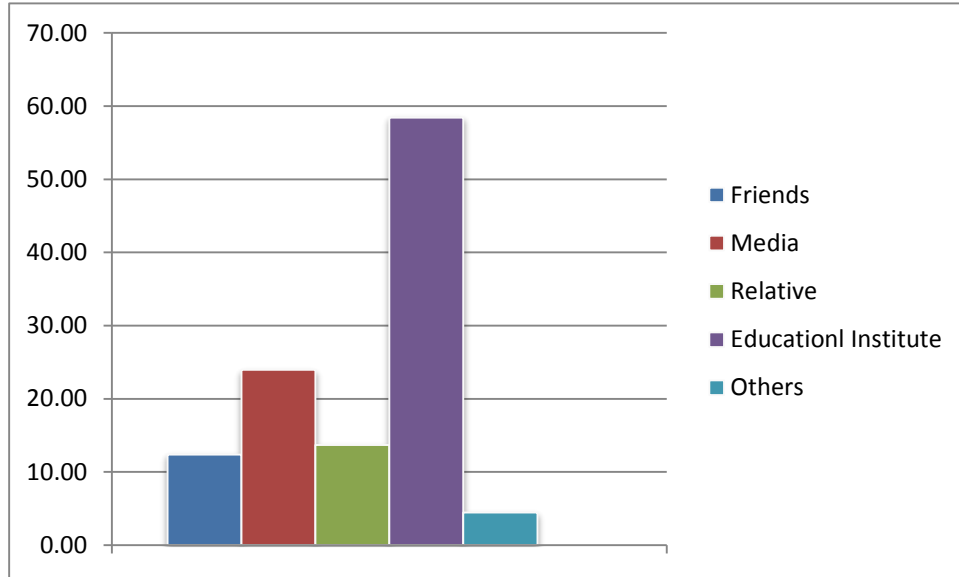


Figure 4.7: Source of knowledge

In this observation it was found that 58.42% students gained information from Educational institute, 23.95% from media, 13.68%, 12.37%, 4.47%, students heard it from relative, friends and other sources respectively.

4.8 Awareness about Affected Organ

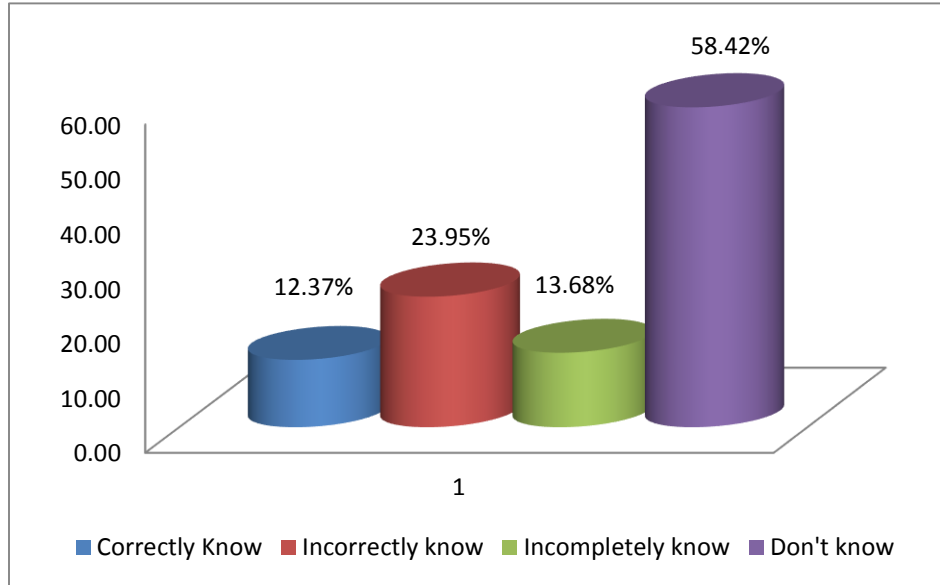


Figure 4.8: Awareness about affected organ

Most (58.42%) of the students were not aware about the organ that is affected by Hepatitis B, only 12.37 % correctly knows about the organ affected, 23.95% incorrectly knows and 13.68% incompletely knows about the affected organ.

