

Survey on Hepatitis B Knowledge and Awareness among the
university students of Bangladesh



Submitted By

Nadia Afrin

ID: 2016-3-79-010

Research Supervisor

Md. Anisur Rahman

Assistant professor

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DEDICATION

This Research Work is dedicated to Almighty Allah, my beloved parents, honourable faculties and loving friends.

Declaration by the Research Candidate

I, **Nadia Afrin** hereby declare that the dissertation entitled “**Survey on Hepatitis B Knowledge and Awareness 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 of Master of Pharmacy is a record of original research work carried out by me during 2017, under the supervision and guidance of **Md. Anisur Rahman, Assistant Professor, Department of Pharmacy, East West University** and the thesis has not formed on the basis for the award of any other degree/diploma/fellowship or other similar title to any candidate of any university.

Date: 20-07-17

Nadia Afrin

ID: 2016-3-79-010

Department of Pharmacy,

East West University, Dhaka.

Certificate by the Supervisor

This is to certify that the dissertation entitled “**Survey on Hepatitis B Knowledge and Awareness among the university students of Bangladesh**” submitted to the department of pharmacy, East West University in partial fulfilment of the requirements for the degree of Master of Pharmacy was carried out by **Nadia Afrin (ID: 2016-3-79-010)** under your guidance and supervision and that no part of the research has been submitted for any other degree. The thesis has not formed the basis for the award of any other degree/diploma/fellowship or other similar title to any candidate of any university.

Md. Anisur Rahman

Assistant Professor

Department of Pharmacy,

East West University, Dhaka.

Certificate by the Chairperson

This is to certify that the thesis entitled “**Survey on Hepatitis B Knowledge and Awareness among the university students of Bangladesh**” 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 record of original and genuine research work carried out by **Nadia Afrin** during 2017 of her research in the Department of Pharmacy, East West University.

Dr. Chowdhury Faiz Hossain

Chairman and Professor

Department of Pharmacy,

East West University, Dhaka.

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Abstract

Hepatitis B (HB) is a serious global health problem which affects the liver. Hepatitis viruses are the most common cause of hepatitis in the world but toxic substances (e.g. alcohol, certain drugs) can also cause hepatitis. The purpose of our study was to determine the knowledge level of university students in Bangladesh about Hepatitis B, their perception of risk factors and their knowledge about Hepatitis B vaccination. A questionnaire based survey was carried out among 500 university students in Dhaka city of Bangladesh. During the study, it was found that 89% respondents heard about Hepatitis B where 55% were female. Of those who were aware of hepatitis B infection, 30% mentioned blood transfusion as route of transmission of Hepatitis B, 20% and 17% marked mother to fetus and sharing infected needle & syringe respectively while 15% told that the disease can be transmitted through unprotected sex. About 77% students were aware of the affected organ. Level of vaccination of university students was 47% and the rest of them did not complete the full dose vaccination or did not take vaccine due to the lack of free time, lack of belief and also informed that they have never thought about vaccination and its necessity. Besides, most of the respondents (70%) had no knowledge about correct WHO schedule for Hepatitis B vaccination. 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. The survey was carried out in a few universities within the Dhaka city. Therefore, further research with other universities from different parts of Bangladesh is needed to reinforce the outcome of this research.

Keywords: Hepatitis B, Bangladesh, Transmission, Vaccination.

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Chapter One

Introduction

1.1 Overview

Hepatitis B virus (HBV) infection is one of the major diseases of mankind, estimated to cause about 686,000 deaths per year mostly from liver cancer and liver cirrhosis and globally about 240 million people are chronically infected with hepatitis B. Like a threat for world, Hepatitis B is a threat for people of all age groups of Bangladesh and other South Asian Countries. In Bangladesh, most HBV infections occur in childhood as suggested by the high rate of interfamilial HBV infection, history of low rate of acute hepatitis and large number of younger populations affected. Bangladesh is an intermediate endemic zone for Hepatitis B virus infection (Shahinul *et al.*, 2017). The objective of our study is to understand the awareness and knowledge level of Hepatitis B and its vaccination among the university students.

The liver is the largest glandular organ in the body that performs multiple functions including detoxification of blood, storing of glucose, iron and vitamins, metabolism of food and medicine, production of bile which eliminates toxic substances from the body and aids digestion. (Healthline, 2014)

Viral hepatitis- a group of infectious disease known as Hepatitis A, B, C, D & E affects almost 400 million people worldwide, causing acute and chronic liver disease and killing more than 1.4 million people every year. (Center for Disease Control and Prevention, 2016)

Hepatitis is an inflammation of liver. The conditions can be self limiting or may lead to fibrosis, cirrhosis and liver cancer. Toxic substances (e.g. alcohol, certain medicines), other infections like HIV and autoimmune diseases can cause also Hepatitis B infection. Safe food and water provide protection against viral hepatitis. (World Health Organization, 2017)

1.2 Types of Hepatitis (Centers for Disease Control and Prevention, 2017)

1.2.1 Hepatitis A

Hepatitis A infection is highly contagious caused by Hepatitis A virus. It is usually transmitted by fecal-oral route, either through person to person contact or consumption of contaminated food and water. Hepatitis A is a self-limited disease and does not cause chronic infection. More than 80% of adults with Hepatitis A have sign and symptoms but majority of children have an unrecognized infection. The best way to prevent Hepatitis A is by getting vaccinated.

1.2.2 Hepatitis B

Hepatitis B infection occurs due to Hepatitis B virus (HBV). It is transmitted when blood, semen and another body fluid from a person infected with Hepatitis B virus enters the body of someone who is not infected. This can happen through sexual contact, sharing needles and syringes or other drug-injection equipment or from mother to baby at birth. Hepatitis B can be acute or chronic infection but chronic infection may lead to liver cirrhosis or liver cancer. Safe and effective vaccine are available to prevent HBV.

1.2.3 Hepatitis C

Hepatitis C is a blood borne viral infection caused Hepatitis C virus (HCV). Today most people become infected with Hepatitis C virus by sharing needles or other equipments to inject drugs. For some people, Hepatitis C is a short term illness, but for 70% to 85% of people who become infected with Hepatitis C, it becomes a long term chronic infection that may result long term health problem or even health. The majority of infected person are not aware of their infection because they are not clinically ill. There is no vaccine for Hepatitis C. The best way to prevent Hepatitis C is avoiding behaviors that can spread the disease.

1.2.4 Hepatitis D

Hepatitis D occurs among people who are infected with Hepatitis B virus because Hepatitis D virus (HDV) is an incomplete virus that requires the helper function of HBV to replicate. HDV can be acute or chronic infection and is transmitted through mucosal contact with infectious blood. Hepatitis B vaccine provides protection against Hepatitis D virus.

1.2.5 Hepatitis E

Hepatitis E is a self-limited disease and Hepatitis E virus (HEV) is transmitted from ingestion of fecal matter, even in microscopic amounts and usually associated with contaminated water supply with poor sanitation. There is no currently FDA-approved vaccine for Hepatitis E.

1.3 History of Hepatitis B virus (HBV)

The Hepatitis B virus was discovered in 1965 by Dr. Baruch Blumberg who won the nobel prize for his discovery (Hepatitis B Foundation, 2017). In the 1950s, Blumberg obtained blood samples from hemophiliac patients who had received blood transfusion from multiple donors and, hence, produced antibodies against antigens from donors. In 1965, Blumberg

reported the discovery of the “Australian Antigen” in the sera of an Australian aborigine which reacted immunologically with the sera of hemophiliac patient by forming a precipitin line in agar gel immunodiffusion. He speculated that the antigen is present in the normal sera of Australian aborigine as the aborigine never received blood transfusion and the antibody was present in the serum of hemophiliac patient received multiple blood transfusion, and tentatively called the protein as Australian antigen. (David *et al.*, 2015)

In 1969, after further research, Blumberg reported the presence of Australian antigen in the sera of 20% of 125 patients with acute viral hepatitis. Based on the observation, Blumberg concluded that the Australian antigen was the infective virus of serum hepatitis itself and reported of the existence of a carrier state of the Australian antigen for nearly 20 years. In 1971, it was revealed that the antigen was a surface protein of the HBV particle (Hepatitis B surface Antigen) that was tremendously useful as a screening tool for Hepatitis B infection in blood donors and infected individuals who were at the risk of transmitting HBV to others, such as pregnant woman, health care workers, drug abusers. HBsAg (Hepatitis B surface Antigen) also served as an immunogen for Blumberg's subsequent development of Hepatitis B vaccine. (David *et al.*, 2015)

1.4 Geographical Distribution

Hepatitis B prevalence is highest in the WHO Western Pacific Region and the WHO African Region, where 6.2% and 6.1% respectively of the adult population is infected. In the WHO Eastern Mediterranean Region, the WHO South-East Asia Region and the WHO European Region, an estimated 3.3%, 2% and 1.6% of the general population is infected respectively. 0.7% of the population of the WHO Regions of the Americas is infected. (World Health Organization, 2017)

1.5 Morphology of Hepatitis B Virus

Hepatitis B virus (HBV) is the prototype member of the Hepadnaviridae member family having a strong preference for infecting the liver cells. HBV virions are double-shelled particles, 40-42nm in diameter, with an outer lipoprotein envelope that contains three related envelope glycoprotein or surface antigen. Within the envelope is the viral nucleocapsid, or core that contains the viral genome, a relaxed circular, partially duplex DNA of 3.2kb, and a polymerase that is responsible for the synthesis of viral DNA in infected cells. In addition to virions, HBV-infected cells produce two distinct subviral lipoprotein particles: 20 nm spheres

and filamentous form of similar diameter. These HBsAg particles contain only envelope glycoproteins and host derived lipids and typically outnumber virions by 1000:1 to 10,000:1. (Don & Alfred, 2004)

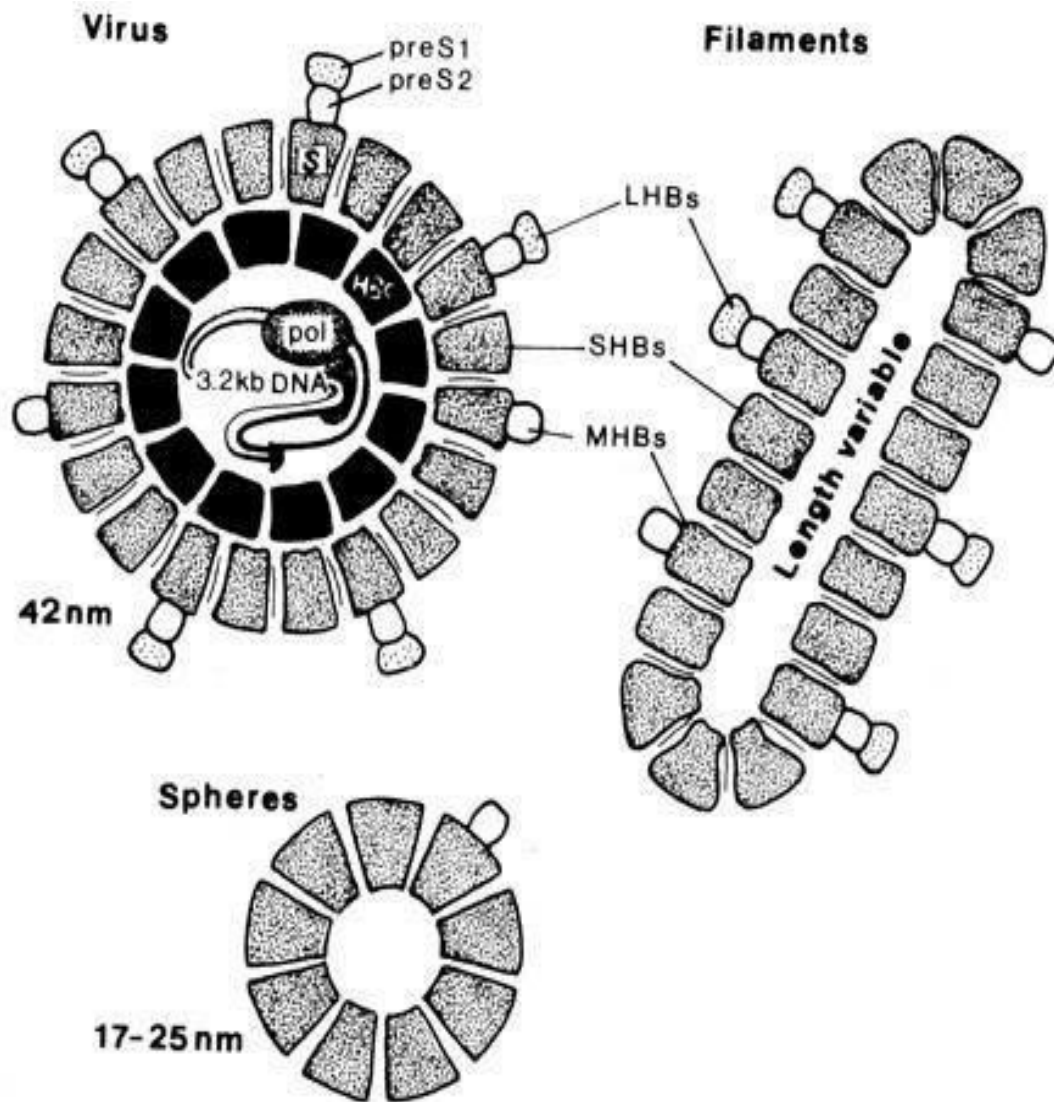


Fig 1.5.1: Schematic diagram of hepadnavirus particles. Individual subunits containing SHBs protein only, HBs protein plus pre-S2 (MHBs), and HBs protein plus pre-S1 and pre-S2 (LHBs) is shown in intact virus, among filaments and spheres. The virus particles contain an internal nucleocapsid (Hbc) and viral genome. (Lai *et al.*, 2003)

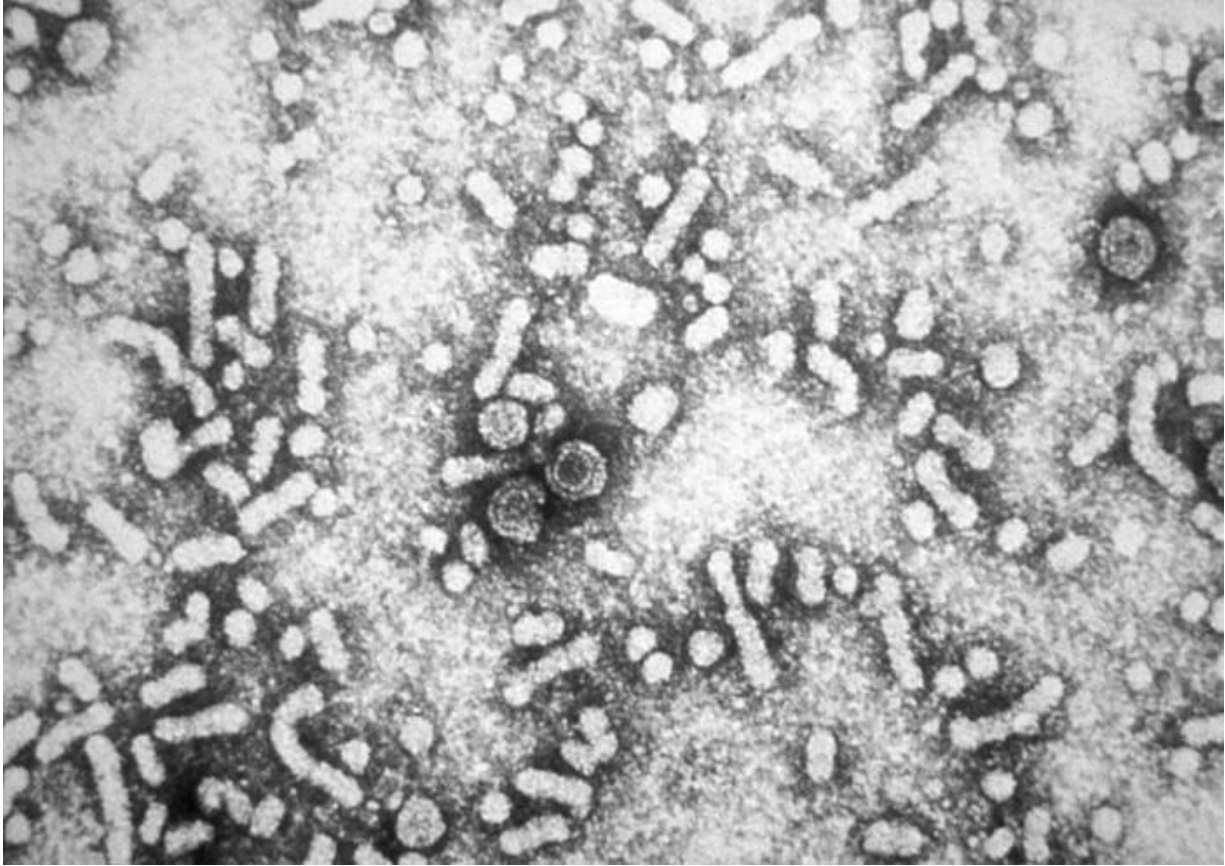


Fig 1.5.2: Electronic Microscopic Presentation of HBV particles. The round 42 nm particles represent infectious virions. The small empty spheres and the filaments are non-infectious. The preparation was enriched with virus particles. (Guptan *et al.*, 2002)

1.6 Replication Cycle of HBV

The Hepatitis B virus must attach specifically on to a cell capable of supporting its replication. HBV replicative intermediate and viral transcripts are found in bile duct epithelial, pancreatic acinar cells, lymph node, endothelial, smooth muscle cell and bone marrow cell of Hepatitis B infected patients. Incoming HBV virions are bound by cell surface receptors. After membrane fusion, cores are presented to the cytosol and transported in to the nucleus. There, their DNA genomes are converted to covalently closed circular (ccc) form, which serves as the transcriptional template for host RNA polymerase II. This enzyme generates a series of genomic and subgenomic transcripts. All viral RNA is transported to the cytoplasm, where its translation yields viral envelope, core and polymerase protein. Nucleocapsids are assembled in the cytosol, and during this process a single molecule of genomic RNA is incorporated in to the assembling viral core. Once the viral RNA is

