

Hepatitis B knowledge and medical practices among healthcare professionals in Vietnam: a cross-sectional study

Abstract

Background and Aim

Although the nationwide immunization program was implemented in 2003, hepatitis B infection remains a major public health issue in Vietnam. In addition to the late implementation, the knowledge, attitude, and practice of health care workers directly impact the hepatitis B prevention. This study aims to obtain the information on the health care workers toward hepatitis B and discover the deficiency of their knowledge.

Methods

A questionnaire was distributed to Vietnamese health care professionals from regional hospitals, community clinics and medical centers in Hoa Binh Province and Quang Ninh Province. Correct answers to questions were summed up into a total knowledge score, which is then compared across characteristics of survey participants using statistical tests such as ANOVA, Chi-square, T-test, and multivariate linear regression.

Results

Knowledge about hepatitis B is still inadequate even for highly educated health professionals. Of 314 participants surveyed, 86% did not know that there is usually no symptoms associated with chronic hepatitis B and 27% did not know untreated chronic hepatitis B can cause cirrhosis, liver cancer, and liver failure. In addition, 90% failed to identify all the modes of transmission of hepatitis B. Respondents who reported poorer medical practices, or having no previous experience with chronic hepatitis B patients, scored significantly lower on the total knowledge score than otherwise. Furthermore, even though hepatitis B is a blood-borne disease, 30% of the participants still think hepatitis B is transmitted through sharing food and water with an infected patient, while 50% think that they can prevent hepatitis B by cleaning and cooking food thoroughly. This lack of transmission knowledge, even among health care providers, continues to perpetuate the stigmatization of this disease in the Vietnamese society.

A large percentage (68 -75%) did not receive or attend training on topics of hepatitis B prevention, diagnosis, and management in the past 2 years. However, even among those who did, there is still no significant improvement in the total knowledge scores, which indicates certain drawbacks with the current viral hepatitis healthcare workers training in the country.

Most survey participants seem to be well aware of necessary hepatitis B preventive actions, with 79.6% reporting that they had been previously tested for hepatitis B while 62.8% had been vaccinated against the virus. However, many of them are still reserved about the safety of the vaccine, accounting for 40%.

Conclusions

Our study reveals that the insufficient training for the healthcare workers in Vietnam. The lack of knowledge was also identified which could lead to inappropriate practice with regard to the prevention of hepatitis B. We believe that there is a instant need for a new training program for the health care workers in order to help the country limited the prevalence of hepatitis B.

Keywords(3-5) Vietnam, healthcare workers, hepatitis B, training

Background

Hepatitis B is a viral infection that is the major cause of liver cancer and an estimated 257 million people infected worldwide [1]. Western Pacific region and African region has the highest burden of hepatitis B infection in which 6.2% and 6.1% of the adult population is infected respectively. Hepatitis B is transmitted through three routes, including birth, blood, and unprotected sex. Chronic hepatitis B infection leads to higher risk of cirrhosis and liver cancer.

Among Western Pacific countries, Vietnam has one of the highest prevalences of hepatitis B with an estimated 8.6 million people having chronic hepatitis B. In other words, an estimated 12% of Vietnamese adults have chronic hepatitis B. Hepatitis B has infected more than half of the population, among which perinatal transmission (from an infected mother to the infant at birth) is a major transmission route [2–4]. Despite a significant endemic in Asia in general and Vietnam in particular, hepatitis B infection doesn't get the attention it deserves. HBV-related mortality and morbidity can be classified into different categories, such as liver cirrhosis, hepatocellular carcinoma and liver failure [5]. This puts those who have chronic hepatitis B but without treatment at the risk of death from liver diseases and problems. Specifically, according to the country statistics profile by the WHO, liver cancer resulted in nearly 4% the total number of deaths in Vietnam in 2012 and the mortality rate is continuing to increase [6]. Two studies measured the hepatitis B virus-related mortality based on liver cancer mortality and HCC-related mortality, and the estimated mortality of per 100 person-years in HBV-related cirrhosis is 2.1% of the total deaths. It is also stated that the hepatitis B related liver cancer cases will reach 58,600 cases by 2025, a 60% increase from 2005 [4].