4.9 Knowledge of Causative Organism

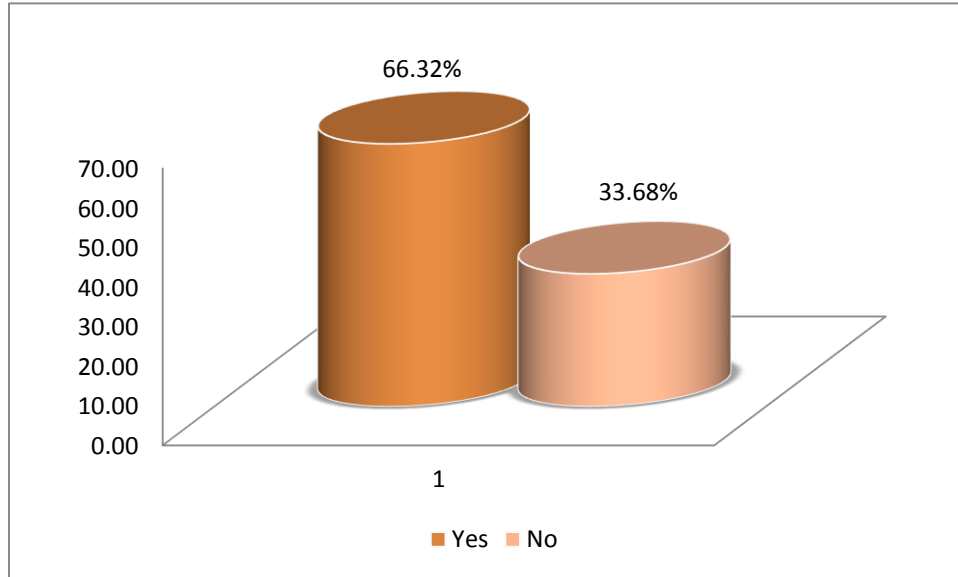


Figure 4.9: Knowledge about virus that causes Hepatitis B

In this study It was observed that majority of the students (66.32%) said that Hepatitis B is caused by virus and 33.68% students don't know about this.

4.10 Knowledge about Treatment

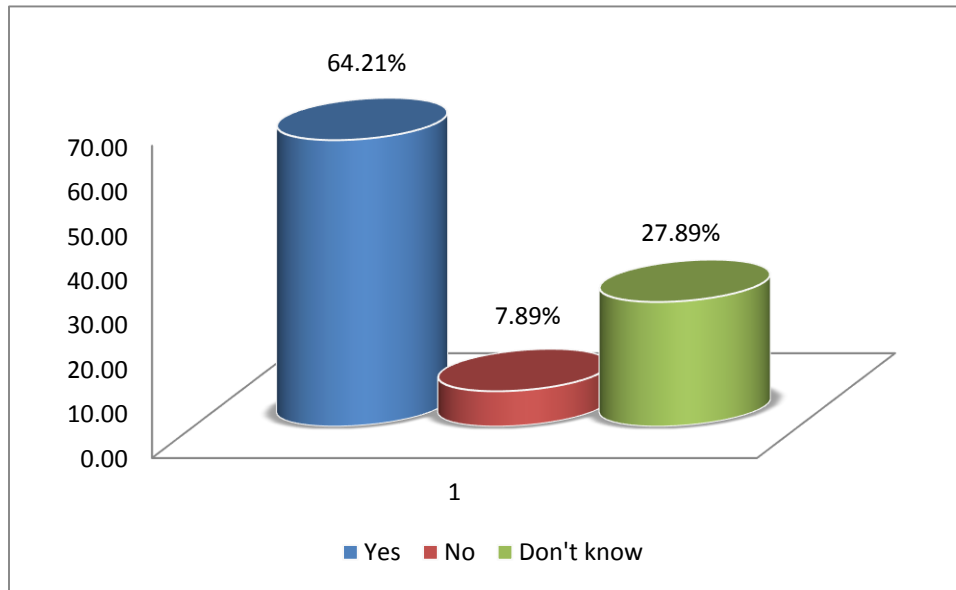


Figure 4.10 : Knowledge about treatment

The study showed that 64.21% of the students answered that they think that it was treatable, 7.89% students thought that it was not treatable and 27.89% had no knowledge about it.