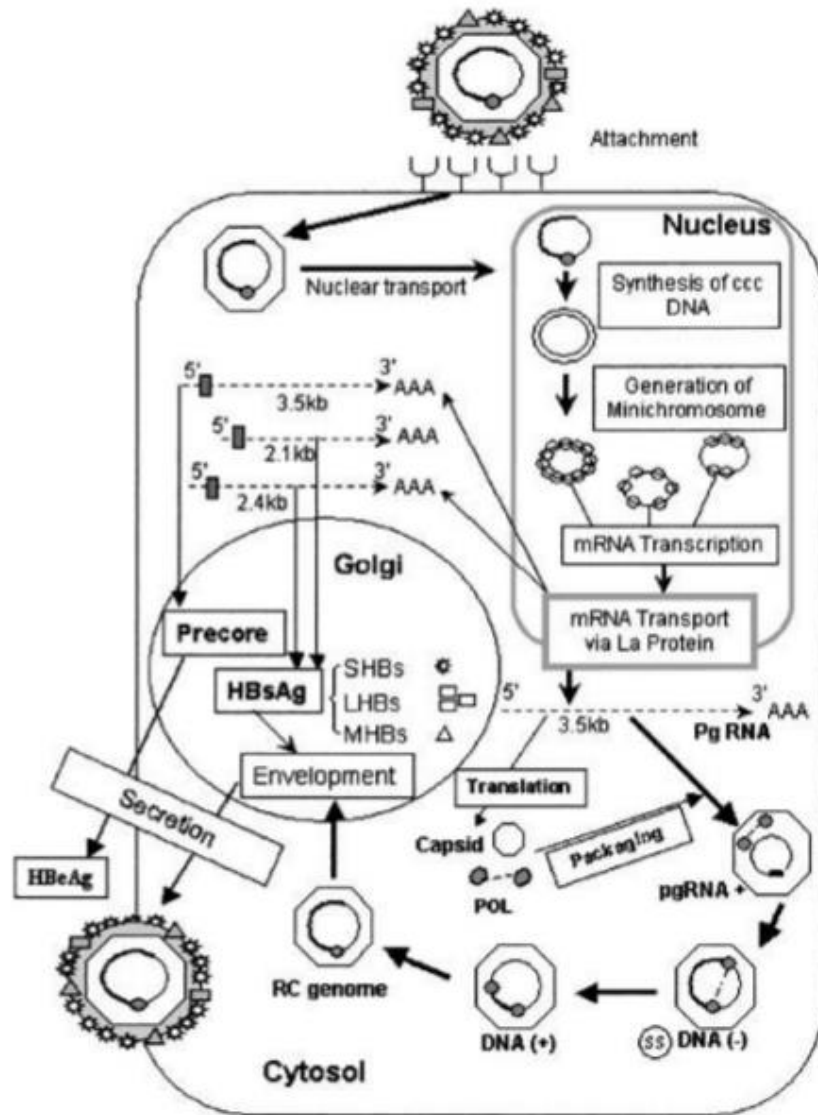


Fig 1.6 Replication Cycle of Hepatitis B Virus (Lacarnini, 2004)

encapsulated, reverse transcription begins. The synthesis of the two viral DNA strands are sequential. The first DNA strand is made from the encapsidated RNA template, during or after the synthesis of this strand, the RNA template is degraded, the synthesis of second DNA strand proceeds with the use of newly made first DNA strand as a template. Some cores bearing the mature genome are transported back to the nucleus, where their newly minted DNA genomes are converted to cccDNA to maintain a stable intranuclear pool of transcriptional templates. Most cores bud in the regions of intracellular membranes bearing the viral envelop protein. In doing so, they acquire lipoprotein envelope containing the viral L, M and S surface antigens and are then exported from the cell. (David & Alfred, 2004)

1.7 Major Health Problem of Hepatitis B virus

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

The frequent occurrence of persistent infection may lead to liver cirrhosis and cancer of the liver. (Lee *et al.*, 2004)

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 & Smith, 2003)

1.8 Risk Factors of Hepatitis B

Heavy alcohol consumption significantly increases the risk of hepatocellular carcinoma in HBV related cirrhotic patients. Elevated baseline serum HBV DNA is a strong predictor of hepatocellular carcinoma and antiviral nucleotide analogues therapy reduce the incidence of hepatocellular carcinoma in cirrhotic patient with HBV infection. (Chih *et al.*, 2013)

Cigarette smoking is a potential risk factor for the initiation of hepatocellular carcinoma, partially through interaction with HBV. For smokers, continued smoking postoperatively might accelerate tumor reoccurrence and patient death. (Xu-Feng *et al.*, 2014)

Saliva of people with Hepatitis B can contain Hepatitis B virus, but in very low concentration compared with blood. Injection of infected saliva can spread the virus, so bite injuries increase the risk of the disease. (Canadian Centre for Occupational Health and Safety, 2017)

Dental treatment can be included among the risk factors of Hepatitis B infection. This is more important in developing countries where the rate of hepatitis infected individuals is higher. (Mahboobi *et al.*, 2013)

Health care workers, staff and inmates of prisons and residential institutions are recognized as high-risk groups for Hepatitis B because of their exposure to blood and body fluids. Patients with renal failure, cancer and organ transplant are also group at risk factor. (Sherlock & Dooley, 2002)

The prevalence of Hepatitis B infection is higher in some countries Taiwan, Singapore and Hong Kong about 15%. (Carretero & Herraiz, 2004)

1.9 Transmission of Hepatitis B virus

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

1.9.1 Peri-natal Transmission

Transmission from mother to neonate may occur through contact with maternal blood and other infectious fluid during labour and rarely through breast milk and placental transmission. In high carriage rate areas, HBV infection is acquired by passage from mother to infant. The infection is usually not via the umbilical vein, but from the mother at the time of birth and during close contact afterward. The risk of transmission increases as term approaches and is grater in acute than in chronic carriers. (Villamil, 2003)

Peri-natal transmission is more common in Asia than in Africa because HBsAg positive women in Asia have higher level of circulating HBV DNA than women in Africa and the exposed babies tend to become HBsAg positive by 3 months after birth. (Zhang, 2004)

1.9.2 Sexual Contact

HBV-DNA has been detected in seminal fluid, vaginal secretion and saliva suggesting that these fluids are more likely to be infectious. Studies in patients attending in clinics for sexually transmitted disease have been 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)

In recent years, changes in sexual practice among the homosexual community, prompted by health concern over the human immune deficiency virus, have slowed the spread of HBV among this population. (Giannini *et al.*, 2003)

1.9.3 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 unit infectious for HBV (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)

1.9.4 Parenteral Drug Abuse

Parenteral drug abusers develop hepatitis from using shared, unsterile equipments. The mortality may be very high in this group. Liver biopsy may be show, in addition to acute or chronic hepatitis, foreign material such as chalk, injected with elicited drug. (Rivero *et al.*, 2002)

1.9.5 Opportunities for Parenteral Infection

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

1.10 Acute Hepatitis B infection

The incubation period ranges 2-20 weeks. The onset is usually insidious beginning with non-specific gastrointestinal symptoms including: anorexia, malaise, nausea, vomiting and flu like symptoms of cough, headache. These symptoms may disappear with the onset of jaundice. Cholestatic hepatitis with prolonged deep jaundice and pruritus is unusual. 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)

Rarely, acute hepatitis damages the liver so badly it can no longer function. The life threatening condition is called “Fulminate Hepatitis”. Patients with this hepatitis are at he risk of developing bleeding problem and coma resulting from the failure of the liver and may require liver transplantation. (Mary D. Nettleman, 2015)

The immune response of the body is the major determinant of the outcome in acute Hepatitis B. A stronger immune response to the infection is more likely to develop severe liver injury due to strong immune response that is trying to eliminate the virus. On the other hand, a weaker immune response has 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. (Mary D. Nettleman, 2015)

1.11 Chronic Hepatitis B Infection

Chronic Hepatitis B infection is usually found predominantly in males. Males are six times

more likely to carriers than females. Chronicity will follow an unresolved acute attack. The attack may be mild and the patient with an explosive onset and deep jaundice usually recovers completely. (Buti *et al.*, 2002)

The patients may be virtually symptom free with only biochemical evidence of continued activity, and simply complain of fatigue and being generally unwell. Diagnosis may be even made in a symptom free patient after a routine medical check-up 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 and rise in serum transaminase values. Relapse may be related to seroconversion from an HBeAg positive state to HBeAg and HBV-DNA negative one. (Yoshida *et al.*, 2004)

1.11.1 Chronic Hepatitis B and Hepatocellular Carcinoma

The history of HBV is influenced by age at which infection is acquired, integrity in to the hosts immunity, and exposure to environmental cofactors. Chronic infection with HBV is more frequent in men than women, in neonates than in adults. (Wang *et al.*, 2002)

In the immunocompetent patient, The persistence of HBeAg producing strains is associated with hepatic inflammation. Seroconversion of anti HBe is paralleled by exacerbation of hepatitis as a result of immune mediated liver cell necrosis and progressive clearance of infected hepatocytes and serum HBV DNA “Healthy Carriers”, a clinically long term benign condition. (Leung, 2002)

Conversely, the HBeAg seropositive patients with replicating HBV display various degree of liver damage, liver cirrhosis and hepatocellular carcinoma. Persistent HBV replication is instrumental is more common in the development of liver cirrhosis and liver cancer. Hepatocellular Carcinoma (HCC) is a frequent chronic HBV infection. In endemic areas, the risk of developing HCC among individuals chronically infected with HBV is up to 100 times that of non HBV carriers. (Tanaka *et al.*, 2004)

1.11.2 Post Hepatitis B Cirrhosis

Many patients with chronic HBV infection evolving over many years with established liver cirrhosis, with jaundice, portal hypertension. Cirrhosis is clinically silent in many cases.

Development of hepatic cirrhosis in a patient with chronic HBV infection could be suspected if the patient has mild pyrexia, palmer erythema or lower limb edema. (Guillevin *et al.*, 2004)

Firm hepatomegaly is common, but progressive hepatocyte destruction and fibrosis gradually reduce the size of liver. Joundice is usually mild when it first appears. (Friedman, 2004)

1.11.3 Risk of Chronic Disease (World Health Organization, 2017)

The likelihood that infection 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 are the most likely to develop chronic infections.

In infants and children

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

In adults

- Less than 5% of otherwise healthy persons who are infected as adults will develop chronic infection and
- 20-30% of adults who are chronically infected will develop liver cirrhosis and liver cancer.

1.12 Diagnosis (Centers for Disease Control and Prevention, 2017)

Diagnosis is based on clinical, laboratory and epidemiologic findings. HBV infection can not be differentiated alone based on the clinical symptoms and definitive diagnosis depends on the results of serologic testing. Serologic markers of HBV infection may vary depending on whether the infection is acute or chronic.

HBsAg is the most commonly used test for diagnosing acute HBV infection or detecting carriers. HBsAg can be detected as early as 1 to 2 weeks and as late as 11 to 12 weeks after exposure to HBV when sensitive assays are used. The presence of HBsAg indicates that a person is infectious, regardless of whether the infection is chronic or acute.

Anti-HBc (core antibody) develops in all HBV infections, appears shortly after HBsAg in acute disease, and indicates HBV infection at some undefined time in the past. The anti-HBc only occurs after HBV infection and does not develop in persons whose immunity to HBV is

from vaccine. Anti-HBc generally persists for life and is not a serologic marker in acute infection.

IgM anti-HBc appears in person with acute disease about the time of illness onset and indicates recent infection with HBV. IgM anti-HBc is generally detectable 4 to 6 months after the onset of illness and is the best serologic marker of acute infection. A negative test for IgM anti-HBc together with a positive test for HBsAg in a single blood sample identifies a chronic HBV infection. HBV DNA assays are used to monitor the response to treatment, assess the likelihood of maternal to child transmission of HBV and to detect the presence of occult HIV infection.

Anti-HBs (surface antibody) is protective, neutralizing antibody indicating recovery and immunity against reinfection. It can be acquired as an immune response to Hepatitis B vaccine.

1.13 Medical Treatment (World Health Organization, 2017)

There is no specific treatment for acute hepatitis. Therefore, care is aimed at maintaining adequate nutritional balance including fluid replacement lost from vomiting and diarrhea.

Oral antiviral agents are used in the treatment of chronic hepatitis that slow progression of liver cirrhosis, cancer and improve long-term survival. WHO recommends Tenofovir and Entecavir because they suppress the hepatitis B virus and rarely lead to drug resistant compared to other drugs. In most people, however, the treatment does not cure hepatitis B infection, but suppresses the replication of the virus. Therefore, most people who start hepatitis B treatment must continue it for life.

There is no limited access to diagnosis and treatment of hepatitis B in many resource-constrained settings. In 2015, of the 257 million people living with HBV infection, 9% (22 million) knew their diagnosis. Of those diagnosed, the global treatment coverage was only 8% (1.7 million). Many people are diagnosed only when they have already advanced liver disease.

Among the long-term complication of HBV infections, cirrhosis and hepatocellular carcinoma cause a large disease burden. 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 few months of diagnosis. In high-income countries, surgery and

chemotherapy can prolong life for up to a few years. Liver transplantation is sometimes used in people with cirrhosis in high income countries, with varying success.

1.14 Prevention (World Health Organization, 2017)

The hepatitis B vaccine is the mainstay of hepatitis B prevention. WHO recommends that all infants should receive hepatitis B vaccine as soon as possible after birth, within 24 hours. The birth dose should be followed by 2 or 3 doses to complete the primary series. In most cases, 1 of the following 2 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 and combined vaccine) given at the same time as the first and third doses of diphtheria, tetanus- (DIP) vaccine or
- A 4-dose schedule where a monovalent birth dose is followed by three monovalent or combined vaccine doses, usually given with other routine infant vaccine.

The complete vaccine series induces protective antibody level in more than 95% of infants, children and young adults. Protection lasts at least 20 years and is probably life long. Thus, WHO does not recommend booster vaccination in 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 and blood products, dialysis patients
- People interned in prisons
- People who inject drugs
- Household and sexual contact of people with HBV infection
- People with multiple sexual partner
- Healthcare workers who may be exposed to blood and blood products through their work

The vaccine has excellent record of safety and effectiveness. Since 1982, over 1 billion doses of Hepatitis B vaccine have been used worldwide. In 2015, global coverage with the third

dose of hepatitis B vaccine reached 84% and global coverage with the birth dose of hepatitis B vaccine was 39%.

WHO also organizes world Hepatitis day on July 28 every year to increase awareness and understanding of viral hepatitis.

1.15 Immunization and Hepatitis B Vaccine development in Bangladesh

The Hepatitis B virus causes up to a million deaths worldwide and 16 million health care related infection in the tropics each year. HBV infection is potentially life threatening condition as many of the affected individuals progress to chronic hepatitis, cirrhosis and Hepatocellular Carcinoma (HCC). (Harunor & Shafquat, 2006)

Currently, through several antiviral drugs are used, there is no reliable curative treatment for HBV once it has been acquired and prevention by universal strategy for reducing the number of acute infection, long term liver disease, cirrhosis and liver cancer. (Harunor & Shafquat, 2006)

In 1991, a attempt to reduce the global impact on HBV infection, WHO recommended that hepatitis B vaccination should be integrated in to national immunization program in all countries. (Harunor & Shafquat, 2006)

Immunization and vaccine development programme of WHO Bangladesh has been providing technical assistance to the government of Bangladesh to strengthen immunization systems including vaccine preventable disease and adverse events following immunization surveillance: ensure the safe use of vaccine and strengthen National Regulatory authority. (World Health Organization, 2017)

WHO introduced Hepatitis B vaccine in Bangladesh in 2005. Unfortunately, despite an increased prevalence of HBV infection, Bangladesh has not incorporated Hepatitis B vaccination in to its national childhood immunization policy until recently, most probably because of its economic constrains. Presently, it offers three doses hepatitis B vaccine to all babies. (Harunor & Shafquat, 2006)

Chapter Two

Literature Review

A total of 125 students of Chittagong Medical College, Chittagong, Bangladesh, was selected to find the degree of knowledge and awareness about Hepatitis A virus and Hepatitis B virus and evaluation of practice of vaccination. The information was collected by self administered questionnaire along with direct observation of respondents. About 6.4% and 87% of students were aware for Hepatitis A and Hepatitis B vaccination respectively. None of them had taken vaccine for Hepatitis A but two-third of the students had been vaccinated for Hepatitis B. Despite the fact that vaccination program being priority National Public Health Program, vaccination procedures had not been implemented well in reality. Awareness of Hepatitis A on preventive activities, such as increased utilization of safe water and hand washing practices should be strengthened. (Sandesh & Pragya, 2011)

Hepatitis B infection is the most transmissible blood borne infection among health care workers. About 400 health care workers (250 doctors, 100 nurses, 50, technicians) of Lady Hardinge Medical College & Associated Hospital, New Delhi included to evaluate the awareness and status of Hepatitis B vaccination. Blood samples were collected for the detection of Hepatitis B surface antigen (HbsAg). About 34.4% doctors, 18% nurses, 4% technician had overall adequate knowledge about Hepatitis B vaccination. Out of 400 people, 56.7% were fully vaccinated (3 dose), 28% partially vaccinated (1 or 2 dose) and 15.2% did not give vaccine. Besides, no health care workers were positive for HbsAg. (Madhumita *et al.*, 2016)

Hepatitis B virus infection cause significant morbidity and mortality worldwide. A study was conducted to determine Hepatitis B vaccination status among medical students at King Faisal University, Saudi Arabia and found that 117 (59.4%) had received at least one dose of vaccine, 23 (11.7) had never received the vaccine and 57 (28.9%) were sure that they receive the vaccine. Among them only 67 (43.2%) who received the vaccine, took the full dose. (Doaa *et al.*, 2016)

A literature search was conducted on research articles to understand the variation of prevalence of HBV and HCV infection in different regions due to inadequate knowledge and non implementation of International health standards. But unfortunately, up to date, no prevalence study has been reported from rural areas of Pakistan depicting HBV and HCV infection. Prevalence of HBV in general population, peds, pregnant woman and IDUs was reported 4.5%, 1.8%, 0.34%, 12.62% and 22.4% respectively. (Umar & Sobia, 2014)