The major transmission route of the hepatitis B virus in Vietnam is from mother to child at birth [2]. In order to avoid developing chronic hepatitis B infection, newborns should receive their first dose of vaccine within 12 hours after birth and complete another series of three doses later. The universal immunization for hepatitis B among infants has been introduced in Vietnam since 2003. Reduction in HBsAg prevalence due to vaccination was observed in the cohort born after the universal vaccination program. A systematic review indicated that the prevalence of HBsAg reduced significantly in the young age groups in Southeast Asia [7]. Great strides have been made in community immunization against hepatitis B, with the vaccine coverage reaching 97% in 2012, and birth dose coverage increasing to 75%. Perceptibly, high vaccination coverage results in lower number of children who have chronic hepatitis B. The prevalence of HBsAg also declined from 3.64% to 1.64% in 2008. [6]. At the moment, Vietnam is aiming to achieve less than 1% hepatitis B infection prevalence for children under 5 years old by 2017.

It is also important for health care providers in Vietnam to know what they can and should do in terms of hepatitis B prevention, diagnosis, and management. Their knowledge, attitude and practices directly affect whether people get screened and vaccinated, which plays a vital role in protecting the community from the hepatitis B virus. Nonetheless, there are still remarkable deficiencies in Vietnamese health care providers' knowledge about this disease, which emphasizes the fact that more training for medical providers on certain areas is necessary. Without a national strategy to effectively prevent, diagnose and treat chronic viral hepatitis, liver cancer deaths are going to increase by 50% in the next 20 years. Our report intends to look at the current situation in Vietnam in terms of how medical providers handle patients and potential patients of hepatitis B. More specifically, we attempt to locate inadequacies in certain hepatitis B knowledge disciplines as well as shortcomings of the medical training sessions on

hepatitis B in Vietnam. The ultimate purpose is to seek/request improvements on the said weaknesses. We also hypothesize that new training courses will improve health care workers knowledge about hepatitis B which ultimately helps Vietnam achieve WHO's global goal of complete hepatitis B elimination by 2030.

METHOD

Study population

This is a cross sectional study conducted on medical providers from health facilities in Quang Ninh and Thai Binh province (Vietnam). The study instrument was a pre-designed questionnaire, which was structured to obtain information on medical providers' knowledge and attitude regarding hepatitis B, as well as their practice of hepatitis B and liver cancer prevention, diagnosis and management. Health care workers were requested to complete the questionnaire during the weekly staff meeting and return to the survey staff on site.

Statistical methods

Participants who omitted more than a half of the survey questions were excluded from the analysis. Among 314 participants who completed the survey questionnaire, descriptive statistics were generated from variables in the dataset. Each question is assigned a point, with 42 knowledge-based questions accounting for a total of 42 points.

RESULTS

Demographics

This study analyzes a sample of 314 health care providers, whose median age is 31 years. Most participants are female health care professionals working at district and community health care facilities. Of the respondents, 25.2% are physicians (n=78), 19.0% are physician assistants (n=59), and 38.1% are nurses (n=118), 13.5% are midwives (n= 42), and 4.2% are medical students (n=13). The distribution of specialties is 21.2% internal medicine (n=48), 17.2% pediatrics (n=39), 2.6% surgery (n=6), 28.2% obstetrics (n=64) and 2.6% lab (n=6). Out of all health care providers surveyed, 50.2% report having a 2-year-college degree, 40.2% report have a 4-year-university degree, and 9.6% report having a Master's degree. More detailed demographic and HBV-related characteristics of the study participants are shown in Table 1.

Table 1. Distribution of demographic factors

Characteristic	N	(%)
Sex		
Male	102	33.2
Female	205	66.8
Unknown	7	

Education level

College	105	50.2
University	84	40.2
Master's	20	9.6
Unknown	105	

Province of residence

Quang Ninh	169	53.8
Hoa Binh	145	46.2

Specialty

Internal Medicine	48	21.2
Pediatrics	39	17.2
Surgery	6	2.6
Obstetrics	64	28.2
Lab	6	2.6
General Medicine	64	28.2
Unknown	87	

