HBsAg PREVALENCE AND KNOWLEDGE ON HEPATITIS B AMONG STIENG TRIBE ADULTS IN BINH PHUOC PROVINCE, VIETNAM

Ai Thien Nhan Lam, Khemika Yamarat*, Robert Sedgwick Chapman

College of Public Health Sciences, Chulalongkorn University, Bangkok 10330, Thailand

ABSTRACT: Hepatitis B virus infection remains a major public health problem in Vietnam. About 10 percent of the population lives with chronic HBV infection and in a recent year there were 23,300 deaths related to HBV. However, there has been limited data about hepatitis B infection, especially among ethnic groups. A cross-sectional study aims to determine the HBsAg prevalence and knowledge on hepatitis B among Stieng tribe adults in Binh Phuoc province. Multi-stage sampling was used to select 357 participants. Demographic, knowledge on HBV and health behavior information was gathered. Serum samples were taken to test for HBsAg prevalence. The study found that the prevalence of the hepatitis B surface was 16.2%. More than half of the participants answered that had never heard about Hepatitis B (52.4%), 23% of the participant had a low level of knowledge, and only 24.6% had a high level of knowledge. There was a significant association between HBsAg and gender (*p-value* = 0.012) with males having a higher level than females. There were significant associations with levels of knowledge and certain personal characteristics: education (*p-value* < 0.001), occupation (*p-value* = 0.001), history of HBV infection or liver diseases (*p-value* < 0.001) and history of family member with HBV infection or liver diseases (*p-value* < 0.001). In conclusions, there was a high overall prevalence of HBsAg positive (16.2%). The prevalence of HBsAg was significantly higher in males than females. Education, occupation, history of HBV infection or liver diseases and history of family members with HBV infection or liver diseases associated significantly with knowledge levels. This study is the first study providing an estimate of revalence and factors associated with hepatitis B infection among Stieng tribe adults. The prevalence of HBsAg is quite high among Stieng tribe adults; therefore the government and Ministry of Health should consider health strategies for this group. A campaign for HBV prevention and control needs to be launched to draw attention from the government, the Ministry of Health and the villagers. There is a need to educate and create knowledge on hepatitis B among the villagers, and especially among the farmers and those with low education levels.

Keywords: Hepatitis B, Virus infection, Stieng tribe, Vietnam.

INTRODUCTION

Hepatitis B virus (HBV) infection remains a major global problem. All over the world, there are two billion people previously infected, and more than 350 to 400 million people have developed chronic HBV infection causing one million HBV-related deaths each year [1]. Asians have the highest rate of HBV infection, although hepatitis B can infect anyone. According to the Asian Liver Center at Stanford University, there are 260 million chronic carriers of HBV living in Asia; this is two-thirds of chronic carriers of HBV in the world [2]. HBV infection remains a major public health problem in Vietnam. About 10% of the population lives with chronic HBV infection and there were 23,300 deaths related to HBV [3] in 2005. HBV prevention and control in Vietnam is the only universal infant vaccination program, was introduced in late 2003.

Therefore, the children born before 2003 did not have HBV vaccination. According to previous studies, people in rural areas have a high prevalence of HBsAg positive (19.0%) in Northern Vietnam [4], 16.4% in the rural areas of Central Vietnam, and in rural Southern Vietnam 11.0% in the general population [4]. There are studies on hepatitis B in Vietnam but as yet few data exist for the ethnic groups. The Stieng tribe is the largest ethnic group with 9.4% of the population in Binh Phuoc which is a mountainous province. The Stieng are mostly farmers with low incomes and living in remote areas, having low educational levels, and therefore lacking health care and health information. This study aims to determine the HBsAg prevalence and

* *Correspondence to: Khemika Yamarat*
E-mail: Khemika.Y@Chula.ac.th

knowledge on hepatitis B among Stieng tribe adults who are living in Binh Phuoc province.

METHODS

This cross-sectional study was conducted in Binh Phuoc province, among Stieng tribe adults age 18 to 49 with no hearing or mental problems and willing to participate. Multi-stage sampling is used in this study. After selecting randomly one district in three districts with the largest Stieng populations, researcher selected one village in this district by randomly picking one village name out of eighteen village names. Researcher selected randomly three hamlets in this village by picking three names from seven names and from the name's list of each hamlet. According to the Stieng population in each hamlet, calculating probability was used (total sample size divide by total number of household, probability was 0.5). Therefore, each person had the same chance of being selected. Three hundred and sixty-seven people were selected and given invitation cards to participate in this study. Final, there were 357 people participated.

