April 30, 2019

PharmacologyOnLine

Newsletter • 2019 • vol.1 • 85-93

HEPATITIS B AWARENESS AND VACCINATION STATUS AMONG PHARMACY STUDENTS AT A PRIVATE UNIVERSITY, BANGLADESH

*Farjana Islam Aovi, Md. Mominur Rahman

Department of Pharmacy, Allied Health Science Faculty, Daffodil International University, Dhaka-1207

farjana.pharm@diu.edu.bd

Abstract

Hepatitis B is life threating infection caused by hepatitis B virus (HBV) which can be ended up as liver cirrhosis or liver cancer. The prevalence of this disease is more common in low income country other than developed countries. Although a lifesaving vaccine is available for this disease but the occurrence of the disease is growing per year. A vital cause for this can be the lack of proper knowledge about the disease and vaccination. The aim of this study was to evaluate the level of basic knowledge about HBV vaccination of pharmacy students. A questionnaire was prepared based on the basic knowledge, consciousness about Hepatitis B and the vaccination status among the pharmacy students. The total number of questions was 200 among which 191 was completed. The respondents were 44.23% male and 55.77% female. About 96.15% students were heard about Hepatitis B. They have poor knowledge about the mode of spread of Hepatitis B virus. They also know a very little about the risk factors of this disease. About 48.08% students do not take any vaccine and 51.85% students do not complete their vaccination course with booster dose. 23.08% students identified the principle reasons behind this as lake of motivation. 7.69% students did not take vaccination due to fear of injection. It is highly recommended that more publicity about the vaccination is necessary to reduce the serious health hazards of HBV.

Keywords: *Hepatitis B, vaccination, health hazard, pharmacy students*

Introduction

Hepatitis B is a disease produced by the hepatitis B virus (HBV) as well as diffused through percutaneous or mucosal coverage to transmissible blood or else body fluids. [1]The hepatitis B virus has a moderately double-stranded circular DNA and belongs to the family Hepad-naviridae [2-3]. It is a major public healthiness anxiety in globally. Approximately 30% of the world's population has been infested with HBV [4–6], and more than 350 million are infected frequently with HBV and carry high risk for cirrhosis, liver cancer, hepatic decompensating, and hepatocellular carcinoma (HCC) [7]. Minimum 1 million people die yearly from HBV correlated chronic liver infection [8]. Hepatitis B prevalence is the uppermost in the WHO Western Pacific Region and the WHO African Region, where the grown-up population is infected to 6.2% and 6.1% respectively. In the WHO Eastern Mediterranean Region, the WHO South-East Asia Region and the WHO European Region, a predictable 3.3%, 2.0% and 1.6%% of the wide-ranging people is infected respectively. The population of the WHO Region of the Americas is infected 0.7% [9].

HBV is transmitted by body fluids, such as blood and serum, and can exhibition vertical diffusion from mother to child. Sexual transmission, vertical transmission, and unsafe injections, including intravenous drug use, are the maximum communal routes of infection for HBV [10–14]. Household dealings and occupational health-care exposure to blood products and hemodialysis are other risk factors [15–22]. Health-care workers must be reported to have the maximum professional hazard for HBV contamination. There are 35 million HCWs worldwide, and percutaneous injuries have been appraised to result in approximately 66,000 hepatitis B viral infections per year [23].

Data from the United States in the 1990s presented that unvaccinated HCWs had serologic indication of past or current HBV contagion three to five times superior than the general populations [24]. In Syria, there is no specific countrywide strategy or guiding standard for inhibiting hepatitis B infection in health-care settings [25]. A survey of the medical students presented that 30% of stated needle branch injuries happened in the operation chamber [24]. The clinical appearances and natural history of HBV infection vary with oldness. Clinical acute hepatitis B is more common in grownups than children, and the probability of becoming a chronic carrier of hepatitis B is greater in children than adults: 80–90% of people infected associated to <5% of infections happening in adults [26]. People with chronic hepatitis B have a 15% to 25% risk of disappearing primary from HBV related problems [27].