Years of Experience

1-5 years	110	37.5
5-10 years	84	28.7

>10 years	99	33.8
unknown	21	
Facility of Practice		
Community health center	74	25.6
District health center	82	28.5
District preventive health center	58	20.1
Provincial health center	43	14.9
Provincial Medical College	31	10.9
Others/Missing	26	
Type of providers		
Physicians	78	25.2
Physician's Assistant	59	19.0
Nurse	118	38.1
Midwife	42	13.5
Medical student	13	4.2
Unknown	4	

Hepatitis B Knowledge and Medical practices

There are still ongoing issues with the medical practices in Vietnam, which presents many risks to the health care workers themselves. Merely 31.2% of the health care providers only sometimes wear gloves when administering injections to patients. 26.2% of the providers have been pricked with a needle at work in the past 12 months. More than 40% of the providers will recap the needle with two hands after injection which indicates the lack of injection safety knowledge. Training on specific medical topics such

as how to deal with hepatitis B also needs to be emphasized more, since only less than 30% of the workers have attended training on prevention, diagnosis and management of hepatitis B in the past 2 years.

Hepatitis B diagnosis and treatment related knowledge questions all pose significant difficulty to all types of medical providers being surveyed. Most of participants also have difficulty getting the right answer for Management-and-Treatment-related questions. This means the sample of health care providers examined do not have sufficient knowledge on these two aspects. While 37% of the respondents answered the questions about hepatitis B immunization knowledge correctly, only 10% is sufficiently informed about hepatitis B transmission and prevention. (Table 2).

Infants are most susceptible to chronic hepatitis B, since people who are infected in infancy usually do not have symptoms, but 80–90% will develop chronic (lifelong) infection [2-4] without many of them being aware. As a result, infant immunization will have an enormous impact on HBV-related morbidity and mortality in Vietnam [9]. However, 40% of the surveyed medical providers do not think that hepatitis B vaccine is safe, which reflects the lack of knowledge and the current anti-vaccination movement in Vietnam. It is important to note that when more people refuse to have their children vaccinated, the community's immunity is reduced, making it easier for outbreaks to occur. Community immunity, or 'herd immunity', plays a crucial role in preventing outbreaks of disease. Therefore it is crucial that the anti-vaccination movement based off many people's misconceptions and myths be subdued so that hepatitis B outbreak is under control and community health is protected.

Table 2. Incorrect response to different perspective of hepatitis B knowledge

	Physicians	Physician Assistant	Medical student	Nurse	Midwife	Total
	N=78	N=58	N=13	N=118	N=42	N=309
Transmission and Prevention N=12	68(87.2%)	54(93.1%)	12(92.3%)	103(87.3%)	41(97.6%)	278(90.0%)
Immunization N=4	47(60.3%)	31(53.4%)	2(84.6%)	38(67.8%)	16(61.9%)	114(63.1%)
Injection safety N=3	11(85.9%)	8(86.2%)	1(92.3%)	14(88.1%)	6(85.7%)	40(87.1%)

Management and Treatment N=15	78(100%)	58(100%)	13(100%)	118(100%)	41(97.6%)	309(99.7%)
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Diagnosis and Monitoring N=5	78(100%)	58(100%)	13(100%)	118(100%)	42(100%)	309(100%)
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Only 57% of the healthcare workers will have no concern about having casual contacts or working together with chronic HBV patients while only 58% have no concern eating or sharing food with them. In addition, only half of the participants know either cooking food thoroughly or avoiding sharing food with a person with chronic hepatitis B cannot prevent hepatitis B transmission. Up to 41% of the health workers at least are somewhat concerned about having their child in the same class with a kid with HBV.

The lack of hepatitis B transmission knowledge has a positive correlation with discrimination against chronic hepatitis B infected patients and the general widespread stigma surrounding the disease in the Vietnamese society. 60 % of the health care providers did not know the prevalence of hepatitis B in Vietnam while more than 75% of the providers did not know infection in a young age is most likely to develop chronic infection With regard to the chronic hepatitis B management and treatment knowledge, 86% of them don't know patient with chronic hepatitis B have no symptoms.

Comparisons of health care providers' knowledge

Association between demographic factors and total score on HBV knowledge-based questions were estimated using a multivariable regression model. With physicians being the reference variable, physician assistants, medical students, nurses, and midwives all score significantly lower and within the same range with one another. Total knowledge scores do not differ significantly across work facilities and specialties of the health care workers.