4.11 Knowledge of Availability of Vaccine

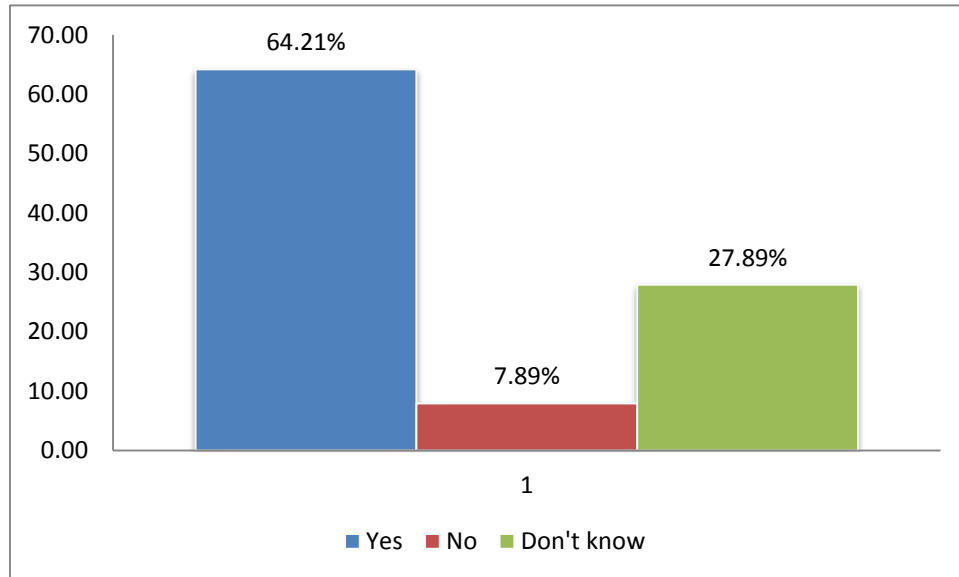


Figure 4.11: Knowledge about availability of vaccine

Among the respondents, 64.21% students said that Hepatitis B vaccine was available, 7.89% disagreed with the availability and 27.89% students didn't know about it.

4.12 Information About Vaccine Taken

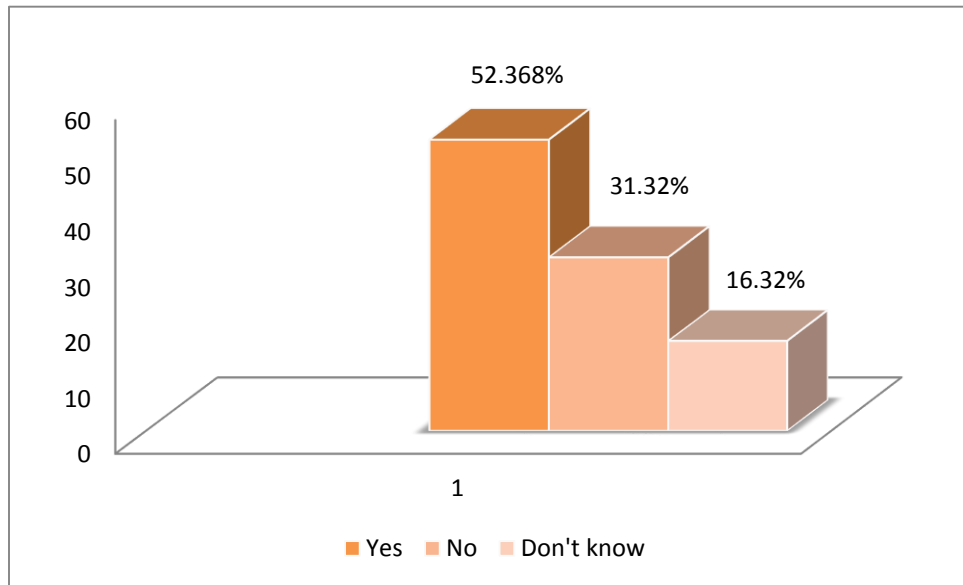


Figure 4.12 : Information about vaccine taken

During the study it was found that 52.37% students took vaccine, 31.32% students didn't take vaccine and 16.32% students didn't know whether they took vaccine or not.