After receiving proposal approval from the ethical committee of Hanoi School of Public Health and permission from local government, the study team started data collection on 26th – 27th February 2012. The participants were sent invitation cards to come to the community house in their hamlet to have blood drawn and be interviewed according to the appointment on the card. The responsibility for drawing blood and testing was with a technical team working in the laboratory and clinic of the Institute of Hygiene and Public Health. This standardized the procedures for blood drawing and handling of serum samples. The questionnaire was adapted from a previous study [5] about knowledge on HBV infection (among Vietnamese Americans in the United States) and was translated into Vietnamese and tested for reliability (Kuder-Richardson = 0.85). This was done in the same Stieng adult tribe in Binh Phuoc province but in a different district. Moreover, questionnaire design benefited from consultation with three experts in the College of Public Health Sciences, Chulalongkorn University. For the interview team, we choose the Stieng people who had graduated at least from secondary-school and were fluent in the Vietnamese and Stieng languages and had been trained in interview skills. Statistical package for the social sciences (SPSS) software version 17 were performed. The analysis was carried out at two parts: descriptive, and association analysis.

Table 1 Characteristics and socio-demographics of subjects

Characteristic	Frequency	Percentage
Gender		
Male	150	42.0
Female	207	58.0
Age (Mean, SD)	(32.42 ±9.75)	
18 – 24	101	28.3
25 – 34	110	30.8
35 – 44	86	24.1
45 – 49	60	16.8
Education		
Cannot read and write	163	45.7
Primary	113	31.7
Secondary	49	13.7
> Secondary	32	9.0
Marital status		
Single	100	28.0
Married	237	66.4
Divorced/Separated	2	0.6
Widowed	18	5.0
Occupation		
Farmer	333	93.3
Worker	5	1.4
Housewife	6	1.7
Student	13	3.6
Money to meet needs		
Not at all	132	37.0
A little	93	26.1
Moderately	124	34.7
Mostly	5	1.4
Completely	3	0.8
Family member (Mean, SD, Min, Max)	(6.31 ±2.62 2 - 20)	
Small (≤ 4)	91	25.5
Medium (5 – 8)	219	61.3
Large (> 8)	47	13.2
History of HBV infection		
Yes	32	9.0
No	7	2.0
Don't know	318	89.1
History of family member with HBV infection		
Yes	52	14.6
No	3	0.8
Don't know	302	84.6

RESULTS

HBsAg prevalence

After testing 357 participants, the results show that there were 58 HBsAg positive participants (16.2%).

Characteristics of the subjects

The mean age of the participants was 32.4. There were more females (58%) than males (42%). Nearly half of the participants cannot read and write (45.7%), 31.7% had studied in primary school, only 13.7% the participants had studied in secondary school, and very few had studied beyond secondary school (9%). More than half of the participants

Table 2 Knowledge on hepatitis B

Knowledge on HBV	Correct answer (%)
Ever heard about HBV infection. (n=357)	47.6
Hepatitis B is more easily spread from person to person than AIDS. (n=170)	24.7
Someone is infected with hepatitis B but they look and feel healthy, that person can spread hepatitis B. (n=170)	40.6
Hepatitis B can be spread by eating food prepared by an infected person. (n=170)	13.5
Hepatitis B can be spread by sharing a toothbrush with an infected person. (n=170)	57.6
Hepatitis B can be spread by eating food that has been pre-chewed by an infected person. (n=170)	54.7
Hepatitis B can be spread by being coughed on by an infected person. (n=170)	10.0
Hepatitis B can be spread by having sexual intercourse with an infected person. (n=170)	44.7
Hepatitis B can be spread by holding hands with an infected person. (n=170)	38.8
People with hepatitis B can be infected for life. (n=170)	81.2
Hepatitis B can cause liver cancer. (n=170)	76.5
Someone can die from hepatitis B. (n=170)	85.3
Hepatitis B disease can be cured. (n=170)	5.3

Table 3 Association between HBsAg test result and level of knowledge

Level of knowledge	Percentage	HBsAg test		*p-value*
		Negative	Positive	
0 score	52.4	161 (86.1)	26 (13.9)	0.075
1-6 score	23.0	62 (75.6)	20 (24.4)	
> 6 score	24.6	76 (86.4)	12 (13.6)	

were married (66.4%). The majority of their occupations were farmer (93.3%). With regard to income, about 37% did not have enough money to meet their needs. The mean of the number of people living in their houses was 6.31. Most of the respondents did not know whether they themselves or their family members had had HBV infection or liver disease in the past or not (89.1% and 84.6%) (Table 1).