Hepatitis B is globally a public health problem with a complicated pathology of liver. A cross-sectional study was carried out on 200 people at Lahore city, Pakistan. The findings of current study showed that poor knowledge and negative attitude of participants were present toward prevention and treatment of Hepatitis B in the community of Lahore, Pakistan. Moreover, they preferred home remedies, complementary therapies and spiritual healers as compared to medical treatment. (Asaf, Muhammad & Rafiullah, 2017)

The prevalence of Hepatitis B virus varies across the globe. Three year hospital based retrospective study at the laboratory unit of Kintampo Municipal Hospital, Ghana to detect the hepatitis B surface antigen in the sera of blood donors. A total of 3402 blood donors was studied and the overall sero-prevalence of hepatitis B surface antigen was 9.6%. Majority of sero-positive donors were less than 40 years with higher prevalence rate 16.4% in donors less than 20 years. The sero-prevalence in male and female were 9.7% and 8.5% respectively. (Williams, Patrick & Samuel, 2014)

In 2004, Nigerian government introduced Hepatitis B vaccine in National Immunization Program. 749 children aged 11-19 years from six secondary schools were selected to determine the seroprevalence and predictors of viral hepatitis B and blood samples were collected from them. Nine of the 749 students screened were positive for HBsAg giving an overall prevalence of 1.2%. After multivariate analysis, age was the predictor of Hepatitis B infection. Despite the low prevalence, the introduction of vaccine is justifiable in the view of public health importance of infection. (Joanah *et al.*, 2016)

The prevalence of Hepatitis B virus is high in health care workers in Brazil. A prospective study was made of 1433 health workers, 872 administrative employee and 2583 blood donors from hospital blood bank and found that health care workers (0.8%) were significantly higher risk for the viral infection than blood donor candidates (0.2%) and 86.4% were vaccination among these workers. Multivariate analysis revealed that increased age reduced chance of immunization. (Luiz & Dirce, 2005)

Hepatitis B virus and Hepatitis C virus are highly occupational hazard for dental practice. 96 dental medical students from Varna Medical University, Bulgaria were interviewed to investigate the knowledge of these viral infection and hepatitis B vaccination status. Almost 90% considered that dental practice could enhance the risk of these infections and had positive attitude toward Hepatitis B vaccination. Unfortunately, only 57.4% of students knew their vaccination status. (Tatina *et al.*, 2015)

In Quetta city of Pakistan, one thousand healthy individuals (aged 18 years and above) were approached to study the knowledge and practice toward hepatitis B. Among them, majority of respondents (45.4%) were unemployed and 26.7% had an intermediate level of education. With the response rate (78%), majority of the respondents had poor knowledge and never went for Hepatitis B screening. Among them, 86.8% stated a negative immunized status against Hepatitis B. (Noman *et al.*, 2012)

Every year nearly 1 million people die due to Hepatitis B. With the study of 150 educated people in Ghana, it was found that high proportion of respondents had high knowledge about viral hepatitis and had vaccinated against Hepatitis B virus. The vaccination rate was higher in health care professionals (96%) than other professionals. (Prince & Linda, 2015)

Hepatitis B infection among health care professionals can be prevented by vaccination, increasing awareness. From the observation of study with newly admitted medical students in India, it was found that most of the students had good knowledge about disease, mode of transmission and prevention and nearly 40% of students were unimmunized mainly due to lack of awareness and motivation. (Santosh, V.S & Shrinivas, 2015)

With the study of 543 chronic hepatitis B patients in a hepatology clinic of Malaysia, it was observed that more than half of the participants were worried of spreading the viral infection to their family and friends and worried since the diagnosis. A third of participants were embarrassed to reveal their diagnosis to the public whereas most of them would inform their family. About half of the participants did not share dining utensils and the majority believed that the virus can be transmitted by sharing of food and utensils. (Rosmawati *et al.*, 2012)

Vitamin D deficiency is associated with several acute and chronic illness. In the present study, vitamin D levels were compared with 35 chronic virus patient (Group I), 30 naturally immunized individuals (group II) and 30 healthy adult (Control group) and found that patients of group I had lower Vitamin D level than group II and control group and the low level may be an indicator of the status of viral replication. (Canan & Mehmet, 2013)

Municipal waste management workers and waste scavenger were at high risk on Hepatitis B virus due to poor waste treatment and disposal methods in Nigeria. During the study with 120 waste management worker and waste scavenger, it was found that waste scavenger (16.67%) were at higher risk of viral hepatitis than waste management worker (2.6%) and the possible pathway of transmission was waste segregation. (Henry, Rauf & Adedotun, 2016)

Chronic Hepatitis C virus patients usually have normal pregnancy course and breast feeding is relatively safe in patients with hepatitis C and hepatitis B with precaution. While evaluating the fetal and maternal outcome and complications in patients with chronic hepatitis B and hepatitis C, the study showed that fetal, maternal outcome and complication were relatively low in hepatitis C patients but high with viral hepatitis B with 4% mortality rate, 28.5% abortion rate, 32% in premature labor, 8% fetal loss together with other complication indicating that hepatitis C patients are relatively safe in pregnancy than hepatitis B patients. (Sameh *et al.*, 2014)

About 10 million people in Bangladesh have been suffering from viral hepatitis. 150 patients (15-35 years) from Homeopathy Medical Center, Dhaka were selected to assess the knowledge and practice about viral hepatitis. Among Injectible Drug Users (IDU) about 19.3%, 27.6% was sharing the same needle and approximately 5% of respondents had a history of taking unscreened blood among 28% of respondents experienced with blood transfusion. Another concerning issue was that 77% of population practiced polygamy sex and only 38.8% used protecting device and the study also showed that majority of population (70.7%) did not receive vaccine. (Sazia *et al.*, 2016)

Co-infection with hepatitis B and hepatitis C among people infected with HIV (Human Immune deficiency Virus) is a major health problem in Sudan. Study was carried out with 100 samples (74 males and 26 females) with different age collecting from HIV infected patients. The study found that the frequency of serological markers of HBsAg in HIV positive samples were 15 (15%) distributed in to 12 male and 3 female. The rate of hepatitis C virus antibody was found in 3 (3%) of HIV positive patients and only one sample (1%) was positive for both hepatitis B and hepatitis C virus. (Adel & Habab, 2015)

A confidential self-administered questionnaire was distributed among 350 dentists in Tehran city (Capital of Iran) to clarify current situation regarding hepatitis B vaccination giving an immunization rate of 48.1%. 3.1% of respondents had incomplete vaccination and 48.8% had absolutely no vaccination at all. Reasons for none-vaccinated group included, high cost (7.2%), insensitivity and ignorance to the risks (45.8%), fear of complication (2.4%), pregnancy (1.2%), inertia (22%). (Jalaleddin *et al.*, 2014)

Barbers are at high risk to viral hepatitis B infection in developing countries like Pakistan. 385 barbers had been interviewed thorough questionnaire and blood samples were collected. The study found that the prevalence of Hepatitis B virus among barbers was 2.1% and 35.1%

of participants agreed to have vaccination for viral hepatitis B but the overall knowledge regarding transmission route of hepatitis B virus and vaccination knowledge was very poor. (Imran, 2014)

A survey on 160 school going adolescent (14-19 years) about Hepatitis B found that only 52% of them had comprehensive and correct knowledge symptoms, causes, measures for prevention of Hepatitis B. Their major source of knowledge were parents (57%), television (56%), newspaper and books (31%), doctors (30%), teachers and peers (29%). (Ali & Ameer, 2010)

Hepatitis B virus infection is highly endemic in Nigeria and about (9-12%) of Nigerians are chronic carriers. While interviewing 400 pregnant women about viral hepatitis B, 62.5% of respondents have heard about viral hepatitis B, 71.5% were aware about its occurrence during pregnancy. Moreover, 6.8% of respondents thought that it was an eye disease while 52.5% of population had no knowledge about the infection. (Gboeze *et al.*, 2015)

Hepatitis B and AIDS are major health problems worldwide. A total of 395 students (17-35 years) from Sudan has responded regarding the awareness about Hepatitis B and AIDS. A significant difference was found between students' knowledge of AIDS and Hepatitis B concerning the routes of transmission, symptoms and prevention. Students showed poor knowledge on viral hepatitis than AIDS. (Fatima, Amna & Nour, 2013)

Adult patients (410) were randomly selected from primary care clinic in Poland to assess the prevalence of Hepatitis B infection and knowledge of hepatitis B. 45.6% were not aware of the potential asymptomatic course of hepatitis B infection, 41.2% about chronic Hepatitis B treatment and the major source of hepatitis B knowledge were media and medical staff. (Maria *et al.*, 2015)

The prevalence of hepatitis B infection is high in China. A cross-sectional study with 2065 migrant workers found that the overall prevalence rate (8.1%), correct response about transmission of hepatitis B was very poor, especially regarding for a question whether hepatitis B can be transmitted by sexual contact (36.8%), from mother to infant (33.9%). About 80.9% of workers responded that vaccination is effective for viral hepatitis. (Yan *et al.*, 2015)

A survey was conducted with 114 males with sexually transmitted infection to evaluate Hepatitis B vaccine and found that the overall hepatitis B vaccine acceptance rate was high. Among all, the ratio of three doses of vaccination was 69.3%, 87% were currently married,

34.2% used condom and 36.8% correctly identified Hepatitis B as a sexually transmitted infection. (Jamshid *et al.*, 2014)

Official French health care policy recommends vaccination for viral hepatitis. With 735 attendees in a survey, 50% totally agreed vaccine was safe. 14% of respondents told that vaccine was dangerous and 18.9% of population were afraid about the adverse effects of vaccine. (Lauranne *et al.*, 2016)

Progression of viral hepatitis to liver cirrhosis and liver cancer can be prevented by treatment, especially if the infection is identified at an early stage. About 3129 working age individuals were interviewed regarding viral hepatitis. The findings were 21.3% had previously undergone viral hepatitis testing. According to the respondents, if a coworker tested positive for hepatitis, 36% reported that they would be anxious about it, 32% would try to avoid the infected person. So educational strategies are needed to increase awareness, knowledge toward Hepatitis B. (Nanae *et al.*, 2013)

Pakistan is considered as an intermediate zone of hepatitis B virus infection, with an estimated population prevalence of 2-7%. A study was conducted among 430 women of childbearing age using semi-structured questionnaire. 43% of respondents had correct knowledge about hepatitis B vaccination and knowledge was specially poor among low socioeconomic groups. The main source of information regarding Hepatitis B vaccination were lady health workers (53%) and traditional birth attendants (22%). Age and level of education were significantly associated with the knowledge of Hepatitis B and its vaccination. (Nooren, Kumar & Shaikh, 2015)

Hepatitis B vaccination is recommended for infant, children and adolescence since 1995 and for specific target groups since 1982 in Germany. In order to estimate vaccination coverage in adult target group and overall adult population, a nationwide cross sectional study was carried out among 412 people. Vaccination coverage was 29% in general population, 58.2% in target group population. Particular gaps in vaccine coverage were detected among health care workers (69.5%) and chronically ill person (22%). Knowledge on risk factor and transmission was far below expectations, whereas the acceptance of vaccination of majority of population (79%) was good. (Karl *et al.*, 2008)

Significance of study

Hepatitis is characterized by necrosis and inflammation of liver and may result from infection with a variety of viruses. About 400 million people worldwide are chronically infected with Hepatitis B (HBV), with approximately one million deaths annually from complication of chronic disease. A substantial proportion of (up to 40%) of HBV- infected individual go on to develop cirrhosis and hepatocellular carcinoma. (R Dhillon & M Parakevopoulou, 2014)

India has approximately HBV carrier rate of 3.0% with a high prevalence rate in the tribal population. With a population of more than 1.25 billion, India has more than 37 million HBV carriers and contributes to large proportion to the worldwide pool of HBV carriers. (Pankaj, 2014)

Despite the effectiveness of current vaccination policy, the prevalence of Hepatitis B remains high and currently available antiviral strategies are either poorly effective or only effective for non-curative suppression of viral replication. (Elisabetta *et al.*, 2015)

As it is a global concern in our country, the incidence of disease 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 our knowledge there is no major significant studies regarding this topic. Main reasons for choosing the topic for the study was to identify the current stage of knowledge of mode of transmission, risk factors, symptoms and knowledge about vaccination for Hepatitis B.

Aim of the Study

The aim of the study was to:

- Understand the knowledge level of University students in Bangladesh about Hepatitis B.
- Their perception of mode of transmission, risk factors and sign and symptoms of Hepatitis B
- Know the awareness of Hepatitis B vaccination and their vaccination status.

Chapter Three

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 500 students from different universities inside Dhaka city.

University including

1. East West University
2. Dhaka University
3. Jahangirnagar University
4. National University
5. Jagannath University
6. Bangladesh University of Engineering & Technology
7. BRAC University
8. Eastern University
9. University of Asia Pacific
10. United International University
11. Bangladesh University
12. Prime Asia University
13. Northern University
14. Ahsanullah University of Science & Technology
15. North South University

3.3 Inclusion Criteria

- University Students
- Both male & female
- 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 containing 27 questions which covered with knowledge and information about Hepatitis B (HBV) and its vaccination. The questionnaire has several parts with multiple choice type questions. The data was collected by both face to face interview and by questionnaire supply.

3.6 Development of Questionnaire

The questionnaire was developed by considering various studies conducted in different countries like India, Pakistan, Germany, Nigeria and other countries and also from the observation of different behavior of Bangladeshi people.

3.7 Sampling Technique

In this study, most of the samples were collected from East West University and Jahangirnagar University for our convenience.

3.8 Data Collection Period

The duration of the study was about three months that started from March, 2017 up to May, 2017.

3.9 Data Analysis

Data obtained were categorized according to qualitative and quantitative variables after interposing the data from excel. All test was carried out in the MS excel 2007 with respect to the respective parameters.

Chapter Four

Result & Discussion

4.1.1 Age Distribution of Respondents

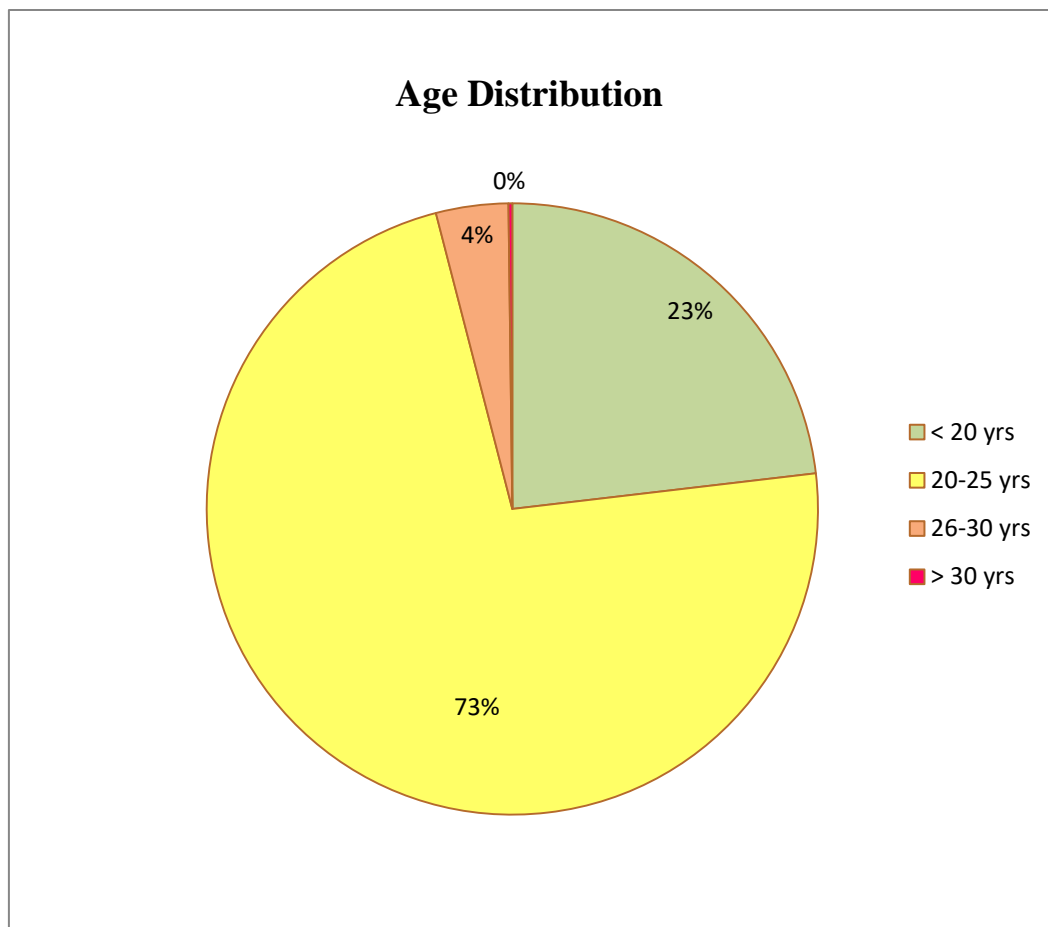


Fig 4.1.1: Age Distribution of Respondents

Among the respondents, during this study it was found that about 73% (362) were in the age range 20-25 years, 23% (115) were in the age below 20 years, 4% (19) were in the age range 26-30 years and only few respondents were in the age above 30 years.

