

Knowledge, Attitude and Practice towards Hepatitis B Prevention Among Medical Students at Copperbelt University, Ndola Zambia

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Abstract

Introduction: Hepatitis B viral infection is a viral infection that attacks the liver and can cause acute and chronic disease with systemic manifestation. The infection is one of the major causes of morbidity and premature death and contributes substantially to the escalating costs of health care globally and locally. The main objective of this study is to assess the knowledge, attitude, and practice regarding viral hepatitis B infection prevention among medical students at Ndola Teaching Hospital in Ndola, Zambia.

Methodology: An analytical cross sectional study was conducted among medical students studying bachelor of medicine and surgery and bachelor of dental surgery at the Copperbelt University School of medicine and Ndola Teaching Hospital. The total number of patients that met the inclusion criteria and thus enrolled in the study was 162. Ethical approval was obtained from Tropical Disease Research Centre (TDRC) and permission to conduct the study among the clinical students was granted by the copperbelt university school of medicine. Data was collected from clinical students with a use of a questionnaire and it was entered and analyzed with the use of SPSS 23.

Results: The assessment, the majority of students demonstrated that they had good knowledge (91.4%), attitude (75.9%) and practice (90.7%) towards HBV prevention. Furthermore, the findings showed that there was correlation between the level of practice and knowledge, year of study and attitude toward HBV infection prevention with the P-values of 0.018, 0.028 and 0.003 respectively.

Conclusion: The levels of knowledge attitude and practice among participants were high. With this outcome, we recommend that the current system of training among clinical students with regard to HBV infection prevention should continue with more emphasis on developing the right attitude.

Keywords: Hepatitis B viral infection • HBV infection • HBV prevention

Introduction

Hepatitis B infection is among the most common infectious diseases worldwide and is a major public health problem with one-third of the world population infected. It is a viral infection that attacks the liver and can cause acute and chronic disease with systemic manifestation. Among the routes of transmission the most common is horizontal. Transmission can also be via contact with body fluids or blood. The disease takes a heavy toll on the lives of the general public and health system with an estimated 2 billion people being infected worldwide and about 350 million of them suffer from chronic hepatitis B infection mainly hepatocellular carcinoma and liver

cirrhosis. Furthermore, about 1.4 million deaths annually are recorded and 40 million HBV carriers worldwide. Globally, approximately 2 million health workers are infected with HBV. It is also estimated that about 500 to 600 health care workers and training personnel are hospitalized annually due to exposure to blood products.

Certain groups at higher risk of HBV infection include organ transplantation and blood transfusion recipients, infants of mothers who are carriers, immune suppressed individuals, health care and laboratory personnel, homosexuals, percutaneous drug abusers and prostitutes. Health care providers are among the categories at highest risk of about 2 to 4 times higher than the general population

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due to their nature of work involving contact with blood borne pathogens. Medical students are amongst this high risk community as they attend to infected patients during their training and as such adequate knowledge about the disease is significant in order to remain protected and protect transmission to other patients [1].

Despite the fact that the infection is preventable through vaccination and post exposure prophylaxis, some of the medical students may be unaware of the risks of HBV infection and appropriate preventive measures. Many studies have estimated HBV knowledge and practice status among health care workers and medical students in different parts of the world. Findings of some researches done outside Zambia vary from one training institution to another. For instance, a study by Saeed, in Tabuk City, Saudi Arabia among 147 medical students concluded that the knowledge was fair whereas the attitude was negative towards hepatitis B infection. In another study conducted at a private medical college in Kochi, India, among 230 medical students, it was found that the knowledge and attitude were good but very few students with good practice. However, little evidence is available in Zambia about HBV knowledge assessment amongst medical students. Therefore, in order to bridge the knowledge gap, this study is aimed at assessing the knowledge, attitude and practice regarding occupational risks of hepatitis B virus among medical students at NTH. The burden of Hepatitis B in the health sector is increasing both at a global and national level. According to Namwaka, Zambia has one of the highest prevalence of hepatitis B at a global and regional level at 12%. This prevalence is said to be highest between the ages 15-59 and in coinfection with HIV at 5.6% and 7.1% respectively. This prevalence rate may be attributed to various risk factors to which this categories of individuals are predisposed. Medical students are considered to be among the group at risk as they are exposed to body fluids which may be infectious. In addition, the prevalence is high among HIV infected individuals which may be due to compromised immunity rendering infected individuals susceptible to HBV.