Acute hepatitis B infection is an ailment that initiates with prodromal symptoms like anorexia, chills, headache, nausea, vomiting, and malaise. Development of jaundice may occur but it is distinguished in only 30% of all patients with acute infection. Acute hepatitis B is frequently unrecognized in kids younger than five years old. Chronic contamination with the HBV may be associated with chronic inflammation of the liver. After 10 years of chronic infection, about 20% of the patients with hepatitis B have established to cirrhosis and about 5% have developed HCC [28]. Habitually infected HBV patients have a 15–25% risk of dying prematurely due to HBV-related cirrhosis and HCC [29]. Hepatitis B is evaluated to be the reason of 30% of cirrhosis and 53% of HCC all-inclusive [30]. This virus has also connected with membranous glomerulonephritis [31].

Prevention is the only harmless approach against high prevalence of viral hepatitis. Nontoxic and active HBV vaccines have been existing since 1982. The implementations of mass immunization curriculums have been recommended by the World Health Organization since 1991. After that its global prolonged treatment, the frequency of HBV infection and liver cancer among infants, children, and adolescents has melodramatically diminished [25]. Many attempts to prevent HBV infection of the implantation have been designated, including short-term and long-term administration of polyclonal anti-hepatitis B surface antigen immune globulin, management of monoclonal anti-HBs immune globulin, vigorous immune prophylaxis, antiviral therapy, and a combination of these managements. WHO recommends the use of oral treatments - Tenofovir or Entecavir, because these are the most potent drugs to destroy hepatitis B virus. Entecavir is off-patent, but convenience and costs vary widely.

Tenofovir is protected by a patent until 2018 in most upper-middle- and high-income countries [32]. Hepatitis B vaccine stops hepatitis B. The first dose is suggested within 24 hours of birth with either two or three more doses given after that. This includes from HIV/AIDS and individuals born premature. The hepatitis B can be eventually eliminated is mas vaccination of infants with hepatitis B vaccine as part of the Expanded Programme on Immunization (EPI) [33]. Since the initial 1990s, Syria was between the first countries in the Middle East to practice the second generation HBV vaccine as an integral fragment of the national infant immunization programs. However, in Syria, the worldwide vaccination of young people do not have the same application success as compared to infant vaccinations. [25]. Prophylactic vaccination with HBsAg leads to improvement of the antibody to HBsAg and protects most normal individuals against HBV. In spite of the existence of high levels of HBsAg in sera, chronic HBV transporters are incapable to initiate an adequate immune reaction to HBsAg [34]. Universal neonatal vaccination is both cost operative and appropriate for control of HBV infection in areas of medium or high endemicity. In small endemicity areas, selective vaccination of high-risk groups is cost effective, but its impact on the occurrence of HBV injection will depend on the ability to reach these groups [35]. In particular liver transplant recipients, post transplantation HBV vaccination may be a valuable and cost-effective strategy in the prophylaxis of HBV reappearance, permitting the discontinuation of life-long HBIG treatment [36].

The aims of this study was to evaluate the knowledge and awareness of HBV infection and hepatitis B vaccination to coverage among adult students particularly of pharmacy subject.

Methods

A cross sectional study was carried out at a leading private university in Bangladesh. The university is situated at Dhaka, the capital of Bangladesh. The students of department of pharmacy were the targeted subject. From 1st year to 4th year (total 8 semesters) students were invited to answer the questionnaire. 200 students willingly participated and filled up the survey questionnaires. A closed ended questionnaire was prepared for the conduction of this study and carried out from October 02, 2016 to October 04, 2016 at the university premises. Collected data were statistical analysed using Microsoft excel spread sheet.

Results and Discussion

For the experiment, one questionnaire was prepared based on 19 questions of which 200 copies were distributed among the pharmacy students. 191 questionnaires were found completed and 9 were uncompleted. Collected demographic data of sample group has been shown in Figure 1 and 2. From the total respondents, 44.23% were male and 55.76% were female. The age of the participants ranged from 15 to 25 years. All of the students were from the Faculty of pharmacy and were Bangla and English speakers (100%). [Figure 1]

The survey revealed that about 96% students were familiar with the term hepatitis B and its vaccination. About 82% students identified the main causative mode of spreading hepatitis B virus was blood transfusion hazard. Others identified the mode of transmission was also lacking with students unaware that contaminated blood (82.69%), unprotected sex with an infected person (19.23%), and birth to an infected mother (17.30%) .

An alarming data was revealed from the survey that only 51.92% of the students had not taken the hepatitis B vaccine although they had heard about the disease. Table 4 showed the causes behind this situation. 23.07% students identified lack of motivation as the first reason behind this.