4.1.2 Gender Distribution of Respondents

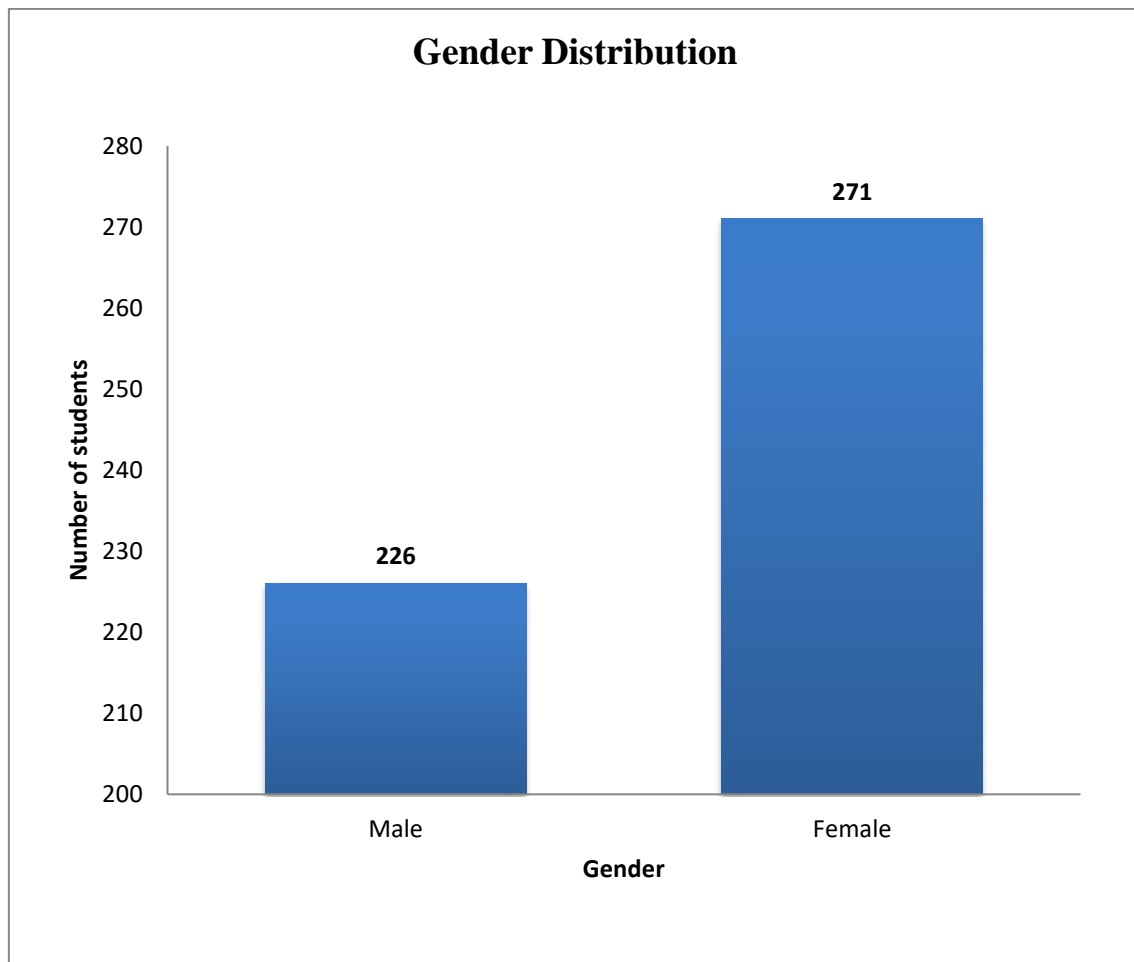


Fig 4.1.2 Gender Distribution of Respondents

From the above graph, it can be seen that the majority of the respondents were female which was about 55% (271) and the rest of the population were male about 45% (226).

4.1.3 Martial Status of the Respondents

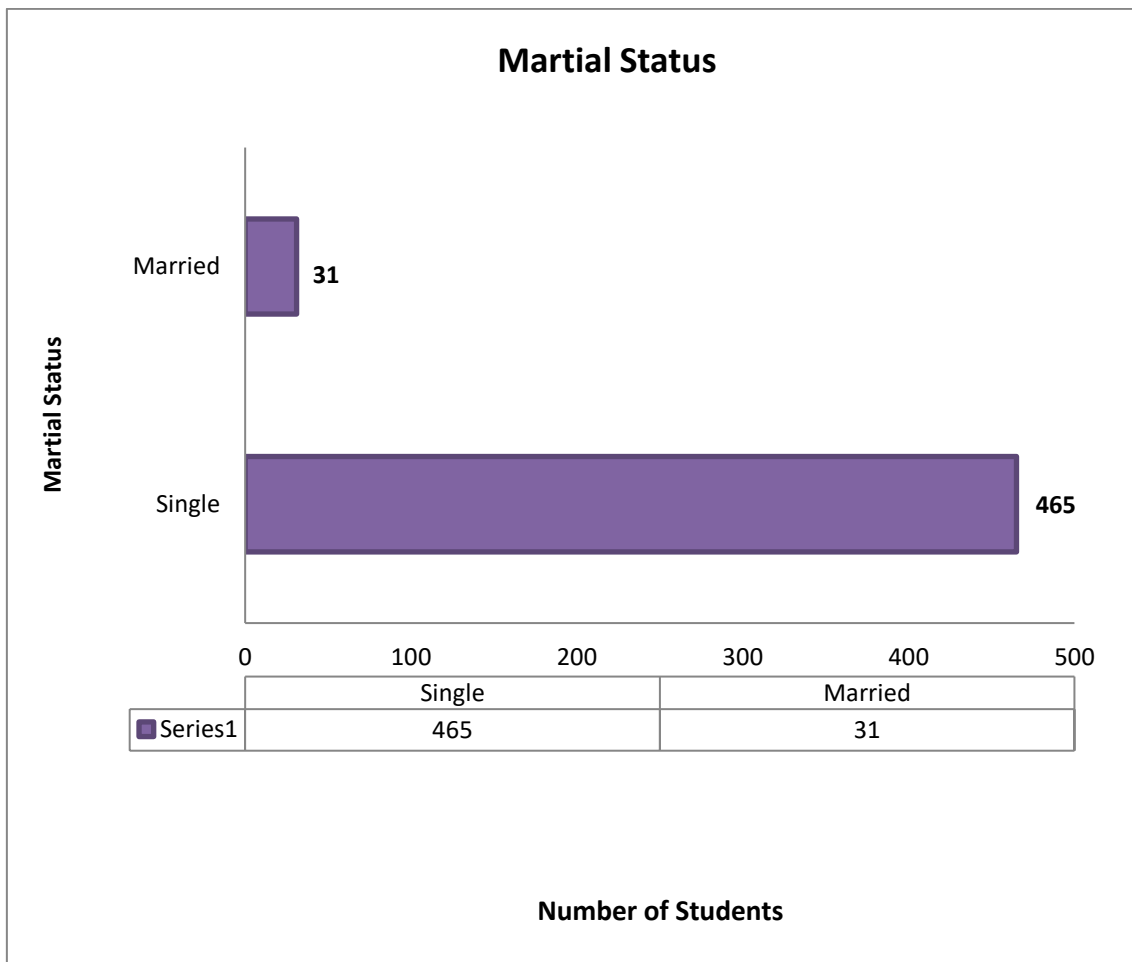


Fig 4.1.3 Martial Status of Respondents

Among the respondents, about 94% (465) were single and only 6% (31) were married.

4.1.4 Educational Status of Respondents

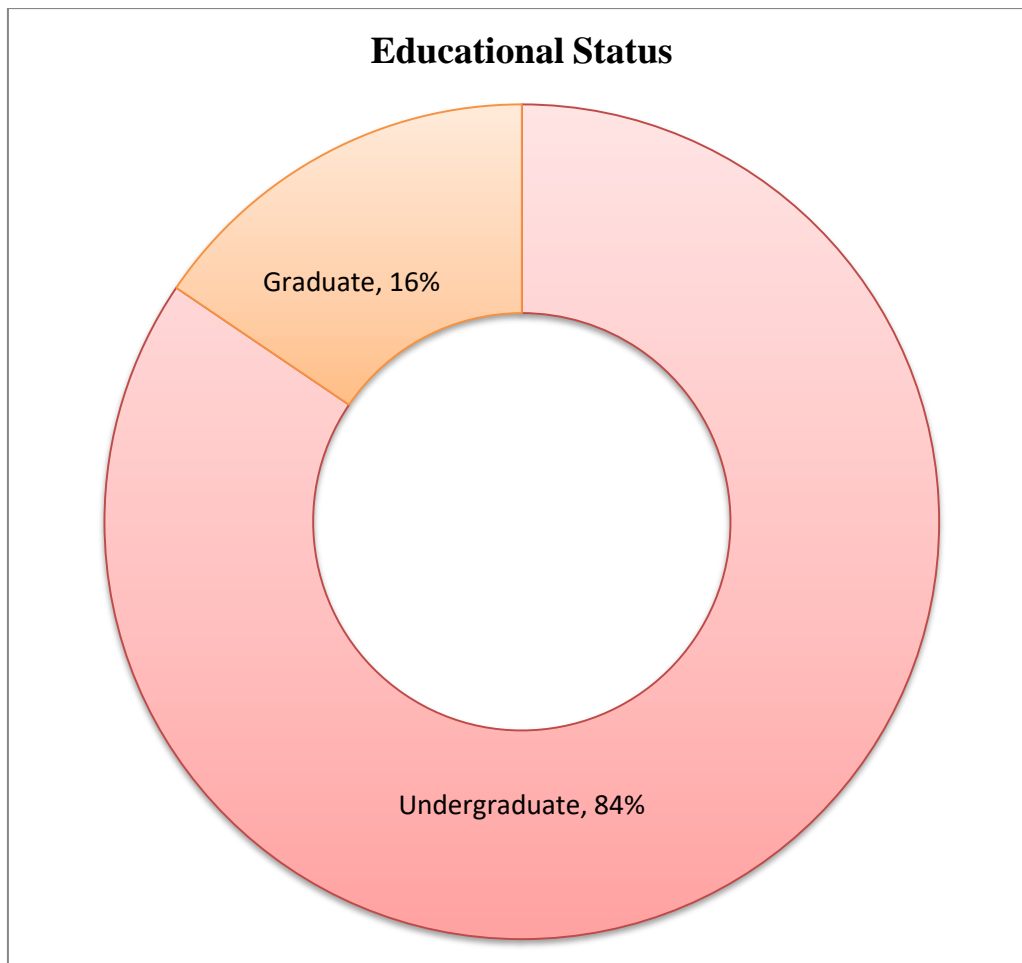


Fig 4.1.4 Educational Status of Respondents

From this study, it was found that most of the respondents were undergraduate students which was about 84% (419) and 16% (77) were graduate students.

4.1.5 Job Status of the Respondents

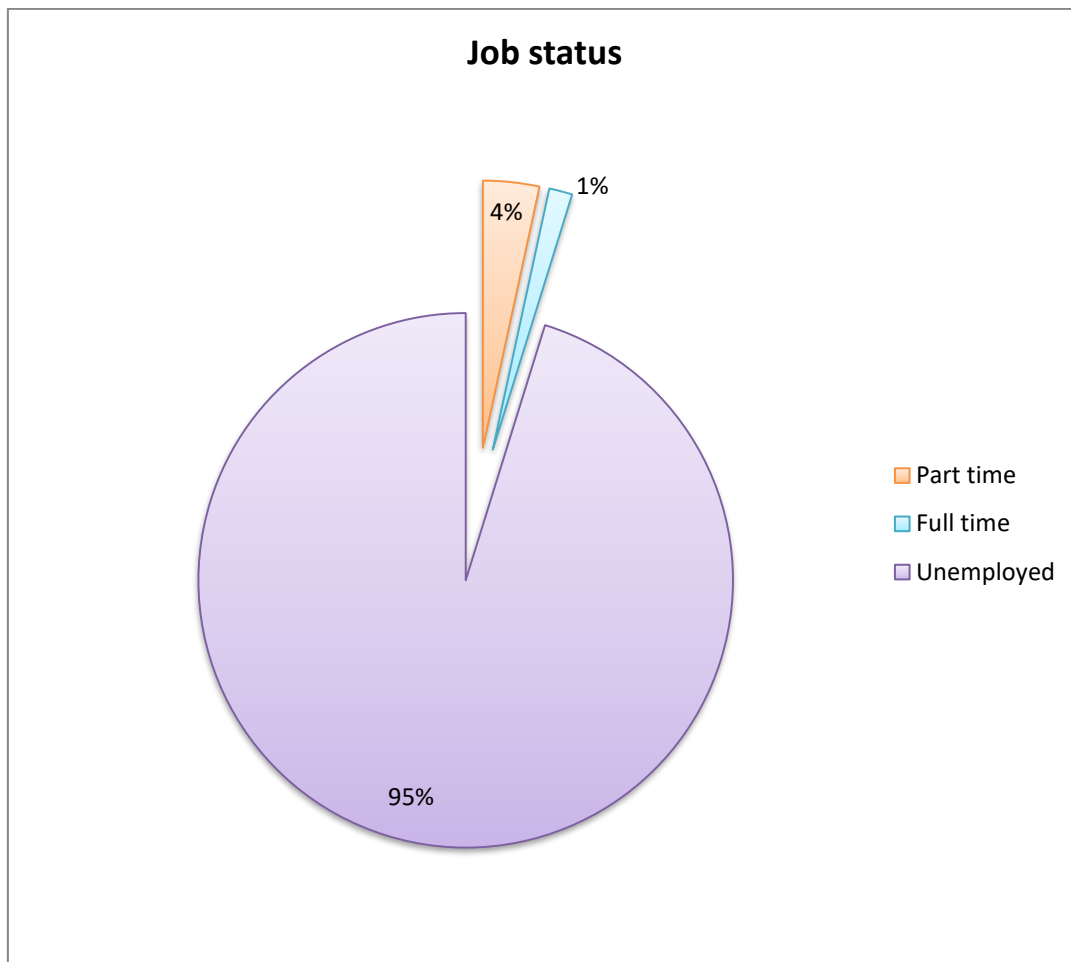


Fig 4.1.5 Job Status of the Respondents

The study showed that 95% (476) respondents were unemployed, 4% (17) were engaged in part time job and 1% (7) were engaged in full time job.

4.1.6 Institutional Status of Respondents

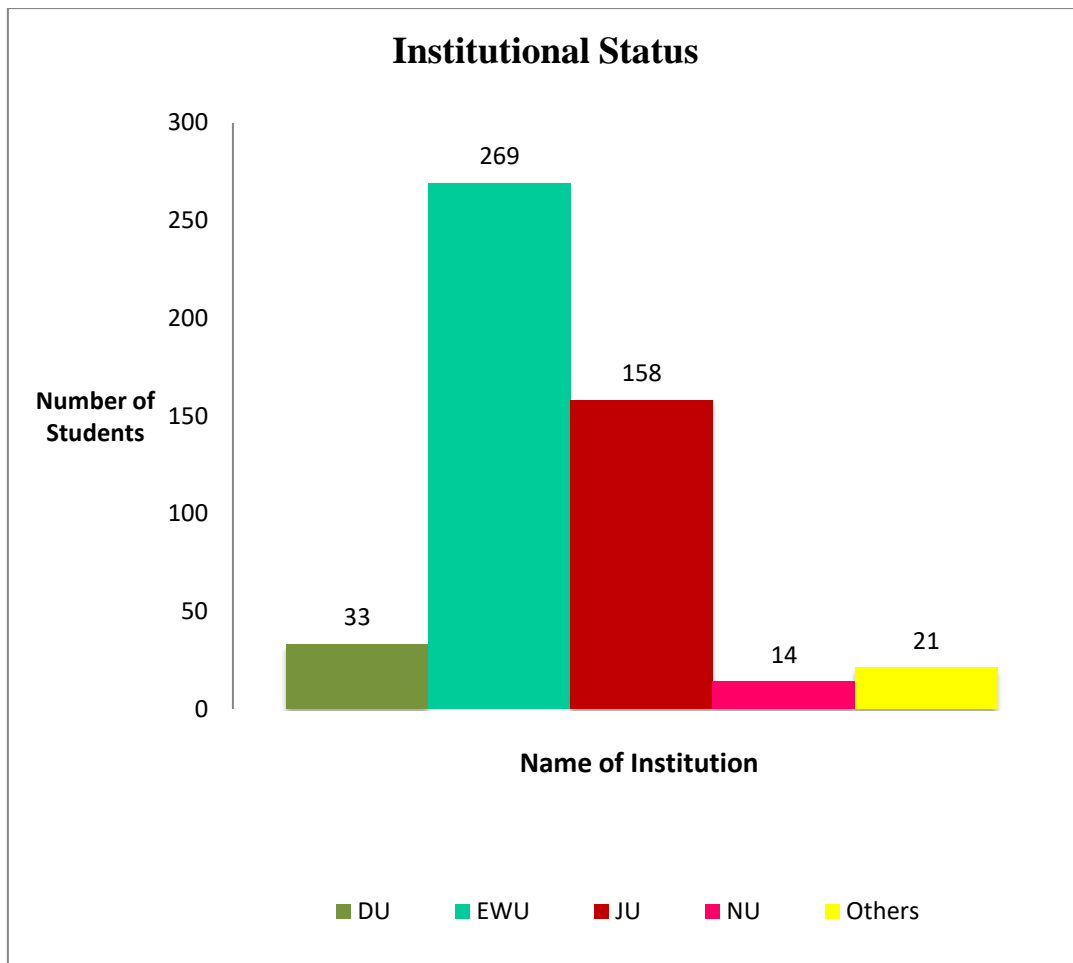


Fig 4.1.6 Institutional Status of Respondents

The graph showed that majority of the students 54% (269) were from East West University (EWU), 32% (158) from Jahangirnagar University (JU), 7% (33) from Dhaka University (DU) and about 3% (14) and 4% (21) students were from National University (NU) and from various public and private universities respectively located inside the Dhaka city.