In Zambia, the control strategies have focused much on blood bank screening and childhood vaccination with existing immunization program focusing primarily on children six weeks of age leaving the adult population at risk, medical students inclusive. It is estimated that about 500-600 health care workers are hospitalized annually due to exposure to blood borne pathogens. Medical students form an integral part of health care system and as such, they must have adequate knowledge about HBV infection that is the modes of transmission, clinical features, complications and preventive measures. The average risk of acquiring hepatitis B from an HBV carrier after percutaneous exposure to infected material ranges from 6% to 30 % whereas for HIV is 0.3%. Medical students being part of health care workers are equally exposed to the risk as they also get involved in management of infected patients. This study thus focuses on determining the level of knowledge, the attitude and practice towards prevention of HBV among medical students at NTH.

Materials and Methods

Every year, hepatitis B infection causes about 1.34 million deaths worldwide recording high mortality compared to HIV or malaria thereby making it the second biggest killer after tuberculosis. The

daily mortality globally from all the types of viral hepatitis (A, B, C, D, and E) is estimated to be 3600 with the highest number of deaths resulting from chronic hepatitis B and C.

HBV is the major public health concern globally infecting approximately 30% of the world's population. It is the 10th leading cause of death and 5th cause of cancer worldwide. According to WHO 2015 report, 257 million people or 3.5% of the population were living with chronic hepatitis B infection which resulted in about 887,000 deaths mostly from cirrhosis and hepatocellular carcinoma. Of the infected people, only 27 million (10.5%) were aware of their infection status, reflecting that most of the people infected with HBV are unaware of their infection. The prevalence is highest in the Western pacific region and African region with 115 million (6.2%) and 60 million (6.1%) of the infected adult population respectively, the lowest being the Americas with 0.7%. Sub Saharan Africa has an estimated 87 890 deaths from HBV annually with increasing incidence of hepatocellular carcinoma and liver cirrhosis. In 2017, the mortality resulting from hepatitis B increased to about 1.3 million from 887, 000 recorded in 2015.

Africa has approximately 50 million chronic carriers of hepatitis B virus, with a 25% mortality risk. In sub Saharan Africa, carrier rates range from 9-20%. Hepatitis B associated hepatocellular carcinoma is probably the most common tumor affecting males in sub Saharan Africa, with Mozambique having the highest incidence rate of 103.8 per 100,000 males.

In Zambia, the estimated prevalence of HBV among the general population is 12% which is among the highest in the world. At a provincial level, HBV prevalence was highest in Luapula (5.1%) with the highest rates of HBV- HIV coinfection in Lusaka and Western provinces. Recent study show that between the ages 15 to 59, the prevalence is 5.6 percent, 1.3% for children, 7.1 percent among HIV positive and 5.4 percent among HIV negative.

HBV can be prevented with effective vaccines and increased awareness among the groups that are at risk. In Zambia, despite specific measures implemented to eliminate the infection, the prevalence keeps rising especially among the ages 15 to 59 and as coinfection with HIV. N. Nshimbi, indicates that if the situation remains unchecked, the prevalence is estimated to rise to about 11.1% among ages 15 to 59. In Zambia, literature shows that much of control strategies focus on blood screening and childhood vaccination leaving out adult population at risk implying that prevalence may keep rising [2].