Though the students are from pharmacy department, they did not think the patients with hepatitis B infection would work or socially exposed. About 30% students think this infection is contagious. About 77% students thought blood transfusion could be the prime culprit for this infection, on the other hand nobody could identified dental visit as the mode of spread. This data presentation disclosed some lack of knowledge about hepatitis B infection. [Figure 2, 3, 4]

Conclusion

The syllabus of pharmacy subject contains a detail materials about physiology, pharmacology and

clinical pathology. Therefore the students are obliged to know the contents related hepatitis B infection and the vaccination status. Although this survey revealed some lacking of knowledge and motivation to be vaccinated. Students should be more careful about the vaccination against hepatitis B infection. University authority can also take some measures to motivate the students for vaccination or give away the available vaccines to the students at reduced prices. Acknowledgment:

The authors are very grateful to the students of pharmacy who participated in the study and helped collect the data.

References

1. W. F. Carman and H. C. Thomas. Genetic variation in hepatitis B virus. Gastroenterology 1992; 102(2): 711–719
2. N. Gitlin. Hepatitis B: diagnosis, prevention, and treatment. Clinical Chemistry 1997; 43(8): 1500–150
3. A. J. Zuckerman. More than third of world's population has been infected with hepatitis B virus. British Medical Journal 1999; 318(7192): article 1213
4. World Health Organization, "The world health report 1996. Fighing disease. Fostering development," Executive Summary, World Health Organization, Geneva, Switzerland; 1996.
5. 5. M. J. Alter. Epidemiology and prevention of hepatitis B. Seminars in Liver Disease 2003; 23(1): 39–46
6. 6. D. Lavanchy. Hepatitis B virus epidemiology, disease burden, treatment, arid current and emerging prevention and control measures. Journal of Viral Hepatitis 2004; 11(2): 97–107
7. 7. Z. Sun, L. Ming, X. Zhu, and J. Lu. Prevention and control of hepatitis B in China. Journal of Medical Virology 2002; 63(3): 447–450
8. 8. M. J. Alter, J. Ahtone, I. Weisfuse, K. Starko, T. D. Vacalis, and J. E. Maynard. Hepatitis B virus transmission between hetero-sexuals. The Journal of the American Medical Association 1986; 256(10): 1307–1310.
9. L. A. Kingsley, C. R. Rinaldo Jr., D. W. Lyter, R. O. Valdiserri, S. H. Belle, and M. Ho. Sexual transmission efficiency of hepatitis B virus and human immunodeficiency virus among homosex-ual men. The Journal of the American Medical Association 1990; 264(2): 230–234
10. R. P. Beasley, C. Trepo, C. E. Stevens II, and W. Szmuness, The e antigen and vertical transmission of hepatitis B surface antigen, The American Journal of Epidemiology 1977; 105(2): 94–98
11. A. Kane, J. Lloyd, M. Zaffran, L. Simonsen, and M. Kane, Transmission of hepatitis B, hepatitis C and human immun-odeficiency viruses through unsafe injections in the developing world: model-based regional estimates, Bulletin of the World Health Organization 1999; 77(10): 801–807
12. B. Broers, C. Junet, M. Bourquin, J.-J. Deglon,´ L. Perrin, and B. Hirschel, Prevalence and incidence rate of HIV, hepatitis B and C among drug users on methadone maintenance treatment in Geneva between 1988 and 1995, AIDS 1998; 12(15): 2059– 2066
13. A. Vegnente, R. Iorio, S. Guida, and L. Cimmino, Chronicity rate of hepatitis B virus infection in the families of 60 hepatitis B surface antigen positive chronic carrier children: role of horizontal transmission, European Journal of Pediatrics 1992; 151(3): 188–191
14. J. L. Lauer, N. A. VanDrunen, J. W. Washburn, and H. H. Balfour Jr., Transmission of hepatitis B virus in clinical laboratory areas, Journal of Infectious Diseases 1979; 140(4):513–516
15. D. J. Hu, M. A. Kane, and D. L. Heymann, Transmission of HIV, hepatitis B virus, and other blood borne pathogens in health care settings: a review of risk factors and guidelines for prevention, Bulletin of the World Health Organization 1991; 69(5):623–630
16. J. F. Fernandes, R. F. S. Braz, F. A. V. Neto, M. A. Silva, N. F. Costa, and A. M. Ferreira, Prevalence of serologic markers of hepatitis