4.13 Hepatitis B infection among the family members of the respondents

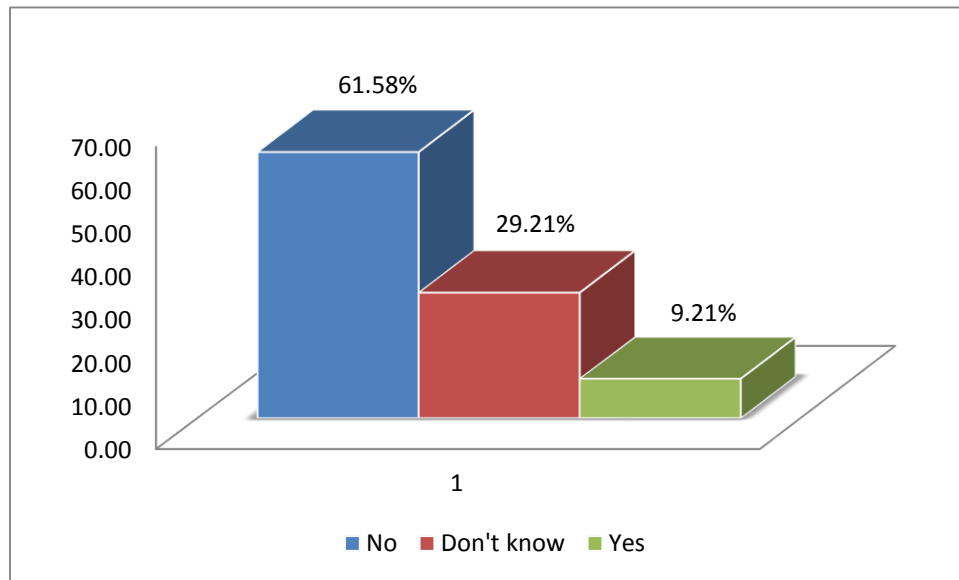


Figure 4.13: Hepatitis B infection among the family members of the respondents

Among the population 9.21% confirmed that they have the Hepatitis B patient in their family, where's 61.58% responded they their family is free from Hepatitis B and 29.21% population is not confirmed on the question.