Participants who have a four-year-university education obtain statistically significantly higher score than those who have only a two-year-college education level. However, there is no significant difference in total knowledge score between two-year-college students and Master's students. (Table 3)

Healthcare providers' knowledge on hepatitis B transmission is found to not translate into proper preventive and diagnosis practices. A one-point increment in transmission mode knowledge score is associated with a qualitatively and statistically insignificant increase in prevention and diagnosis score. However, medical providers who had previous exposure to patients with hepatitis B score significantly higher than those who have no previous exposure.

Table 3. Difference in total hepatitis B knowledge scores by demographic factors

Characteristic	Difference	95 confidence level	P-value
Male	0.0	Reference	
Female	-0.88	(-2.03, 0.27)	0.135
1-5 years	0.0	Reference	
5-10 years	0.64	(-2.31,1.04)	0.648
>10 years	0.02	(-1.63,1.58)	0.999
Community health center	0.0	Reference	
District health center	-0.05	(-2.34,2.44)	1.00
District preventive health center	0.06	(-2.67, 2.55)	1.00
Provincial health center	-0.60	(-2.26, 3.45)	0.981
Provincial Medical College	-1.27	(-1.91, 4.45)	0.822
College	-2.29	(0.35, 4.23)	0.012
University	0.0	Reference	
Master	-1.92	(-1.36, 5.22)	0.44

Others	-3.36	(1.42, 5.30)	<0.0001
Internal Medicine	0.53	(-3.6, 2.6)	0.999
Obstetrics	0.187	(-3.1, 2.7)	1.0
Pediatrics	1.398	(-4.7, 1.9)	0.888
Lab	1.55	(-8.5, 5.4)	0.995
Surgery	1.385	(-8.3, 5.5)	0.998
General Medicine	0.0	Reference	
Others	2.018	(-6.2, 2.1)	0.804
Physician	0.0	Reference	
Physician assistant	-3.13	(0.72, 5.56)	0.003
Medical student	-5.90	(1.71, 10.08)	0.001
Nurse	-3.96	(1.92, 5.99)	<0.001
Midwife	-4.23	(1.56, 6.90)	<0.001

Longer years of experience and older age see a negative correlation with the amount of training the medical providers attended over the past two years, which might either indicate their lower willingness to

get educated on the disease or the incompetency of the health care system in giving updated training and education to older health workers.

Participants who attended training on hepatitis B prevention score lower than those who did not attend training (by 0.26 points). The same applies to training on management of the disease, with the training attendees scoring slightly lower than the others. Only training on hepatitis B diagnosis witnessed a higher score among those went compared to those who did not go (by 0.65 points). (Table 4) This indicates high ineffectiveness of medical training in Vietnam, specifically when it comes to hepatitis B training. Possible problems can either be lack of initiative to ensure those who signed up actually ended up getting the training or outdated/ineffective training materials.

Table 4. Difference in related perspective of hepatitis B knowledge score by local practice.

Local Practice	Difference	95% confidence Interval	P-value
Have you attend of training of the following topics in the past 2 years?			
Prevention of Hepatitis B			
Yes	-0.26	(-0.78, 0.26)	0.325
No	0.0	reference	
Diagnosis of Hepatitis B			
Yes	0.65	(-0.03, 1.32)	0.059
No	0.0		
Management of patients with Hepatitis B			
Yes	-0.089	(-0.37, 0.19)	0.532
No	0.0	reference	

Do you wear glove when
administering injection to patients

Always	0.0	reference	
Sometimes	0.07	(0.29, 0.15)	0.74
Never	-0.41	(-0.12, 0.93)	0.163

Have you been vaccinated against
HBV?

Yes	1.51	(0.05, 2.97)	0.041
No	0.0	reference	

Have you encounter any patient
with chronic hepatitis B infection?

Yes	2.27	(1.12, 3.42)	<0.001
No	0.0	Reference	

We also found that there was a negative correlation between age and stigma score. The amount of providers who have no stigma and discrimination is significant different between 5-10 years of experience and more than 10 years group.