B virus in hospital personnel, Revista de Saude´ Publica´ 1999; 33(2):122–128
17. M. Colombo, S. Oldani, M. F. Donato, A multicenter, pro-spective study of posttransfusion hepatitis in Milan. Hepatology. 1987; 7(4):709–712
18. R. Saxena, V. T hakur, B. Sood, R. C. Guptan, S. Gururaja, and S. K. Sarin, Transfusion-associated hepatitis in a tertiary referral hospital in India. A prospective study, Vox Sanguinis 1999; 77(1):6–10
19. S. V. Williams, J. C. Huf f, E. J. Feinglass, M. B. Gregg, M. H. Hatch, and J. M. Matsen, Epidemic viral hepatitis, type B, in hospital personnel, The American Journal of Medicine 1974; vol(6): 904–911
20. V. A. Mioli, E. Balestra, L. Bibiano, Epidemiology of viral hepatitis in dialysis centers: a national survey, Nephron 1992; 61(3):278–283
21. A. Pruss¨-Ustun,¨ E. Rapiti, and Y. Hutin, Estimation of the global burden of disease attributable to contaminated sharps injuries among health-care workers, The American Journal of Industrial Medicine 2005; 48(6): 482–490
22. J. L. Gerberding, Incidence and prevalence of human immun-odeficiency virus, hepatitis B virus, hepatitis C virus, and cytomegalovirus among health care personnel at risk for blood exposure: final report from a longitudinal study, Journal of Infectious Diseases 1994;170(6):1410–1417
23. World Health Organization, Geneva, Switzerland "Global policy report on the pre-vention and control of viral hepatitis in WHO Member States," Tech. Rep., World Health Organization; 2013.
24. B. J. McMahon, W. L. M. Alward, D. B. Hall. Acute hepatitis B virus infection: relation of age to the clinical expression of disease and subsequent development of the carrier state. Journal of Infectious Diseases. 1985; 151(4): 599–603
25. K. C. Hyams. Risks of chronicity following acute hepatitis B virus infection: a review. Clinical Infectious Diseases 1995; 20(4): 992–1000
26. K. Ikeda, S. Saitoh, Y. Suzuki. Disease progression and hepatocellular carcinogenesis in patients with chronic viral hepatitis: a prospective observation of 2215 patients, Journal of Hepatology 1998; 28(6): 930–938
27. R. P. Beasley and L. Y. Hwang. Overview of the epidemiology of hepatocellular carcinoma, in Viral Hepatitis and Liver Disease: Proceedings of the International Symposium on Viral Hepatitis and Liver Disease: Contemporary Issues and Future Prospects, F. 1991; B.Hollinger, S. M. Lemon, and H. S. Margolis, Eds., Williams & Wilkins, Baltimore, USA: 532–535
28. J. F. Perz, G. L. Armstrong, L. A. Farrington, Y. J. F. Hutin, and B.P. Bell, The contributions of hepatitis B virus and hepatitis C virus infections to cirrhosis and primary liver cancer world-wide, Journal of Hepatology 2006; 45(4): 529–538.
29. Hepatitis B Vaccine 2009; Hepatitis B Foundation, Doylestown, Pa, USA
30. A Comprehensive Immunization Strategy to Eliminate Transmission of Hepatitis B Virus Infection in the United States. Recommendations of the Advisory Committee on Immunization Practices (ACIP) Part II: Immunization of Adults
31. Takekoshi Y, Tanaka M, Miyakawa Y, Yoshizawa H, Takahashi K, Mayumi M. Free small and IgG-associated large hepatitis B e antigen in the serum and glomerular capillary walls of two patients with membranous glomerulonephritis. New England Journal of Medicine. 1979 Apr 12; 300 (15):814-9.
32. J. E Maynard. "Hepatitis B: global importance and need for control." Vaccine 8 (1990): S18-S20.
33. Holliday S.M, Faulds D. Hepatitis B vaccine. Pharmacoeconomics. 1994 Feb 1; 5(2):141-71.
34. Sánchez-Fueyo A, Rimola A, Grande L, Costa J, Mas A, Navasa M, Cirera I, Sánchez-Tapias JM, Rodés J. Hepatitis B immunoglobulin discontinuation followed by hepatitis B virus vaccination: a new strategy in the prophylaxis of hepatitis B virus recurrence

after liver transplantation. Hepatology. 2000 Feb; 31(2):496-501.
35. Chen SC, Toy M, Yeh JM, Wang JD, Resch S. Cost-effectiveness of augmenting universal hepatitis B vaccination with immunoglobin treatment. Pediatrics. 2013 Mar 1: peds-2012
36. Marzano A, Angelucci E, Andreone P, Brunetto M, Bruno R, Burra P, Caraceni P, Daniele B, Di Marco V, Fabrizi F, Fagiuoli S. Prophylaxis and treatment of hepatitis B in immunocompromised patients. Digestive and Liver Disease. 2007 May 1; 39(5):397-408.