Hepatitis B is a viral infection of the liver caused by hepatitis B virus. It can exist in an acute form which may resolve without treatment or as a chronic condition leading to cirrhosis and carcinoma of the liver. Acute hepatitis B infection is characterized with prodromal symptoms like headache, chills, vomiting, nausea, anorexia, malaise and in about 30% of patients, jaundice may develop. The chronic form of hepatitis B may be asymptomatic or associated with permanent hepatitis. According to Ibrahim, about 20% of patients with chronic hepatitis B develop liver cirrhosis and 5% progress to HCC.

According to the modes of transmission vary geographically. In highly endemic areas like south East Asia and sub Saharan Africa, the main mode of transmission is vertical transmission perinatally from an infected mother to the newborn child, whereas horizontal

transmission in intermediate prevalence areas and unprotected sexual intercourse and intravenous drug use in adults being responsible in low-prevalence areas. The groups that are at risk of acquiring hepatitis B include, recipient of blood transfusion and organ transportation, sexually active heterogonous and homosexuals, percutaneous drug abusers, infants of HBV carrier mothers, hemodialysis patients, immunosuppressed individuals, laboratory personnel and health care workers. Of these groups, Health care workers who use and are exposed to needles are at highest risk of needle stick injuries. The risk of acquiring HBV after being stuck with a needle of HBV-positive blood from an HBV infected person is 27% to 37% making it 50 to 100 times more infectious than HIV.

Management and initial evaluation of an individual with hepatitis B should involve a complete history, physical examination, assessment of liver disease activity and severity and makers of HBV infection. Acute infection has no specific treatment but only care aimed at maintaining comfort and adequate nutritional balance, including fluid replacement lost from vomiting and diarrhea. Chronic infection can be managed using two different approaches, immune modulation and viral suppression. Interferon is the only example of an immune modulator in HBV therapy as it induce entry into the inactive carrier phase, thereby effectively controlling HBV. Oral antiretroviral which include tenofovir or entecavir are the most potent drugs used for viral suppression and to slow the progression of cirrhosis, reduce incidence of hepatocellular carcinoma and improve long term survival. Despite viral hepatitis B and C affecting about 325 million people worldwide, only 1 in 10 of the affected is tested and only 1 in 5 receive appropriate treatment.

Acute infection in some individuals may complicate into a chronic condition with poor management and when the body fails to clear the infection. Chronic HBV infection may last for lifetime and possibly leading to serious complications. Among the long term complications of HBV infection, cirrhosis and liver cancer result into a large disease burden. Liver cancer progresses rapidly and its outcome is generally poor due to limited treatment options. In addition, chronic HBV infection may cause liver failure, kidney disease and inflammation of blood vessels.

The burden of hepatitis B in the health system is increasing among health workers and medical students. It's estimated that at a global level 2 million health care workers are infected with HBV. Studies show that about 3 million health care workers worldwide experience percutaneous exposure to blood pathogens each year including hepatitis B virus. Medical students being part of the health care delivery system are equally at high risk of HBV like any other health care worker as they have no access or limited access to the vaccine.

Medical students are an essential sector of the health system, they are the doctors of the near future and during their training, they are exposed to blood-borne infections including hepatitis B. It is therefore fundamental that medical students should have adequate knowledge, proper attitude and good practices regarding hepatitis B infection. Studies done outside Zambia show differences on medical student's knowledge, attitude and their practices towards HBV. In a study conducted by Saeed, in Tabuk City, Saudi Arabia among 147 medical students, it was found that the knowledge was about 70.54%, attitude 53.52% and the prevention 67.17%. Saeed concluded that the knowledge was fair whereas the attitude was negative towards hepatitis b infection. In another

a private medical college in Kochi, India, among 230 medical students, it was found that the knowledge about hepatitis B was good (79.1%), majority of respondents had the right attitude (84.3%) and the practice component was low with only 44.8% of the respondents having the correct practice. On the hand, in study by Abhinav, in India, it was found that out of 200 medical students, the knowledge was good in only about 86 individuals while attitude and practice were 125 and 145 respectively. Furthermore, a research done in Ethiopia at Haramaya university showed poor knowledge and poor practice towards hepatitis B among medical and health science students. These variations in research findings on the knowledge, attitude and practices among medical students towards hepatitis B shows that findings may differ from one training institution to another due to various factors such as mode of training and geographical. Similarly, the outcome of this research may not show consistency results with other studies done in other institutions [3].