4.1.7 Department Distribution of Respondents

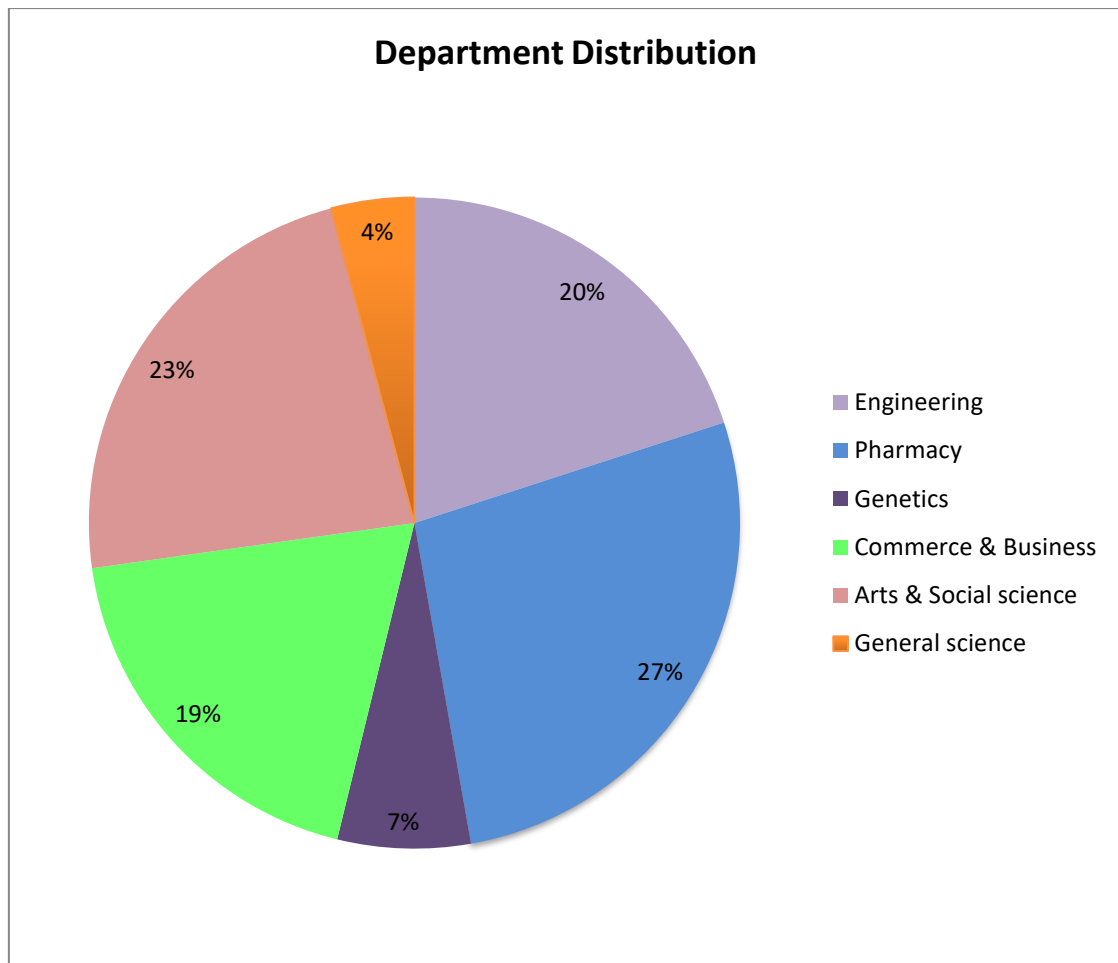


Fig 4.1.7 Department Distribution of Respondents

During this survey study, it was found that majority of the students were from Pharmacy department (27%), 23% were from Arts and Social Science department, 20% were from Engineering department, 19% were from Commerce & Business background, 7% were from Genetics department and only 4% students were from General Science background.

4.2 Knowledge about Hepatitis B

4.2.1.1.1 Sufferer from Hepatitis B

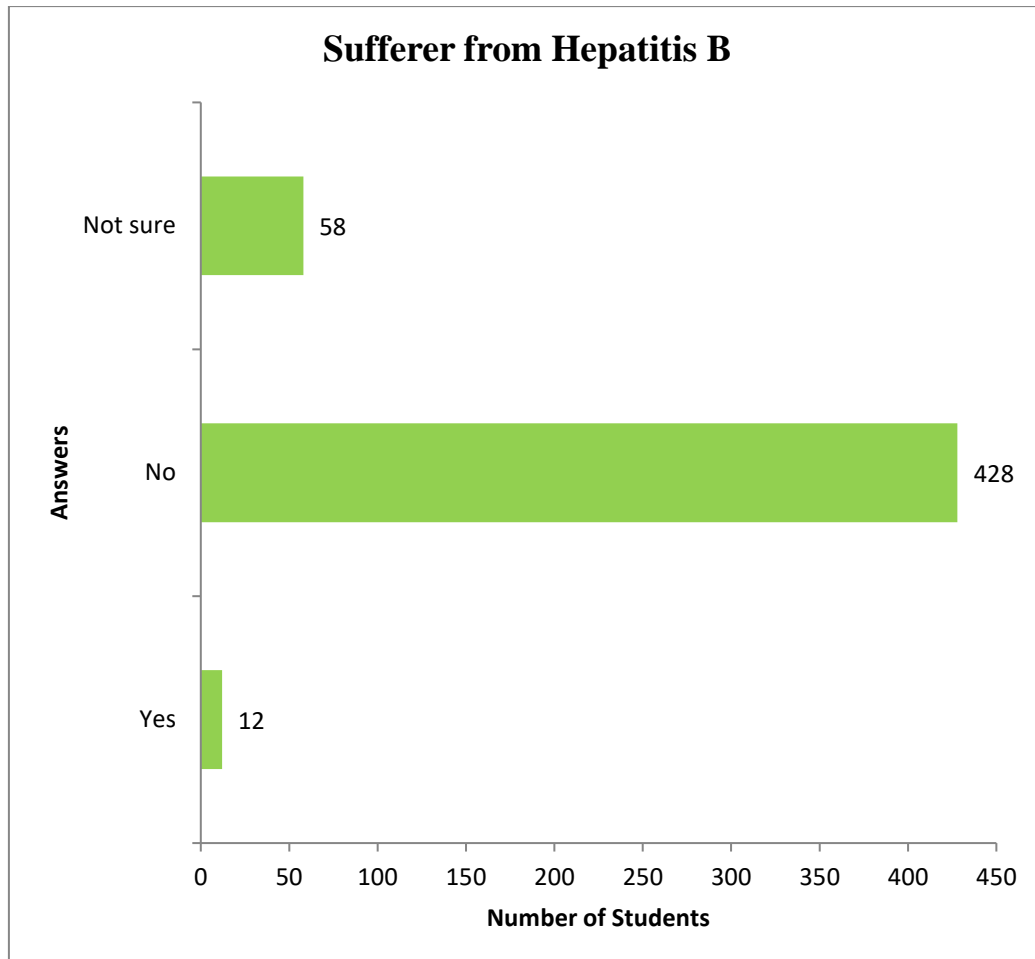


Fig 4.2.1.1 Sufferer from Hepatitis B

Among the study population 86% (428) told that they were not suffering from Hepatitis B infection and 12% (58) respondents told that they were not sure or could not remember whether they suffered from hepatitis B infection or not but 2% (12) population confirmed that they suffered from hepatitis B infection.

4.2.1.1.2 Information about Medication taken & Food restriction

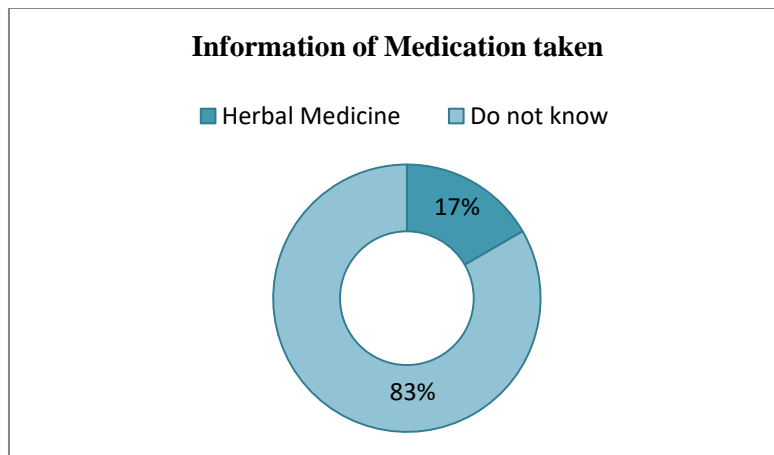


Fig 4.2.1.1.2.1 Information about medication taken

Among the respondents, two students (17%) informed that they took herbal medicine while they were suffering from hepatitis B but rest of the students could not response on it.

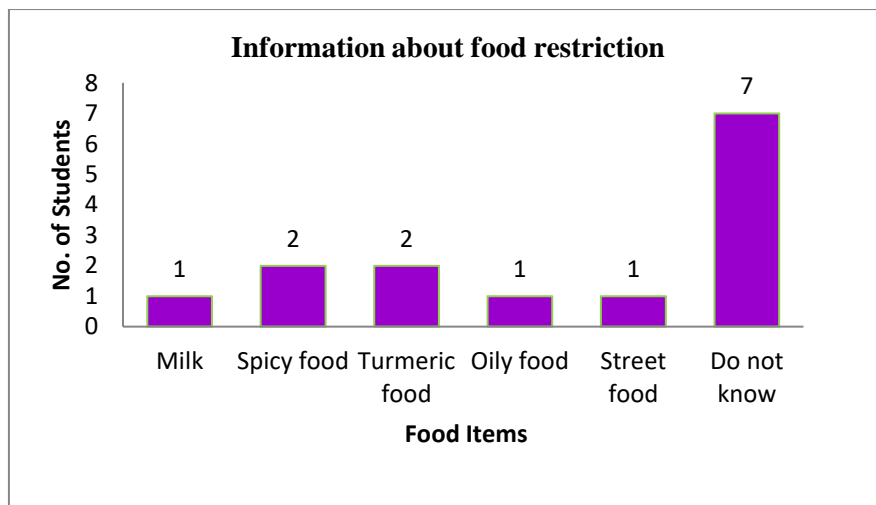


Fig 4.2.1.1.2.2 Information about food restriction

During this survey study, some students told that they were not allowed to intake some foods like milk, spicy & turmeric food, oily food and street food when suffering from the infection but the rest of the population could not mention about that information.

4.2.1.2 Awareness about Hepatitis B

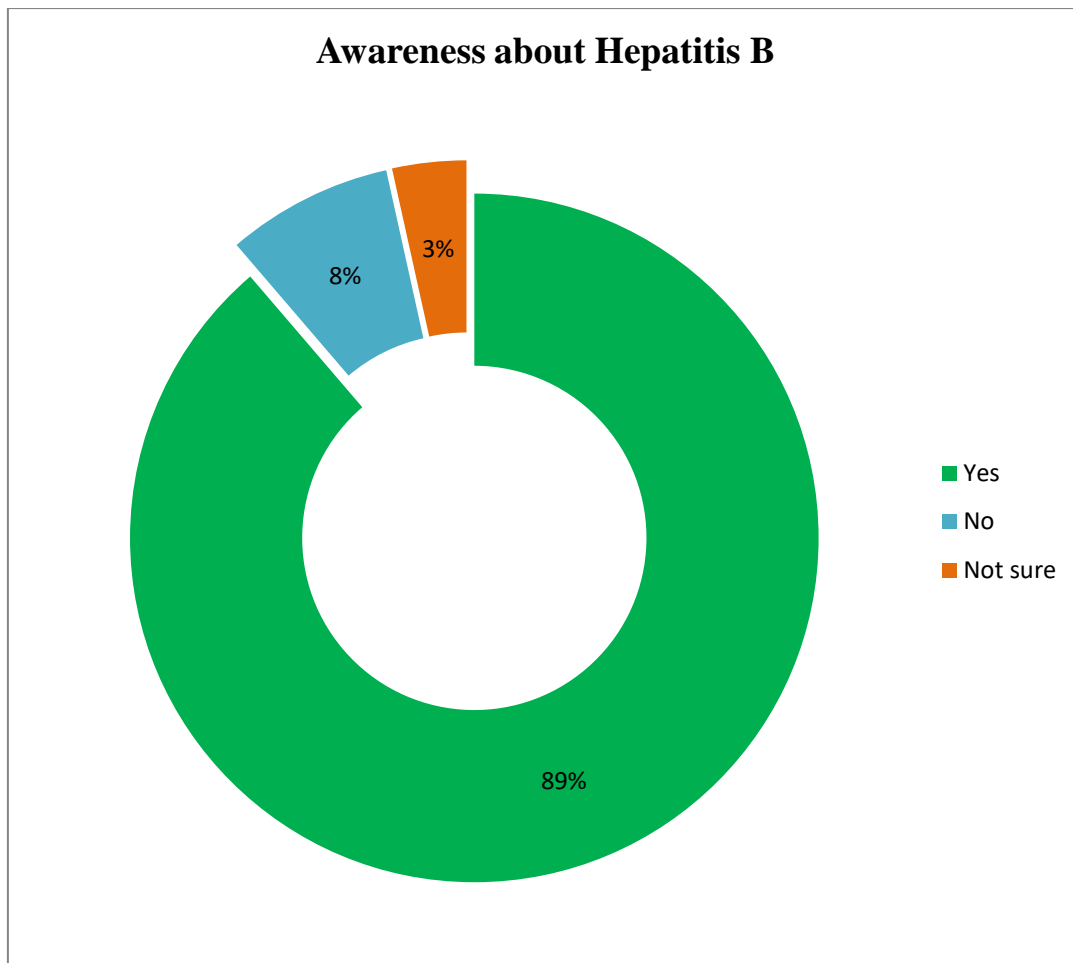


Fig 4.2.1.2 Awareness about Hepatitis B

In this observation, it can be said that majority of the population 89% (409) have heard about Hepatitis B, 8% (36) of population did not know about the infection. Only 3% (16) were not sure about the infection.

4.2.2 Awareness about Affected Organ

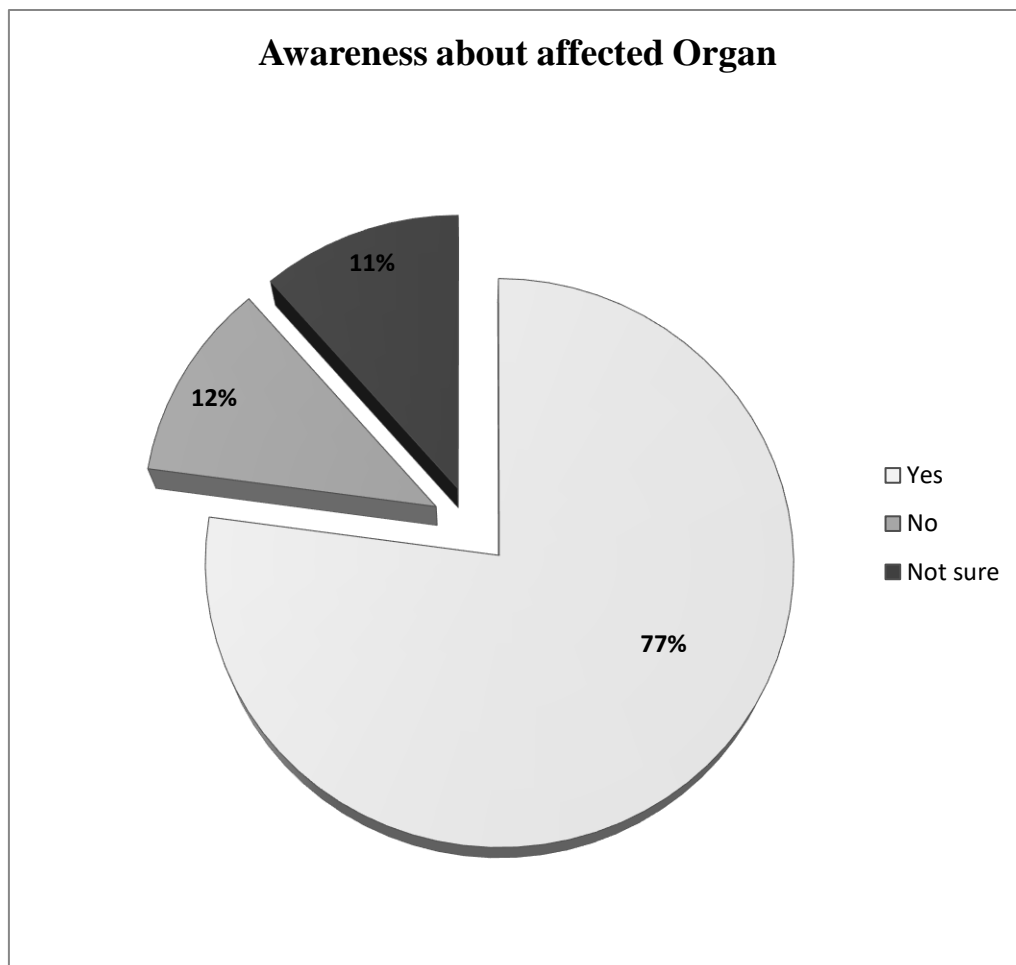


Fig 4.2.2 Awareness about Affected Organ

Most of the students of about 77% (385) were aware about the organ named liver that is affected by Hepatitis B, whereas the rest of the students did not have any idea about the affected organ.