Table 1. Hepatitis B related knowledge questions and correct responses in percentage

Questions	Correct responses (%)	
Studying year of the participants	1st 2nd 3rd 4th	: 23.03% : 35.07% : 30.89% : 10.99%
Gender-	Male Female	: 44.23% : 55.76%
Age group (years)	15 - 20 21 - 25 26 - 30 31 - 40	: 32.69 % : 67.30 % : 0 % : 0 %
Do you have heard about hepatitis?	Yes No	: 96.15% : 3.84%
What is the causative agent of hepatitis B?	Virus Bacteria Protozoa Do not know	: 94.23% : 0% : 0% : 5.76%
What major body organ is affected by the viruses?	Heart Pancreas Stomach Liver	: 0% : 0% : 1.92% : 98.07%
What are the symptoms of hepatitis B?	Tiredness(fatigue) Low fever Nausea Do not know	: 21.15% : 23.07% : 71.15% : 5.76%
Hepatitis B can be passed through contaminated-	Food Water Blood Do not know	: 1.92% : 38.46% : 59.61% : 1.92%
The mode of spread of hepatitis B infection-	Sexual intercourse Transfusion of blood Pregnant mother to baby Physical contact with a person with hepatitis B Saliva	: 19.23% : 82.69% : 17.30% : 15.38% : 11.53%
What are the risk factors that may be cause of hepatitis B disease?	Smoking Alcohol Piercing and tattoo Blood transfusion Dental visits Eating from contaminated food Drinking from contaminated drinks	: 0% : 1.92% : 0% : 76.92% : 0% : 3.84% : 23.07%

Hepatitis B can be confirmed through-	Blood test Saliva test Ultrasonography X ray	: 94.23% : 5.76% : 0% : 0%
Do you think, hepatitis patients should be allowed to work?	Yes No Do not know	: 42.30% : 51.9% : 7.69%
Do you think, Hepatitis B contagious?	Yes No Do not know	: 28.84% : 57.69% : 9.61%
Is hepatitis B infection preventable?	Yes No Do not know?	: 94.23% : 3.84% :1.92%
Hepatitis B can be prevented by-	Vaccine Injection Medicine Do not know	: 80.76% : 9.61% : 5.76% : 3.84%
Does hepatitis B vaccination protect the infection?	Yes No Do not know?	: 51.92% : 48.07% : 0%
Do you have taken vaccine against hepatitis B virus?	Yes No	: 48.6% : 51.9%
If no, then what is the reason behind not being vaccinated?	lack of motivation Never thought of vaccination Lack of belief Fear of injection	: 23.07% : 17.30% : 11.53% : 7.69%
Do you think it is necessary to take hepatitis B vaccination?	Yes No	: 94.23% : 5.76%