Despite increasing prevalence of hepatitis B among developing countries, there is paucity of information on the knowledge, attitude and practice regarding hepatitis B prevention among medical students. Therefore, this study aimed at assessing the knowledge, attitude and practice regarding hepatitis B prevention among medical students at Ndola Teaching Hospital.

To assess the knowledge, attitude, and practice regarding viral hepatitis B infection prevention among medical students at Ndola Teaching Hospital in Ndola, Zambia

- To establish the knowledge regarding HBV infection prevention among medical students at NTH
- To determine the factors that influence the level of practice towards viral Hepatitis B infection prevention among medical students at NTH
- To evaluate the attitude of medical students towards viral Hepatitis B infection prevention.

What are the knowledge, attitude, and level of practice towards viral hepatitis B prevention among clinical medical students at Ndola Teaching Hospital?

This study yield baseline information that can be used by the government through line ministry such as ministry of health as reference information for future and other related studies to be conducted in the country concerning the prevention and controlling of hepatitis B among medical students. The results can further help in the formulation of new policies and strategies that can be used to sensitize health students concerning hepatitis B and the significance of vaccination.

In addition, there is paucity of information regarding the knowledge, attitude and prevention of hepatitis B among medical students in Zambia. To the best of my knowledge, there is currently no study that has been done to assess the knowledge, attitude and practice towards prevention of hepatitis B among medical students in Zambia. Beneficiaries of the new policies will include medical students, health workers and the general public (Table 1) [4].

Variables	Definitions	Scale of measurement
Age	Actual date of birth	Continuous
Year of study	Fourth, fifth and sixth	Categorical

Gender	Male and female	Categorical
Accidental needle prick	Yes/no	Categorical
Exposure to bodily fluid	Yes/no	Categorical
knowledge	Yes/no	Categorical
Attitude	Increase None /Decrease/	Categorical
Practice	Yes/no Yes/no Advice/ fail to advice	Categorical
a)vaccination status		
b)vaccination timing		
c)advice to others		
Observe aseptic technique	Yes/no	Categorical

Table 1: Measurements.

In this study, a normal scale was used for measurement. The variables in the study were divided into categorical and continuous measuring variables.

The conceptual framework below provides an overview of the factors that influence knowledge, attitude, and practice regarding prevention of hepatitis B among medical students.

This study was conducted at Ndola Teaching Hospital. The hospital was selected to target the clinical year medical students and also due to its convenience in terms of location and thus will eliminated the need to spend much on transport to access the required information.

The study targeted Copperbelt University School of medicine clinical year medical students at Ndola Teaching Hospital studying Dental Surgery and Medicine and Surgery.

The study design was analytical cross sectional study which aimed at obtaining information for the purpose of establishing the knowledge, attitude and practice towards prevention of hepatitis B infection among medical students at Ndola Teaching Hospital. Information required for computing the sample size include:

- An estimate of prevalence
- Desired confidence level
- Desired width of confidence interval

According to the formula the sample size is 162. In this study, same sample size was used.

A Simple Random Sampling technique was used to select individual participants doing their clinical years at Ndola Teaching Hospital. This sampling technique was used because every unit had same chance of being selected and every sample of the same size has the same chance of being selected. Furthermore, the method estimates were easy to calculate and the participant chosen represented the study population.

In this research, the inclusion criteria included; medical students at the copperbelt university who are in their clinical years studying MBChB and BDS at Ndola Teaching Hospital. The exclusion criteria included all medical students at Ndola Teaching Hospital who did not consent to the study.

Primary data was used in this study. Data collection was done using self-administered questionnaires because the study population included medical students who are able to read.