4.14 Correct Mode of Transmission if Hepatitis B

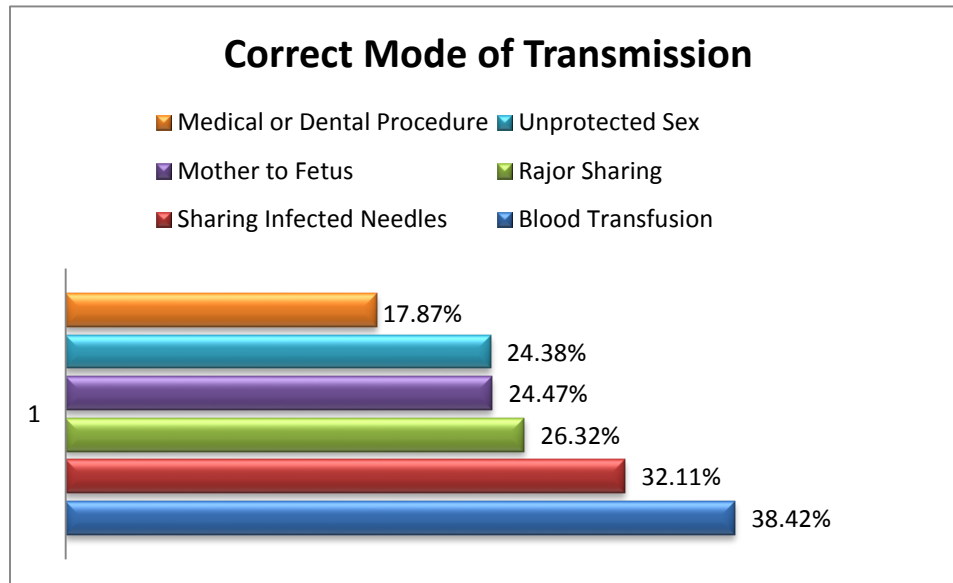


Figure 4.3.1: Mode of transmission of Hepatitis B

From the students 24.38% supported that “Hepatitis B can be transmitted by unprotected sex”. About 24.47% Students said Hepatitis B can be transmitted mother to fetus. 32.11% marked sharing infected needles or syringe as a way of mode of transmission. 38.42% claimed “by blood transfusion HIV can be transmitted”. 21.84%, 16.05%, 17.89%, 26.32% and 19.21% 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.

4.15 Misconception About Mode of Transmission of Hepatitis B

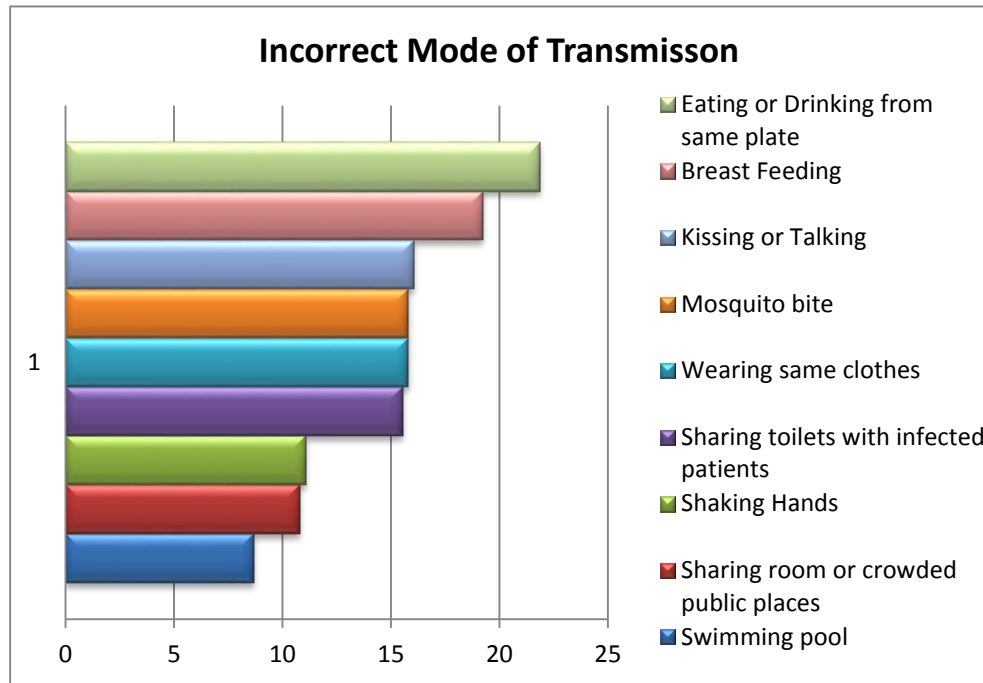


Figure 4.3.2: Misconception about mode of transmission of Hepatitis B

Some of the students didn't have clear concept about mode of transmission of Hepatitis B. 8.68% confirmed by swimming pools Hepatitis B can be transmitted, 10.79% said by sharing room it can be transmitted. 15.79% responders said by Mosquitoes bites can be transmitted. 15.53% said by sharing toilet with infected person Hepatitis B can be transmitted. 15.79% said by wearing clothes of patients can be transmitted and 11.05% said by shaking hand Hepatitis B can be transmitted.