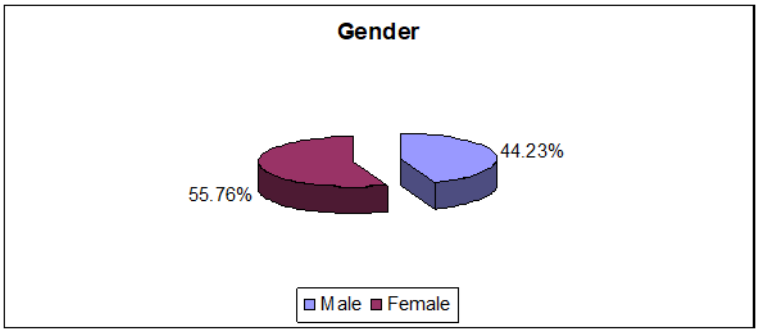

Figure 1. Gender of the participants

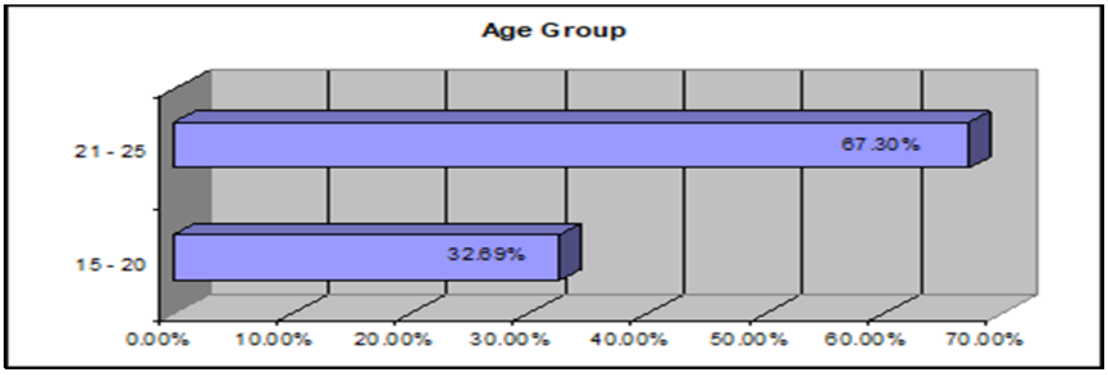

Figure 2. Age groups of the study sample of pharmacy students

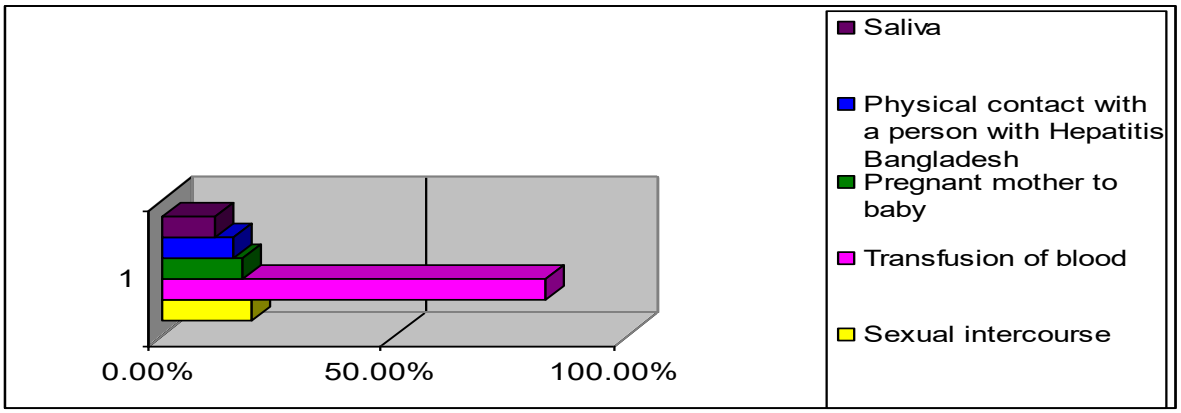

Figure 3. Student's knowledge about the mode of spread of hepatitis B virus.

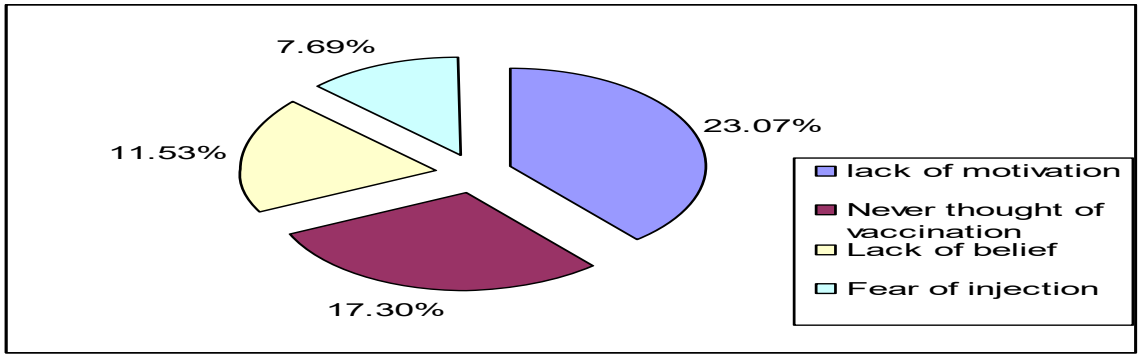

Figure 4. Reason behind not being vaccinated against hepatitis B virus.