The quality of questionnaires was outlined in such a way that they were easy to understand and filled properly. After the collection of data was done using a questionnaire, it was entered in the computer using Epi data. Caution during data entry was also taken by checking data for consistency and errors during entry. To achieve this, a double entry was done using the same software and the results were then compared.

Firstly, after the data has been entered into the computer using Epi Data, it was then be analysed using SPSS. Data was summarized using frequencies, tables and percentages. Caution was taken to ensure that there was consistency and possible errors avoided during entry.

Ethical approval was obtained from the Tropical Disease Research Centre (TDRC) in order to ensure that the research is in line with the Zambian Code of Ethics (ZCE) with respect to autonomy, justice, beneficence and non-maleficence. During the research, human rights of all participants was at liberty to withdraw at any time they wish.

Furthermore, consent forms was provided and signed by individuals who were willing to participate in the research. The questionnaire used in the collection of data had no names or any other personal details identifying a participant to ensure strict confidentiality.

Results and Discussion

The research findings and analysis. Single and bivariate analysis is used. The main variables to be discussed are age, gender and year of study, level of knowledge and attitude towards hepatitis b prevention and their correlation with the level of practice towards hepatitis b prevention.

A total of 14, 9 and 11 questions were used to assess the knowledge, attitude and practice domains respectively. A score of +1 was given to every correct answer. Score of 0-5 was poor knowledge, 6 to 9 average and above 9 was good knowledge. In terms of the attitude, score of 4 and below poor attitude, 5 to 6 average and above 6 good attitude. Finally, score of 4 and below poor practice, from 5 to 7 average level of practice and above 7 good practice.

The total number of participants in this study was 162 and out of this the majority of the students were male 98 in number (60.5%). The age group ranged from 22-45 with the highest number of participants falling between 22-25 years and were 97 in number (59.9%), the lowest being 36-45 years with 19 participants (11.7%). Furthermore, the majority of the students were fifth year, 89 (54.9%) and the lowest number was from the sixth years 22 (13.6%). Highlights the level of knowledge, practice and the attitude of students towards hepatitis B prevention. Out of the 162 students who participated, 148 (91.4%) showed good knowledge, 12 (7.4%) had average knowledge and lastly 2 (1.2%) had poor knowledge. Furthermore, 147 (90.7%) students had good level of practice and 15 (9.3%) had average. Regarding their attitude towards HBV prevention, 123 (75.9%) showed good attitude, 35 (21.9%) had average attitude with 4 (2.5%) having poor attitude (Table 2) [5].

Variable		Frequency	Percentage (%)
Age	22-25years	97	59.9
	26-35 years	46	28.4
	36-45 years	19	11.7
	Total	162	100
Gender	Female	64	39.5
	Male	98	60.5
	Total	162	100
Year of study	Fourth	51	31.5
	Fifth	89	54.9
	Sixth	22	13.6
	Total	162	100
Level knowledge	Good knowledge	148	91.4
	Average knowledge	12	7.4
	Poor knowledge	2	1.2
	Total	162	100
Level of practice	Good level of practice	147	90.7
	Average level of practice	15	9.3
	Total	162	100
Attitude toward HBV prevention	Good attitude	123	75.9
	Average attitude	35	21.9
	Poor attitude	4	2.5
	Total	162	100

Table 2: Highlights the level of knowledge, practice and the attitude of students towards hepatitis b prevention. Out of the 162 students who participated, 148 (91.4%) showed good knowledge, 12 (7.4%) had average knowledge and lastly 2 (1.2%) had poor knowledge. Furthermore, 147 (90.7%) students had good level of practice and 15 (9.3%) had average. Regarding their attitude towards HBV prevention, 123 (75.9%) showed good attitude, 35 (21.9%) had average attitude with 4 (2.5%) having poor attitude.