4.2.3 Knowledge about Viral Infection

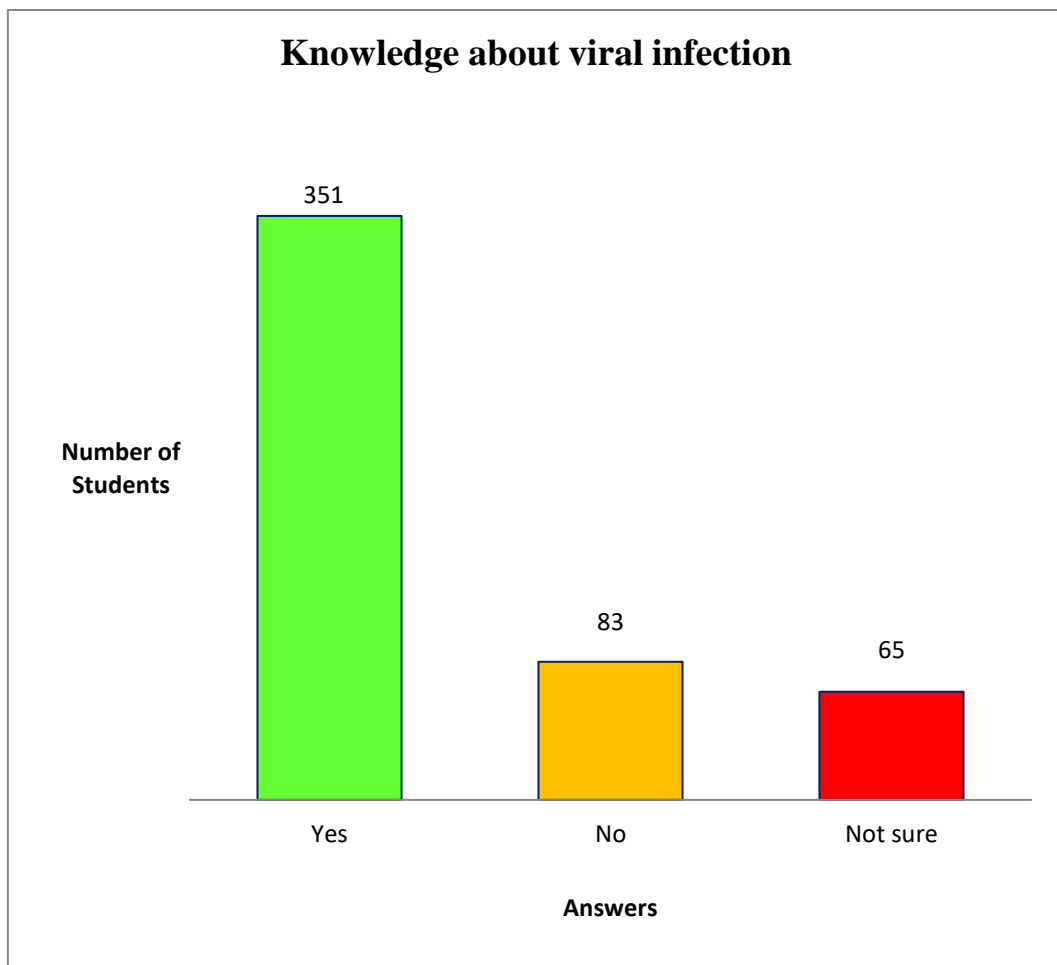


Fig 4.2.3 Knowledge about Viral Infection

Above the graph represents that 70% (351) of respondents said that Hepatitis B is a viral infection, 17% (83) of respondents did not know about the viral infection and also only a few respondent of about 13% (65) did not have any idea regarding this infection.

4.2.4 Mode of Transmission of Hepatitis B

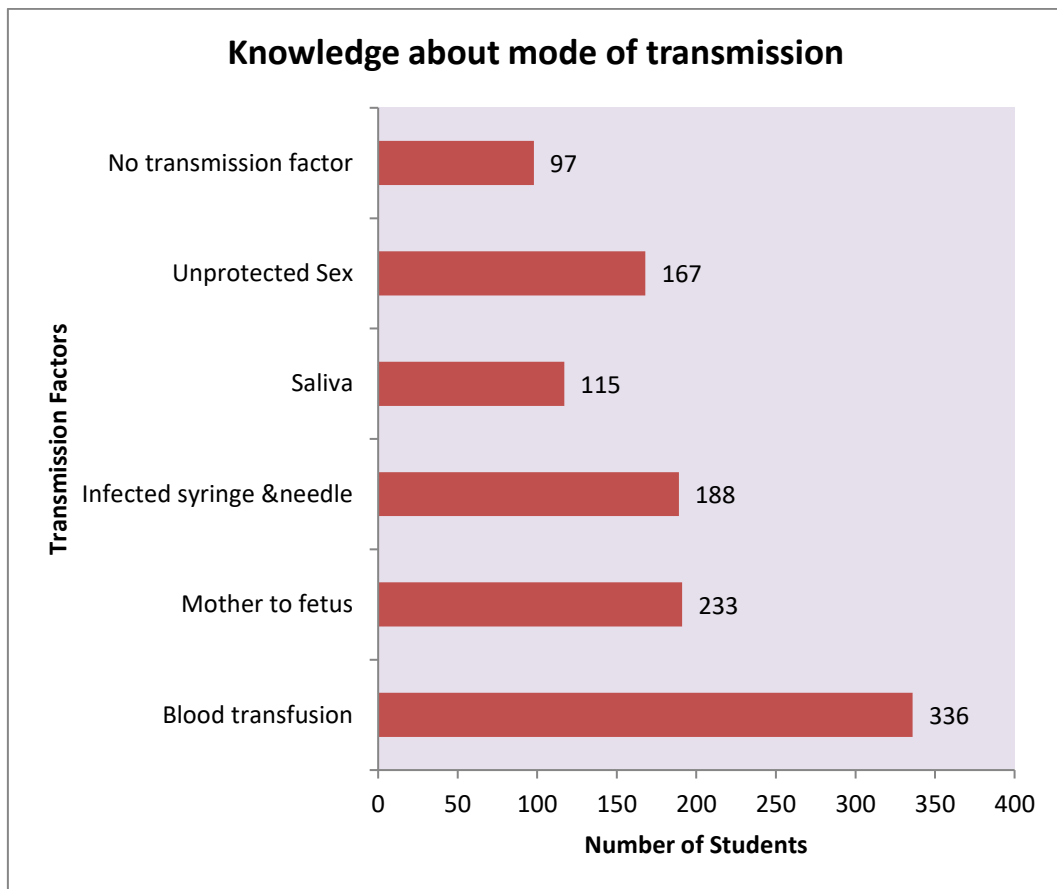


Fig 4.2.4 Mode of Transmission of Hepatitis B

Among the respondents, 30% (336) supported that Hepatitis B can be transmitted by blood transfusion. About 20% (233) respondents told that Hepatitis B can be transmitted by mother to fetus & 17% (188) marked infected syringe and needle. 15% (167) marked unprotected sex as a way of mode of transmission. 10% (115) informed that the virus can be transmitted through saliva whereas only 8% (97) population said that they had never heard of these factors before.

4.2.5 Knowledge about Risk Factors of Hepatitis B

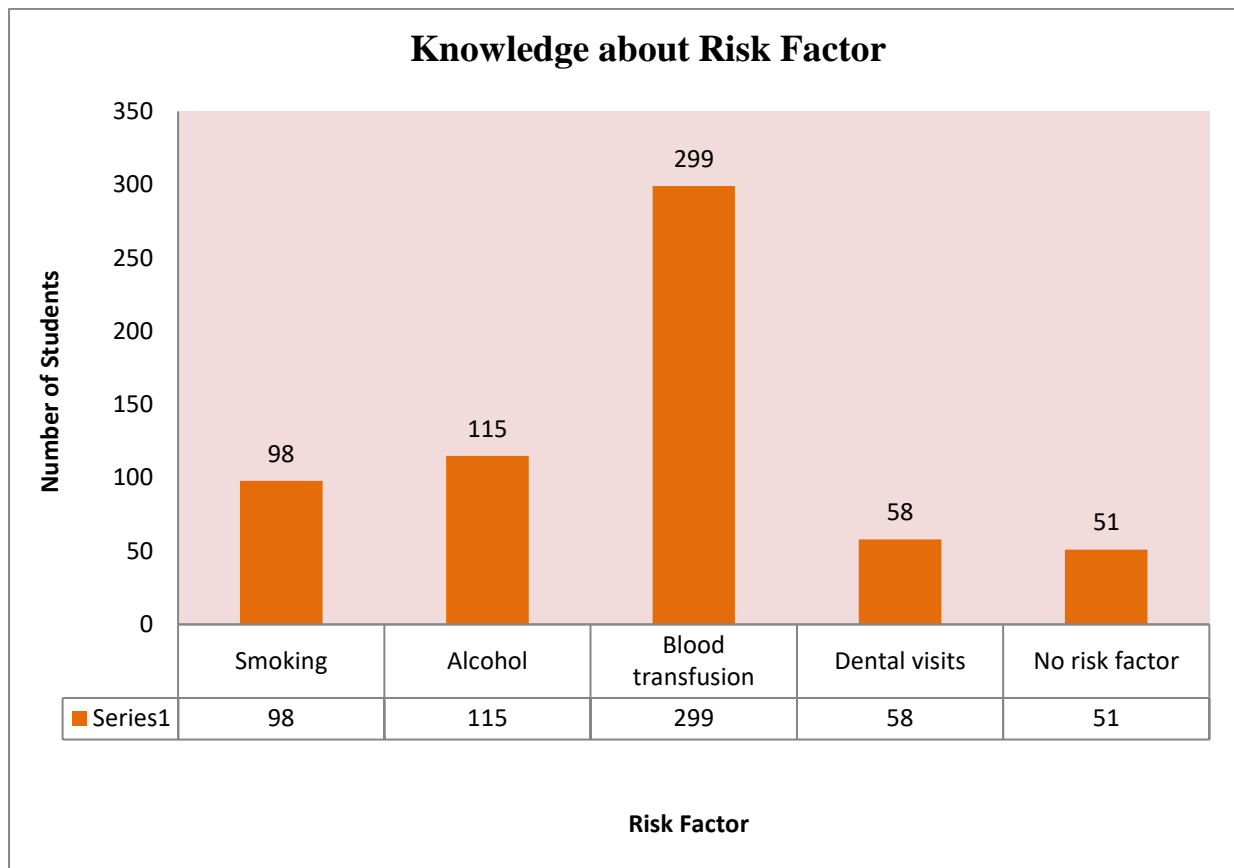


Fig 4.2.5 Knowledge about risk factor of Hepatitis B

From this observation, it was found that most of the students 48% (299) supported blood transfusion as a causative factor of Hepatitis B. About 19% (115) & 16% (98) population said that hepatitis B happens due to alcohol & smoking respectively. Only a few percentage about 9% (58) have knowledge about the dental visits as a risk factor of hepatitis B but the rest of the population about 8% (51) had no idea about these causative factors.

4.2.6 Knowledge about Chronic Infection that cause Liver Cirrhosis & Liver Cancer

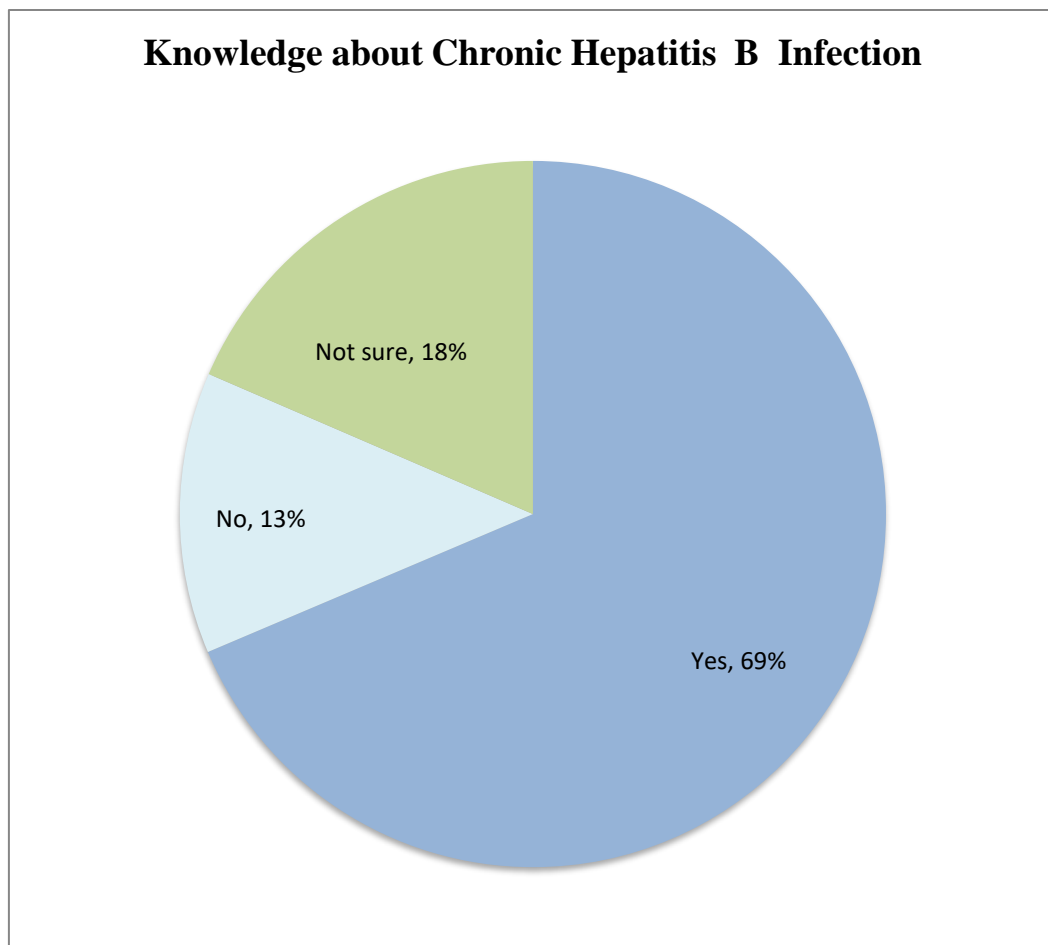


Fig 4.2.6 Knowledge about Chronic Hepatitis B Infection

From this study, 69% (341) students informed that chronic hepatitis B infection may lead to liver cirrhosis and liver cancer, 13% (64) told that they did not know about that information Whereas 18% (92) of students was not confirmed on this question.

4.2.7 Knowledge about Sign and Symptoms of Hepatitis B

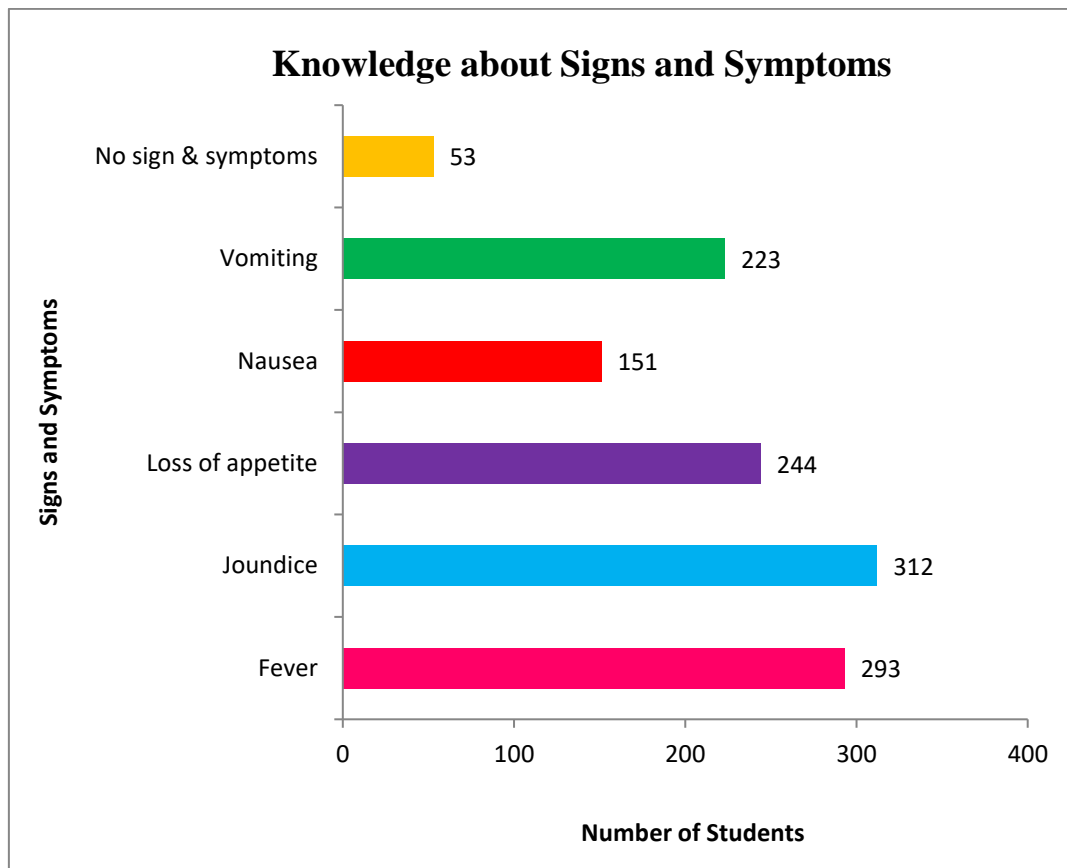


Fig 4.2.7 Knowledge about Sign and Symptoms of Hepatitis B

Among the study population, maximum respondents 24% (312) informed that joundice is the major sign & symptoms of hepatitis B, 23% (293) supported fever, 19% (244) & 18% (223) marked loss of appetite and vomiting respectively as sign and symptoms. About 12% (151) answered on behalf of nausea but only a few population about 4% (53) confirmed that they had no knowledge regarding that information.