Additional obstacles to prevention

Although it is crucial to improve health workers' knowledge on prevention and management of hepatitis B, additional societal obstacles that stem from the common people's misconceptions may obstruct the implementation of effective preventive practices. The adverse events following immunization in Vietnam in 2013 leads to the reduction of vaccination coverage on hepatitis B. The study in 2016 suggested that if the vaccination coverage can maintain the same level as in 2012, it could save more than 15,000 lives [6-impacts of adverse events].

In addition, there is still heavy stigma surrounding the disease of viral hepatitis in Vietnam. Almost one third of the Vietnamese nurses surveyed in a recent study indicated their unwillingness to provide care for hepatitis infected patients. The study further pointed out that the level of willingness was associated with each individual's confidence in protecting themselves against infection and with negative attitudes towards the hepatitis disease itself. In our study, we also found that knowledge score on transmission modes is significantly negatively correlated (25%) with stigma score at $p\text{-value}=.05$, which indicates the importance of educating health care workers on knowledge about hepatitis B transmission modes in order to eradicate the ongoing stigma surrounding the disease. Therefore, establishing a positive safety culture and providing appropriate professional education to help reduce the stigma against infected patients should be one of the first necessary steps to improve care quality in Vietnam [7-nurses].

Study Limitations

This study also has certain caveats that need to be taken into account. First of all, the answers are self-reported, which means no formal data collection method was utilized. This caused certain data points to sometimes be inconsistent and vague. For instance, participants provided generic answers that do not satisfy the purpose of the questions, or participants very frequently skipped demographics questions. There were also some problems in the data entry process, which caused inconsistencies and potentially led to unreliable information.

Secondly, since this is a cross-sectional study, we cannot determine the direction of causal relationships. For instance, we cannot specifically tell that having previous patients who have chronic hepatitis B leads to more general knowledge on hepatitis B.

Lastly, due to the non-random sampling method used, there is low generalizability to the results. The data are collected from medical providers working in the two rural, mountainous, and minor ethnicity-concentrated provinces in northern Vietnam. Considering the sheer size and various provinces of Vietnam, the results are at most representative of the health care circumstances of certain similar provinces. However, given the fact that there are only a few metropolises in Vietnam, and even highly skilled medical providers demonstrate significant deficiencies in some areas of hepatitis B knowledge, it is reasonable to assume that medical providers in Vietnam in general have the same limitations in terms of the hepatitis B virus.

Foundation for future initiatives

To our knowledge, this is the first survey of medical providers' knowledge about HBV infection and practices from Vietnam to be published in the international literature. Therefore, the study provides useful insights into the current issues in dealing with the hepatitis endemic in Vietnam, which ultimately helps Vietnam's Ministry of Health strategically plan for their incipient viral hepatitis health care workers training program. Moreover, this study will also provide a baseline against which to compare future assessments after implementation of new training programs in the country.

Discussion

Although chronic hepatitis B can be preventable by vaccination, it remains a major public health problem in Vietnam. The universal immunization for hepatitis B has been introduced since 2003 and the coverage reaches 97% in 2012 which means newborns are safe. Healthcare workers continue to play an important role in the prevention and elimination of hepatitis B as a disease; as a result, our study aims to

obtain pertinent information on their knowledge, attitude and practice of hepatitis B and liver cancer prevention, diagnosis and management.

Studies show that health care providers in the Vietnam are lacking awareness about the prevalence of chronic hepatitis. This could lead to the continuous uncontrolled spread of hepatitis B and inefficiencies of training on the topic resulted from the general lack of awareness. We are able to find and show overall deficiencies in health care providers' knowledge of hepatitis B transmission, injection safety, diagnosis, management. Moreover, information obtained on local practices can provide more insights as to the areas that need more training. No difference in the knowledge score between those who have attended training over the past two years and those who haven't indicates the ineffectiveness of previous trainings.

Conclusion

In conclusion, there is an urgent need to improve viral hepatitis prevention, care and treatment among healthcare workers in Vietnam through the implementation of more practical measures and trainings. Hence, to address the gap in healthcare workers viral hepatitis education and training, we would develop a Vietnamese online interactive training course to increase the capacity of the national health system to prevent, care and treat chronic hepatitis B. This is to meet the goals of the national action plan towards eliminating hepatitis B as a major public health problem in the near future.

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