Analysis showed that good practice was highest among sixth year students (100%), the fifth years had the second highest rate (93.3%) with the fourth year having the lowest rate (82.4%) (Refer to table 3.2 below). With this said and a spearman correlation value of -0.210 with significance at 0.028 there is a significant negative correlation between years of study and the level of practice.

The study findings also showed that students who had good level of knowledge about hepatitis b prevention had good level of practice towards its prevention (92.6%) as compared to those with average level of knowledge (75.0%) and those with poor level of knowledge (50%). Spearman correlation coefficient was 0.208 with a p value of 0.018, hence there was a significant positive correlation between student's level of knowledge and the level of practice towards HBV prevention.

Analysis further showed that good levels of practice towards HBV prevention was highest among students who had good attitude towards its prevention (95.1%), those with average attitude had the second highest rates (77.1%) with those with poor attitude having the lowest rates (75%). The p value of 0.003 with the spearman's correlation value of 0.268 signify that there was a positive correlation between student's attitude and their level of practice towards HBV prevention.

An analytical cross sectional study was done to assess the knowledge, attitude and practice towards prevention of hepatitis B infection among medical students at Ndola Teaching Hospital.

The findings of the current study shows that the student's level of knowledge about hepatitis b at the Copperbelt University School of medicine in the year 2020 was 91.4%. In comparison with a study done in Bahir Dar, Ethiopia by Tigabu, 2017 at private medical and health science college, it was found that the level of knowledge among medical students about hepatitis B was good (83.8%), which shows similarity with the current study despite being done in different countries. However, the minimal difference that exist (7.6%) maybe attributed to the difference in prevalence and mode of scoring. Furthermore, in other studies, the level of knowledge about HBV differed as well, for instance, a study by saeed, showed 70.54% and a study by Abhinav, indicated 43%.

Statistics of this study further showed that there was a significant correlation between the level of knowledge and the level of practice with a P-value of 0.018. Additionally, results show that there is a very low correlation between the level of knowledge and the level of practice as evidenced by the weak positive R-value of 0.208.

With regards to the year of study, it was found that the higher the year of study, the higher the level of practice towards HBV infection prevention. In this current study, the level of practice was 100% among final year students while figures in similar studies varied between 70% in a study carried out in Kanchipuram, India by Abhinav A, Jeffin S, to as high as 81.6% in a done by Arun J, Teena M.J, in Kochi, India. The fact that the level of practice was higher among final year students was expected as they had accumulated the same over the duration of the course.

In the present study, 75.9% of the students had a good attitude towards hepatitis b prevention. In the study conducted at a private medical college in Kochi, India, among medical students had a comparable level of attitude in which majority of respondents had the right attitude (84.3%). This study together with the study done in Kochi indicate good attitude of students towards HBV prevention. On the contrary, the study conducted by Saeed, in Tabuk City, Saudi Arabia among 147 medical students showed a negative attitude of 53.52%. The variations in these findings can be due to various factors which include mode of training, year of study and the total number of participants involved in each respective study. The results of the current study also show that there is significant relation statistically between student's attitude and the level of practice as shown by the P-value of 0.003. Furthermore, the correlation between the two variables showed the R-value of 0.268 which indicates a weak positive correlation between the two.

Conclusion

The study generally showed good outcome of the knowledge (91.4%), attitude (75.9%) and practice (90.7%) towards HBV prevention among the clinical medical students at the Copperbelt University School of Medicine. In addition, the finding of the current study are that there was correlation between the level of practice and knowledge, year of study and attitude toward with the P-values of 0.018, 0.028 and 0.003 respectively.

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Recommendations

As per the study conducted, it was found that the knowledge, attitude and practices towards HBV infection prevention among the

clinical students were high with the lowest being attitude (75.9%). With this outcome, we recommend that the current system of training among clinical students with regard to HBV infection prevention should continue with more emphasis on developing the right attitude. The study depended on self-reported data with little means of confirming the truth as students were not observed for their attitudes and practices. This makes it prone to being under reported or over reported despite the maintenance of confidentiality.

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