4.16 Prevention and Control of Hepatitis B

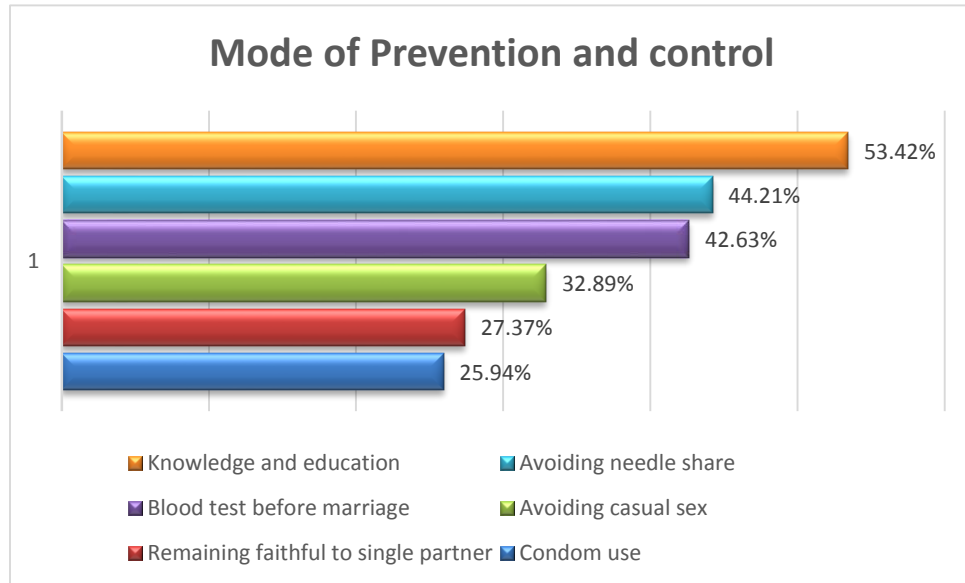


Figure 4.4 : Mode of Prevention and control of hepatitis B

Among the respondents most of the students (53.42%) said “Knowledge and education is the prevention and control method”. 32.89% ,42.63%, 44.21%, 27.37%, 25.94% marked avoiding casual sex, bloos test before marriage, avoidindg needle share, remaining faithful to single partner and condom use respectively as the control and prevention method.

4.17 Attitude towards infected person

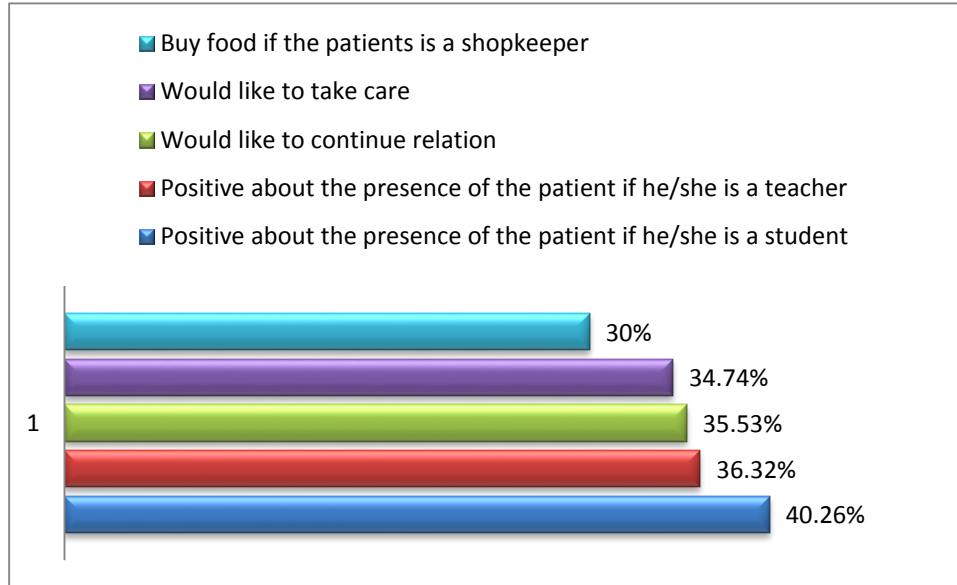


Figure 4.5: Attitude towards infected person

During the study, 36.32% said if the patient is a teacher, they would be positive about his/her presence, 40.2% would be positive if he/she is a student. 30% would buy food if the patient is a shopkeeper. 35.53% would like to continue relation with the patient and 34.74% would like to take care of the patient.

CHAPTER-5

Discussion

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.

This study was carried out on 380 school and college students. In this study a 23-item questionnaire was distributed. The study was conducted in 16 school and colleges of Dhaka, B.Barua and Munshiganj district of Bangladesh.