4.3. Vaccination Knowledge about Hepatitis B Infection

4.3.1 Knowledge about Vaccine Protection

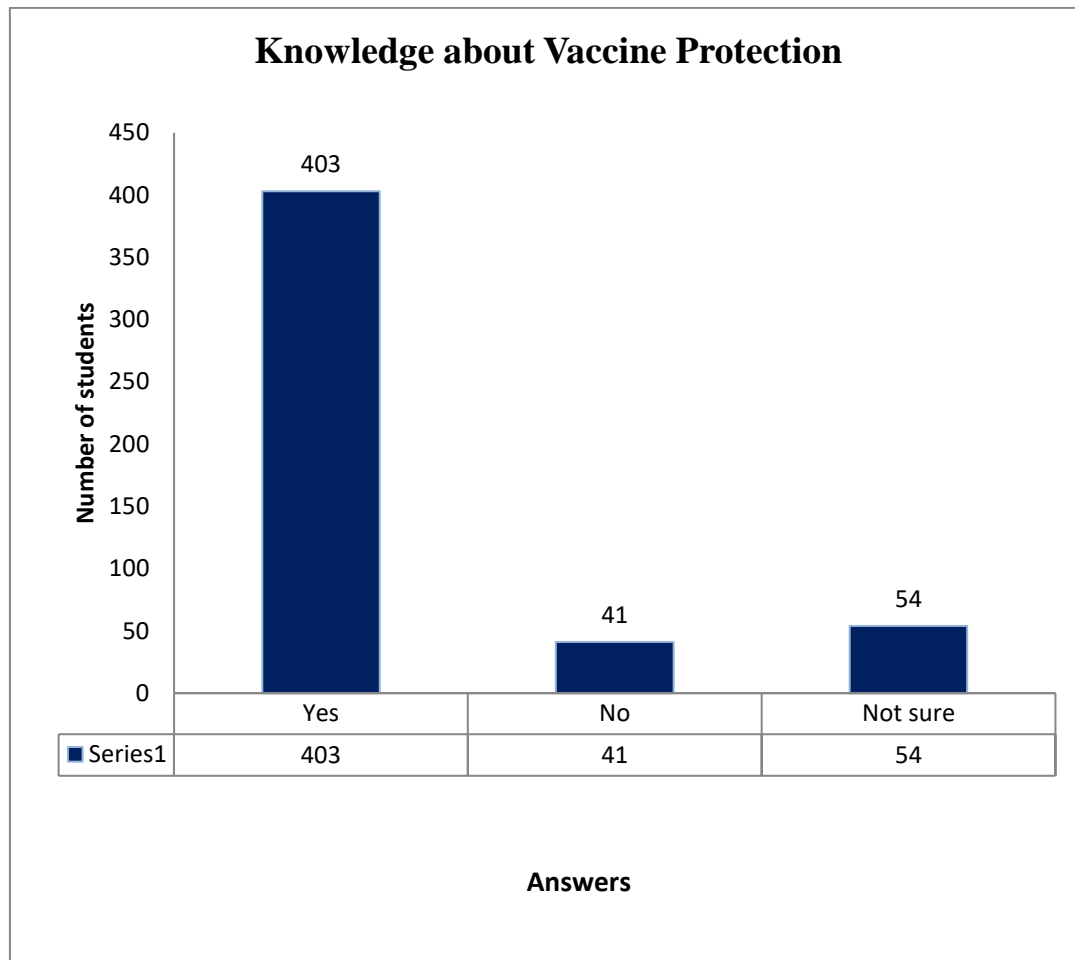


Fig 4.3.1 Knowledge about Vaccine Protection

The study showed that 81% (403) of students thought that Hepatitis B vaccine was protectable against infection, 8% (41) students thought that it was not protectable and 11% (54) of students had no knowledge about it.

4.3.2 Information of having any Liver Disease

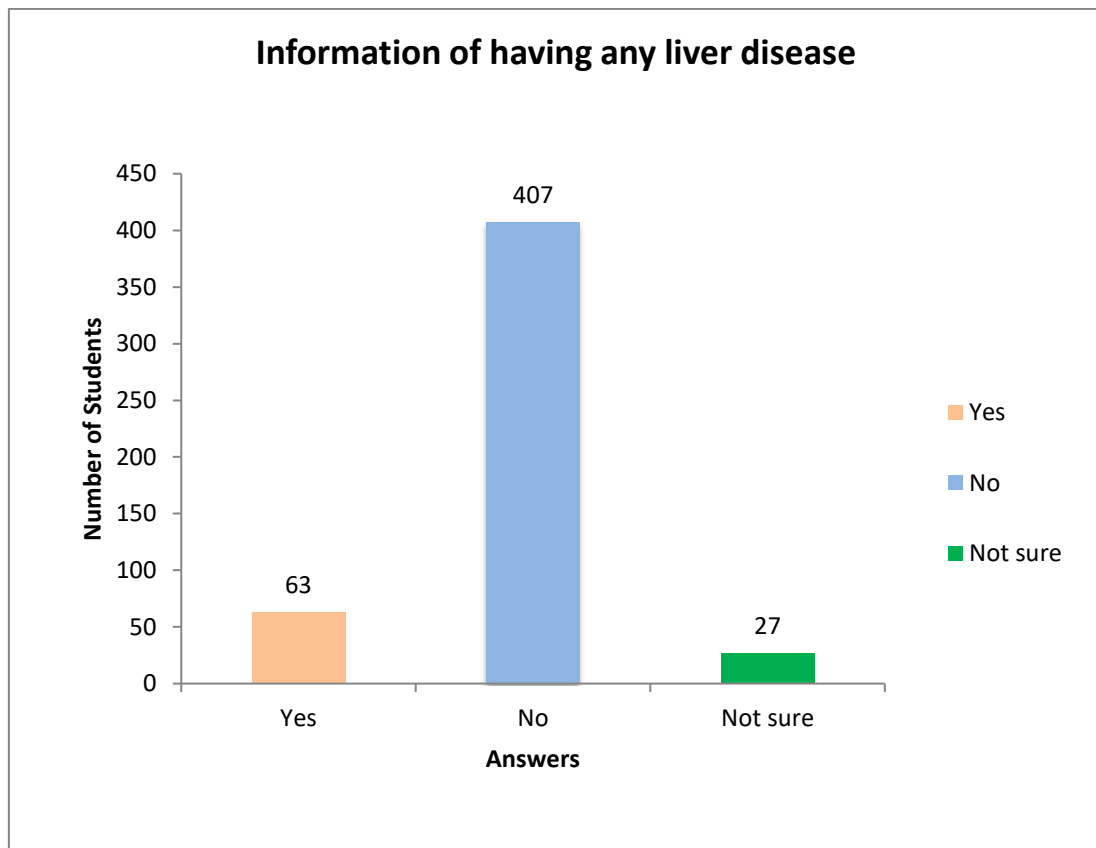


Fig 4.3.2 Information of having any Liver Disease

Among the population, 82% (407) confirmed that they had not been diagnosed with liver disease before, whereas 13% (63) informed that they had been diagnosed with the liver disease and 5% (27) population was not confirmed on that question.

4.3.3 Hepatitis B infection among the Respondent's family members

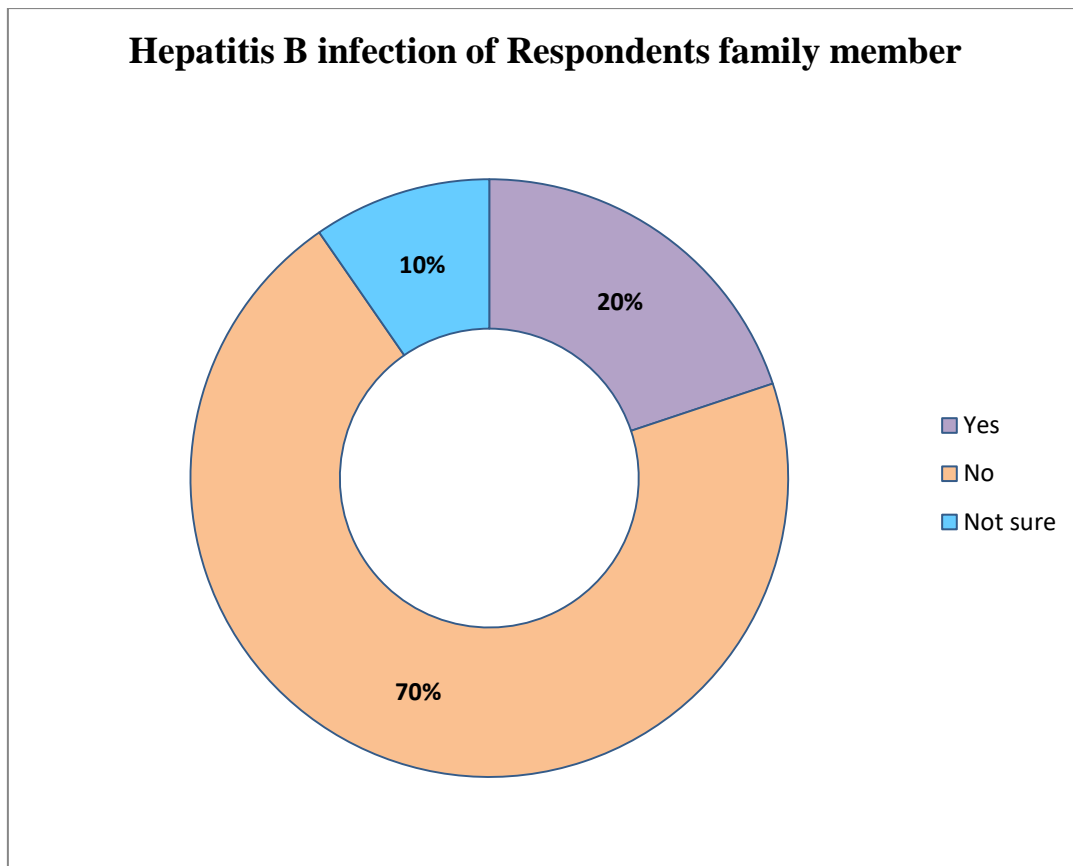


Fig 4.3.3 Hepatitis B infection of Respondent's family members

Among the respondents 70% (351) ensured that they did not have Hepatitis B virus patient in their family whereas 20% (99) responded that they had Hepatitis B virus patient in their family and 10% (48) was not sure about that topic.

4.3.4 Information of being tested for Hepatitis B

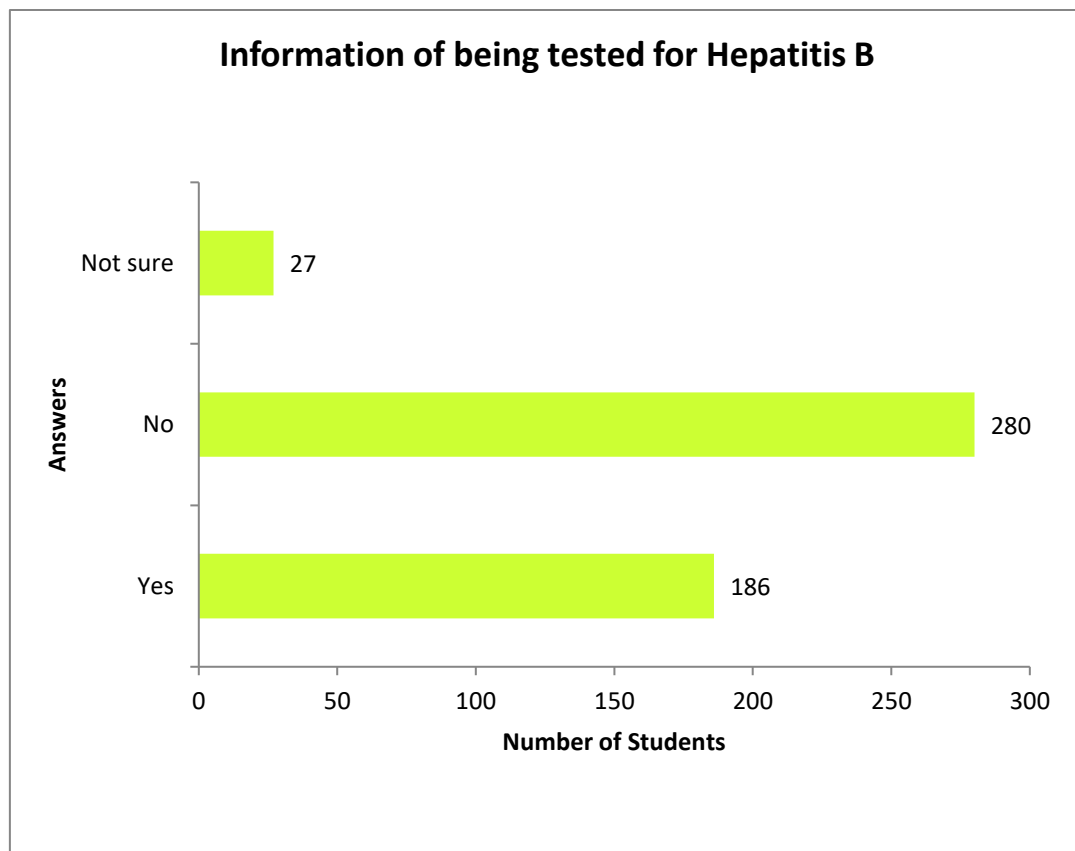


Fig 4.3.4 Information of being tested for Hepatitis B

In the survey maximum students about 57% (280) confirmed that they had not been tested for Hepatitis B, 38% (186) informed that they had been tested for Hepatitis B but only 5% (27) students marked that they were not sure about it.

4.3.5.1 Information about Vaccine taken

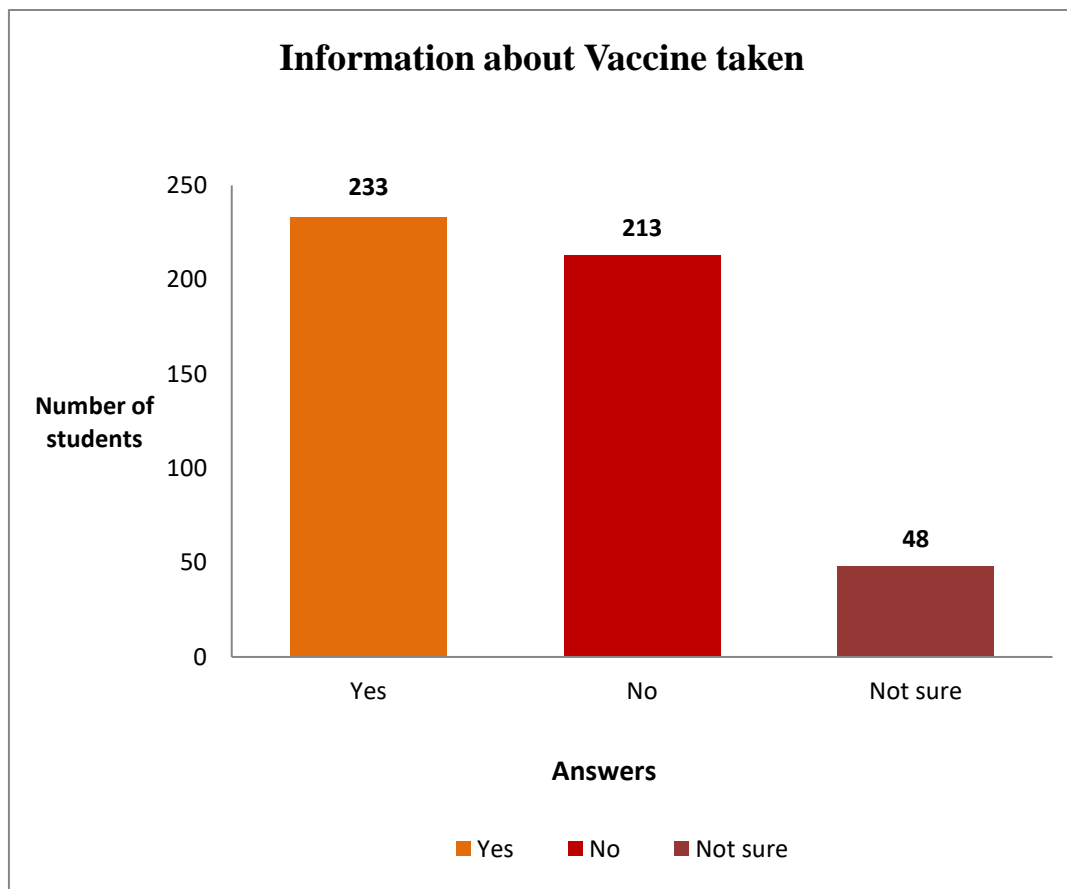


Fig 4.3.5.1 Information about Vaccine taken

During the study, it was found that 47% (233) students took vaccine, 43% (213) students did not take vaccine and 10% (48) students did not know whether they took vaccine or not.

4.3.5.2 Full Dose Completion Status

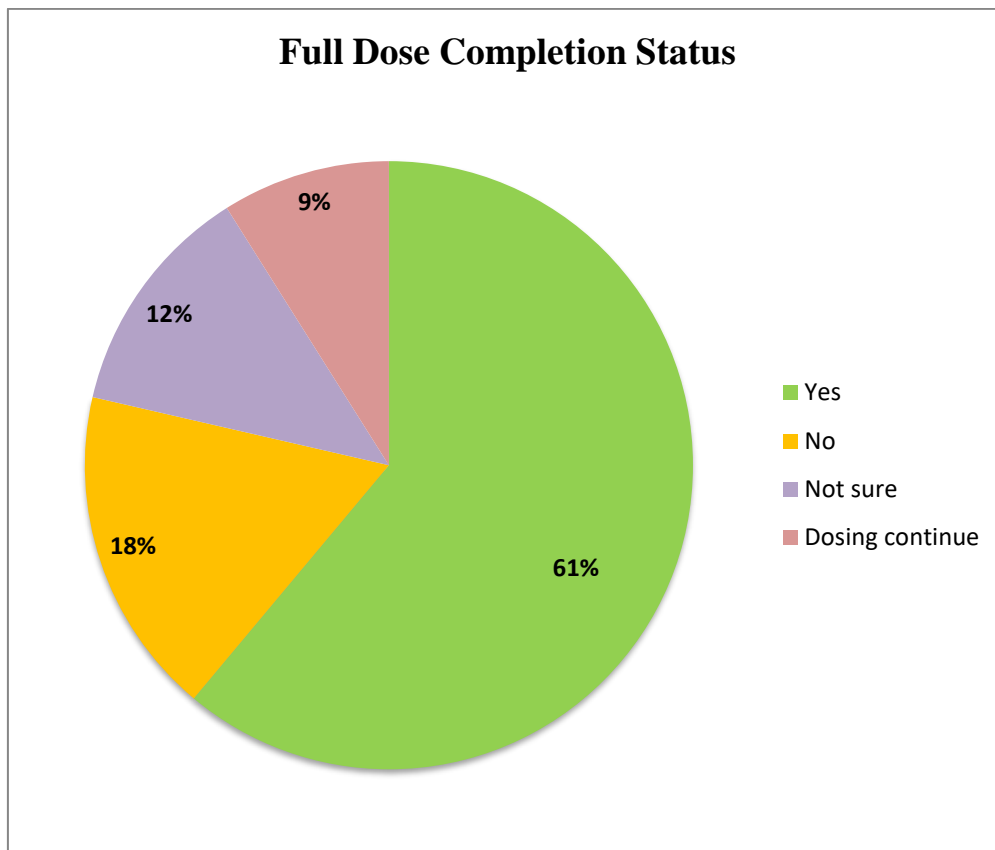


Fig 4.3.5.2 Full Dose Completion Status

Among the students, 61% (157) confirmed that they have completed full dose vaccination program for Hepatitis B, 18% (45) informed that they did not complete the full dose, 12% (32) told that they could not remember whether they completed full dose or not and the rest of the population 9% (23) informed that they are continuing the dosing schedule.