Knowledge on HBV

Participants were asked about the transmission and sequelae of HBV with 13 questions, and more than half of them answered that had never heard about HBV (52.4%). Among the participants who had heard about HBV, only 24.7% answered correctly that "HBV is more easily spread from person to person than AIDS," and 40.6% knew that HBV can spread from an infected person who looks and feels healthy. Very few of the participants knew that HBV cannot spread by eating food prepared by an infected person (13.5%), 57.6% and 54.7% answered that HBV can spread by sharing a toothbrush with an infected person and eating food that has been pre-chewed by an infected person. That HBV cannot be spread by being coughed upon by an infected person was answered correctly by only 10.0%, and 44.7% of the participants answered that HBV can be spread by having sexual intercourse with an infected person. Less than four fifths of the participants (38.8%) knew that HBV cannot be spread by holding hands with an infected person. As for the sequelae of HBV, 81.2% knew that it can be an infection for life and 76.5% knew that it can cause liver cancer. That someone can die from hepatitis B was answered correctly by 85.3% of the participants but only 5.3% of them knew that hepatitis B disease cannot be cured completely (Table 2). Knowledge on hepatitis B of the participants was divided into three levels. The first level was the more than half of the participants (52.4%) who did not have any knowledge about hepatitis B. The next was the group of participants (23%) with a low level of knowledge on HBV who answered correctly fewer than six questions. Another 24.6% of the participants were at a high level of knowledge on hepatitis B; they answered correctly at least seven questions (Table 3).

Association between characteristics, knowledge and outcome (HBsAg)

There was a significant association between gender and hepatitis B infection (*p-value* = 0.012). The male prevalence of HBsAg positive is 22% while the female was 12.1% (Table 4). Although the Hepatitis B infection rate was higher in the group with the second level of knowledge on HBV (24.4%) compared with the group with a 0 score (13.9%) and the group with a score of 6 or over (13.6%), this difference was not statistically significant between knowledge levels and Hepatitis B infection (*p-value* = 0.075 >0.05) (Table 3).

Table 4 Association between HBsAg test result and characteristics

Characteristics and socio-demographics	HBsAg test		Chi-square	*p-value*
	Negative	Positive		
Gender				
Male	117 (78.0)	33 (22.0)	6.293	0.012
Female	182 (87.9)	25 (12.1)		
Age				
18 – 24	84 (83.2)	17 (16.8)	4.808	0.188
25 – 34	86 (78.2)	24 (21.8)		
35 – 44	76 (88.4)	10 (11.6)		
45 – 49	53 (88.3)	7 (11.7)		
Education				
< Secondary	276 (84.9)	49 (15.1)	3.645	0.056
≥ Secondary	23 (71.9)	9 (28.1)		
Marital status				
Single	84 (84)	16 (16)	0.647	0.723
Married	197 (83.1)	40 (16.9)		
Divorced/Widowed	18 (90.0)	2 (10.0)		
Occupation				
Non-Farmer	22 (91.7)	2 (8.3)	1.184	0.394*
Farmer	277 (83.2)	56 (16.8)		
Money to meet needs				
Not at all	111 (84.1)	21 (15.9)	1.478	0.477
A little	81 (87.1)	12 (12.9)		
≥ Moderately	107 (81.1)	25 (18.9)		
No. of family members				
Small (≤ 4)	73 (80.2)	18 (19.8)	1.933	0.380
Medium (5 - 8)	184 (80.0)	35 (16.0)		
Large (> 8)	42 (89.4)	5 (10.6)		
History of HBV infection or liver disease				
Yes	24 (75.0)	8 (25.0)	1.979	0.159
No/ don't know	275 (84.6)	50 (15.4)		
History of family member with HBV infection or liver disease				
Yes	42 (80.8)	10 (19.2)	0.398	0.528
No/ don't know	257 (84.3)	48 (15.7)		

There were significant associations between levels of knowledge and personal characteristic: education (*p-value* < 0.000), occupation (*p-value* = 0.001), history of HBV infection or liver diseases (*p-value* < 0.000) and history of family members with HBV infection or liver diseases (*p-value* < 0.000). There were insignificant associations between levels of knowledge with gender, age group, marital status, insufficient income for needs and family size (*p-value* > 0.05) (Table 5).