Most of our study population were aged between 15-17 years. Among our study populations 52.36% were female and 47.64% were male. In a study conducted by Salem et al., (2015), found 70% respondents were to be female which is higher than our study.

Among the respondents majority (71.57%) students were of class eight-ten, only 28.42 % were from college. Among them 54.16% students were from technical discipline. Rest of the students were from other discipline like commerce and business (22.91%), arts and humanities (1.73%) and science (21.18%). Among them 98.42% were single and 1.57% were married.

During the study it was found that 89.47% students have heard about Hepatitis B. Most of them (58.42%) got information from educational institute and 23.95% from media. On the contrary, Kwame (2015) found that, major source of information is media (77%)

The study showed that only 12.37% students mentioned liver as the affected organ. Most of the students (58.42%) did not know which part is affected by hepatitis B and few of them said other part of the body including urine, blood, and eye. Kwame (2015) found that only 35.5% knew HBV could cause liver cancer

In the current study, majority of the students (66.32%) said that Hepatitis B is caused by virus and 33.68% of the respondents did not know that hepatitis B is caused by a virus.

According to a study conducted in Egypt by Salem et al., (2015) nearly half of the students (300, 50%) knew that hepatitis B is caused by a virus.

Our study showed that 64.21% of the students answered that it was treatable. 7.89% students thought that it was not treatable and 27.89% had no knowledge about it. According to Kwame (2015) most of the students perceived that there is efficient treatment of Hepatitis B Virus infection (68%).

Among our study populants 64.21% students said that Hepatitis B vaccine was available, 7.89% disagreed with the availability and 27.89% students didn't know whether it is available or not. Salem et al., (2015), found that (42%) students knew that a vaccine for HBV is available.

During our study it was found that 52.36% students took vaccine, 31.32% students didn't take vaccine and 16.32% students didn't know whether they took vaccine or not. 9.21% of the respondents have family members having hepatitis B.

Though most of our study population had heard about hepatitis B but their knowledge regarding the mode of transmission was very poor. Among the respondents 38.42% claimed "by blood transfusion it can be transmitted", 32.11% marked sharing infected needles or syringe as a way of mode of transmission, 28.38% students supported that "Hepatitis B can be transmitted by unprotected sex" where 24.47% Students said mother to foetus,. Among respondents 21.84%, 16.05%, 17.89%, 26.32% and 19.21% 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. Kwame (2015) stated that Only 20% knew HBV could be transmitted from sexual intercourse. In another study conducted by Salem et al. (2015) found that students were more knowledgeable about reused blades of barbers and HBV transmission 330 (55%)

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 15.79% said by wearing clothes of patients, 15.53% said by sharing toilet with infected person, 10.79% by sharing room and 15.79% responders said by Mosquitoes bites Hepatitis B can be transmitted,

11.05% confirmed by shaking hand Hepatitis B can be transmitted, and 8.68.% saidm transmission can occur by swimming pools. According to the findings of Kwame (2015) about 51.5% also wrongly stated that people could get HBV through air.

Majority of the respondants (53.42) said that knowledge and education can control and prevent the incidence of the diseases. 44.21% of the study marked avoiding needle share, 42.63% said blood test before marriage, 32.89% marked avoiding casual sex as the mode of prevention of hepatitis B.

About 34.74% agree to care, 35.53 agree to continue relationship, and 30% showed positive attitude to buy goods from positive seller. 40.26% said that they would be positive in the school if any student is infected. Among the population 36.32% students gave a positive attitude about the presence of a infected teacher in school.

CHAPTER-6

Conclusion

Conclusion

It was evident from the study that majority of the respondents had inadequate knowledge regarding Hepatitis B and their conception regarding mode of transmission, prevention and attitude toward infected person are poor. Moreover, all of the respondents were not fully vaccinated against Hepatitis B which made them more vulnerable to the disease. Reasons behind their unawareness can be insufficient information about hepatitis B in their education programs and lack of information transfer through media. Media and educational institute can play a vital role in improving their concept. Knowledge about Hepatitis B should be incorporated in their curriculum. Different types of seminar on Hepatitis B should be arranged to 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.

CHAPTER-7

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