4.3.5.3 Information of Planning for Vaccination

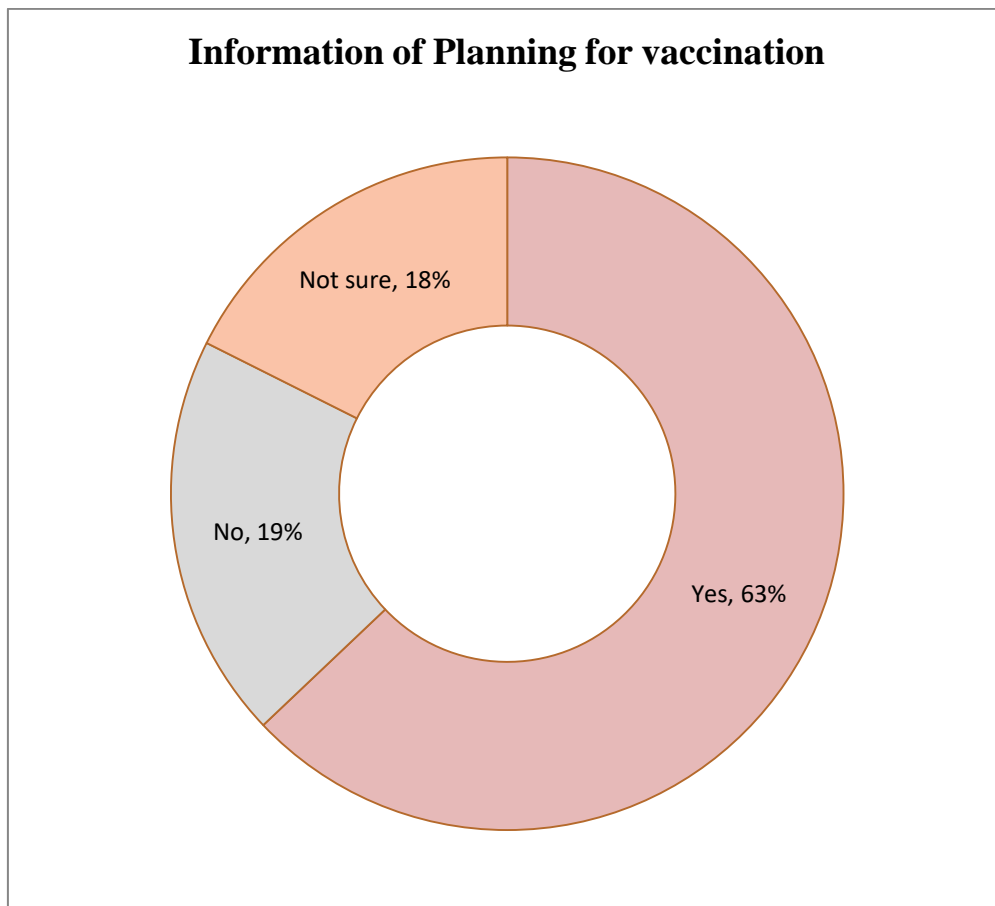


Fig 4.3.5.3 Information of Planning for Vaccination

About 63% (168) of students answered that they have plan for vaccination of hepatitis B infection, 19% (52) of students told that they have no plan for vaccination and 18% (47) of students did not confirm about it.

4.3.5.4 Reasons behind not taking Vaccine

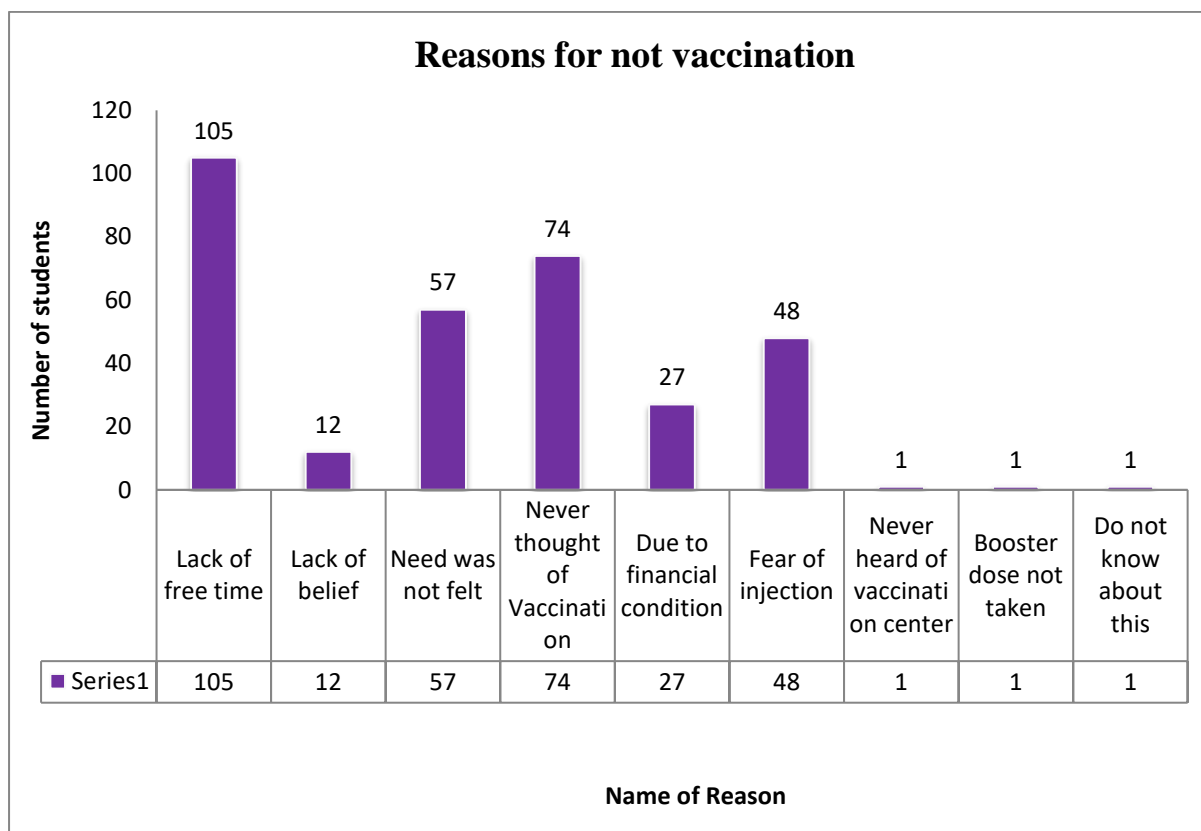


Fig 4.3.5.4 Reasons behind not taking Vaccine

The population who did not take vaccine specify some reasons for that. Most of them 32% (105) did not take vaccine due to lack of free time, 23% (74) told that they have never thought for vaccination, 18% (57) did not take due to lack of feeling of necessity, 15% (48) for fear of injection, 8% (27) because of financial condition, 4% (12) due to lack of belief. Few of them also indicated that they never heard about vaccination center, did not take the booster dose and some of them told that they had no knowledge about the vaccination.

4.3.6 Knowledge about WHO Schedule

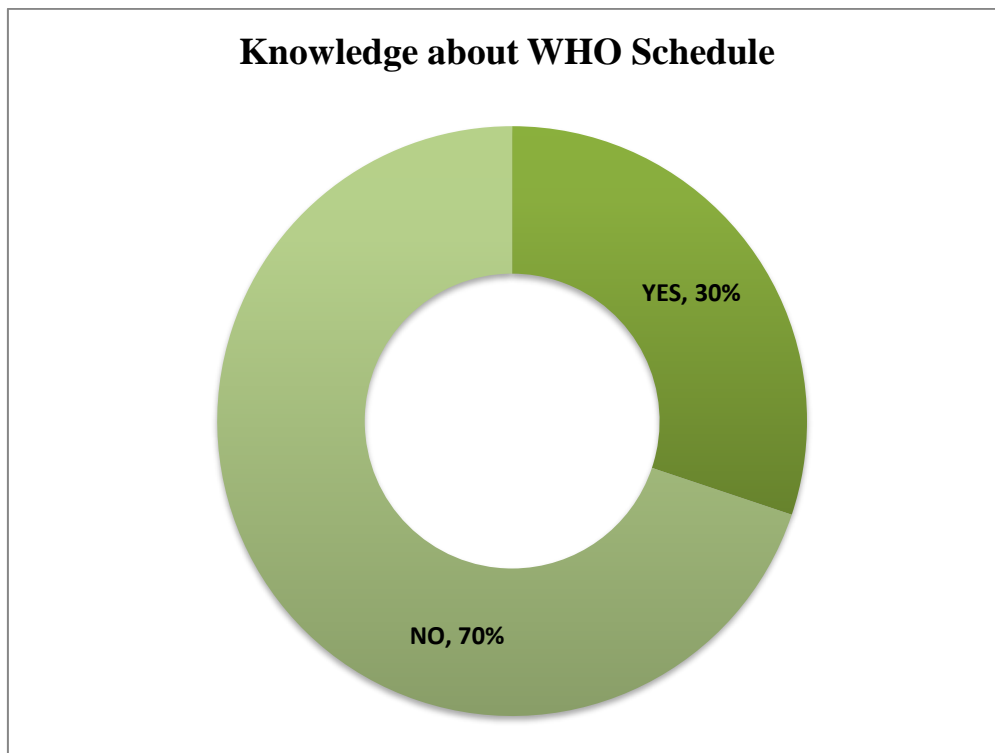


Fig 4.3.6 Knowledge about WHO Schedule

The study shows that about 70% (343) of respondents had no knowledge about the correct WHO schedule for hepatitis B vaccination, whereas 30% (148) of respondents had knowledge of it.

4.3.7 Opinion about National Immunization Program

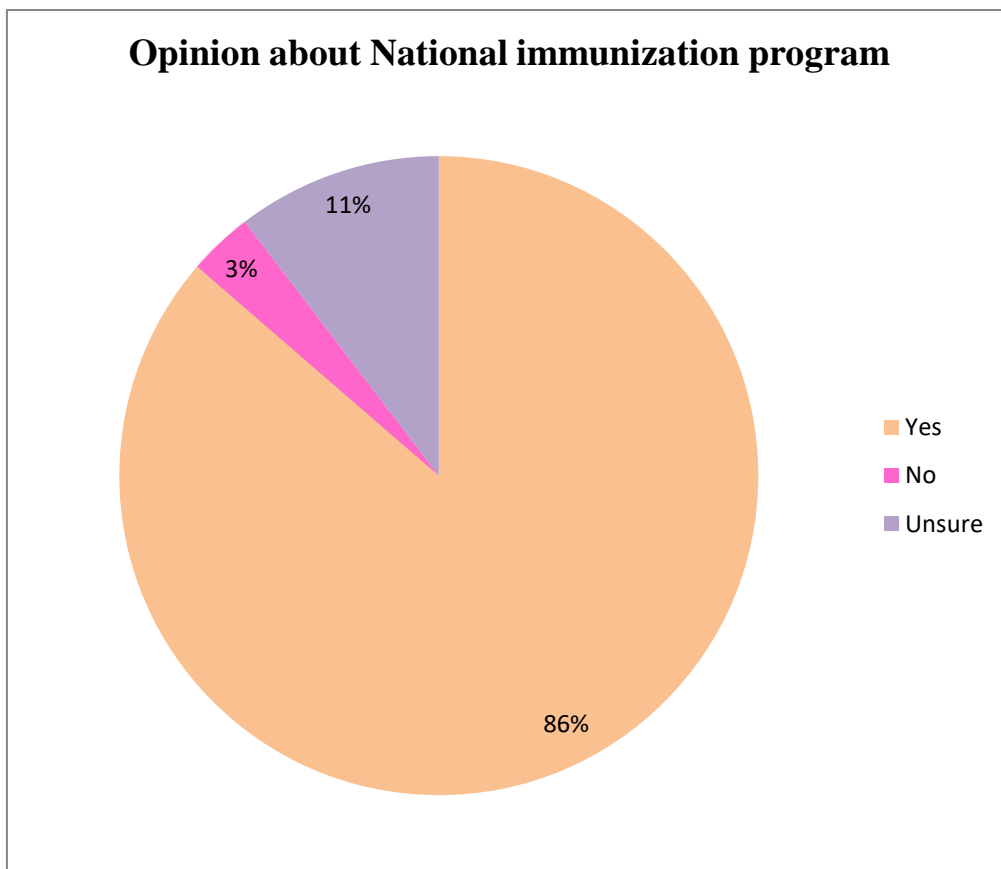


Fig 4.3.7 Opinion about National Immunization Program

Among the respondents, about 86% (424) of respondents thought that it should be included in national immunization program, 11% (51) of population was not sure about it and only few respondents 3% (16) disagreed with that opinion.

Discussion

Hepatitis B is a serious global public health problem which occurs due to Hepatitis B virus affecting the liver. It can be easily transmitted by blood to blood contact, mother to fetus, saliva, unprotected sexual intercourse and by the use of infected syringe & needle. This viral infection is rapidly spreading in the developing countries including Bangladesh due to the lack of knowledge about health education, poverty, illiteracy and lack of Hepatitis B vaccination.

The study was carried out on 500 students reading in different universities inside Dhaka city. In this study a 27-item questionnaire was distributed. Most of our study population were in the age range 20-25 years (73%). Fatima, Amna and Nour, (2013), in their study found most of the population was aged between 17-35 years. Most of our respondents were female (55%). Maria *et al.*, (2011) found 66.1% of population were female.

Among the respondents of our survey, most of the students were from East West University (54%) & Jahangirnagar University (32%). In addition, majority of the students belong from Health Science department like pharmacy (27%), rest of the students were from different discipline like arts and social science (23%), engineering (20%), commerce and business (19%). Majority of the population were undergraduate students (84%) and only a few was from graduate program (16%). Madhumita *et al.*, (2016) in their study revealed that 62.5% of doctors, 25% of nurses and 12.5% of laboratory technicians. Among them 94% were single and 6% were married. About 95% students were unemployed.

During the study it was found that 86% students did not suffer from Hepatitis B but only a few population (2%) who suffered from that infection took herbal medicine and had a restriction to avoid oily, turmeric and spicy food items. Besides, 89% population have heard about Hepatitis B and 77% of respondents mentioned liver as the affected organ. Among them most of the students (70%) informed that Hepatitis B is a viral infection. Nooren, Kumar and Shaikh, (2015) told that only 48% of childbearing age women had heard about Hepatitis B infection.

Higher percentage of our study population had correct knowledge about mode of transmission. 30% students suggested that the virus can be transmitted by blood transfusion, 20% marked mother to fetus, 17% informed sharing infected syringe & needle as a way of transmission, 15% told unprotected sex, 10% claimed saliva. Maria *et al.*, (2011) in their

survey 50% mentioned mother to infant and 82.4% marked blood to blood contact and 54.1% informed sexual contact. Among respondents, 48%, 19%, 16% of population informed that blood transfusion, alcohol & smoking respectively are the causative factors of hepatitis B.

According to the study, 69% of students confirmed that chronic hepatitis B infection may lead to liver cirrhosis and liver cancer. Maria *et al.*, (2011) found that chronic hepatitis B infection might lead to liver cirrhosis (69.5%) and liver cancer (58.8%). Majority of the respondents (24%) marked jaundice as a symptoms of the disease. Other population told fever (23%), loss of appetite (19%) and vomiting (18%).

During the survey, 81% of students answered that vaccine was protectable against Hepatitis B infection but 8% told that it was not protectable and the rest of the population (11%) had no knowledge about it. Sandesh and Pragya, (2011) in their study informed that 87% of people knew about Hepatitis B vaccination. From these students, 82% had not been diagnosed with any liver disease whereas 13% of population informed that they had previous history with the liver disease. Besides, 70% of respondents confirmed that they did not have hepatitis B virus patient in their family and among them 57% of population they had not been tested for Hepatitis B. Nanae *et al.*, (2013) found about 21.3% had undergone previously tested for Hepatitis B.

Among the study population, 47% students took vaccine, 43% students did not take vaccine and 10% of population had no idea about it. From 47% of students, 61% students completed the full dose program, 18% did not complete the dose, 9% students confirmed that they were continuing the dosing schedule but the remaining population (12%) were not sure whether they completed the dose or not. Mathumita *et al.*, (2016) found that 56.7% were fully vaccinated and 15.2% were not fully vaccinated. Most of the respondents (63%) of the study told that they had planned for vaccination but 19% respondents did not plan yet. The population who did not take vaccine specify lack of free time (32%), never thought of vaccination (23%), need was not felt (18%), fear of injection (15%), due to financial condition (8%) and lack of belief (4%). Jalaeddin *et al.*, (2014) found reasons for non-vaccinated group included, high cost (7.2%), insensitivity and ignorance to the risks (45.8%), fear of complication (2.4%), pregnancy (1.2%), inertia (22%).

Among the total population, 70% of students informed that they had no knowledge about correct WHO schedule for Hepatitis B vaccination whereas only 30% of students were aware

about it and also 86% of respondents supported that Hepatitis B vaccination program should be included in national immunization program.

Chapter Five

Conclusion

Conclusion

Hepatitis B virus is encountered sporadically the year round in Bangladesh remaining a major cause of morbidity and mortality and we have to a long way to go before we may bid farewell to this deadly menace. In our country, the prevalence of Hepatitis B virus is increasing. Knowledge of Hepatitis B virus is not satisfactory. Majority of the respondents did not take vaccine. Besides who took vaccine, most of the population did not complete the full dose vaccination program which may increase the incidence of the disease. There were certain amount of population which was not so small thought that it is unnecessary for them to take vaccine. The students do not have adequate knowledge about the mode of transmission, risk factors of viral hepatitis B. Different types of seminar and campaigns 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 vaccination.

Chapter Six

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