DISCUSSION

To our knowledge, this is the first study specific to a general population of Strieng tribal people on the prevalence of HBsAg and knowledge on HBV. In comparison to other studiesin Asia, the prevalence of HBsAg positive (16.2%) in Vietnam in this study was very much higher than in other countries such as the prevalence of HBsAg positive (4.4%) in the study of 4,000 adults in Northeast China [6] and 4.4% prevalence of HBsAg positive in the study of 700 adults in a rural area of South Korea [7], countries with a high prevalence of HBsAg according to WHO [8], or other countries that were cited from an article [9] on the prevalence of HBsAg in Laos (8%), Cambodia (9%) and Thailand (6-10%). the result presented here is also higher than in the study among adults in rural areas of Northern Vietnam [9] where HBsAg was 8.8%. However, our result is similar to another study in a rural population of Northern Vietnam, 19.0%, and 16.8% in a general population in Thanh Hoa province, both cited in "Hepatitis B Infection in Vietnam: Current Issue and Future Challenges" [2]. Only gender was significantly associated with the outcome HBsAg positive (*p-value* = 0.012) and this result is similar to a study of 4000 adults in Northeast China [6], and a study in two districts of Thanh Hoa province, Vietnam where the prevalence of HBsAg positive among males was higher than

Table 5 Association between characteristics and knowledge level

Characteristics	Knowledge levels			*p-value*
	No knowledge	Low	High	
Gender				
Male	71 (47.3)	36 (24.0)	43 (28.7)	0.215
Female	116 (56.0)	46 (22.2)	45 (21.7)	
Age				
18 – 24	49 (48.5)	24 (23.8)	28 (27.7)	0.435
25 – 34	55 (50.0)	24 (21.8)	31 (28.2)	
35 – 44	46 (53.5)	24 (27.9)	16 (18.6)	
45 – 49	37 (61.7)	10 (16.7)	13 (21.7)	
Education				
< Secondary	183 (56.3)	72 (22.2)	70 (21.5)	< 0.000
≥ Secondary	4 (12.5)	10 (31.2)	18 (56.2)	
Marital status				
Single	50 (50.0)	22 (22.0)	28 (28.0)	0.125
Married	123 (51.9)	54 (22.8)	60 (25.3)	
Divorced/Widowed	14 (70.0)	60 (30.0)	0	
Occupation				
Non-farmer	5 (20.8)	6 (25.0)	13 (54.2)	0.001
Farmer	182 (54.7)	76 (22.8)	75 (22.5)	
Money to meet needs				
Not at all	74 (56.1)	34 (25.8)	24 (18.2)	0.051
A little	40 (43.0)	26 (28.0)	27 (29.0)	
≥ Moderately	73 (55.3)	22 (16.7)	37 (28.0)	
Family member				
Small (≤ 4)	50 (54.9)	20 (22.0)	21 (23.1)	0.069
Medium (5 - 8)	115 (52.5)	56 (25.6)	48 (21.9)	
Large (> 8)	22 (46.8)	6 (12.8)	19 (40.4)	
History of HBV infection or liver disease				
No/ don't know	183 (56.3)	68 (20.9)	74 (22.8)	< 0.000
Yes	4 (12.5)	14 (43.8)	14 (43.8)	
History of family member with HBV infection or liver disease				
No/ don't know	173 (56.7)	64 (21.0)	68 (22.3)	< 0.000
Yes	14 (26.9)	18 (34.6)	20 (38.5)	

among females [10].

The prevalence of HBsAg positive in the group with a low level of knowledge on hepatitis B (24.4%) was higher than in the group that never heard about hepatitis B (13.9%) and in the high level of knowledge group (13.6%). The high prevalence of HBsAg in the low level of knowledge group may relate to a history of hepatitis B infection or liver diseases among the participants or participants' family members. They may know information about hepatitis B from their health provider during treatment or from family members or their neighborhoods but they may not understand the disease very clearly. In addition, in a study [11] among the patients in Binh Phuoc hospital in Binh Phuoc province about knowledge on HBV, the patients who had heard about Hepatitis B (78.02%) was higher than this study (47.6%). Those patients may had been provided health information on hepatitis B by health providers in the hospital.

Our participants who had high education were had more knowledge on HBV than the ones who had low education. Farmers had low knowledge on HBV than other occupations (workers, students). This may relate to educational differences among these groups. The participants or family members who had histories of HBV infection or liver diseases had more knowledge on HBV than other groups. This may relate to the provision of information by health providers.

The prevalence of HBsAg was quite high among Stieng tribe adults; therefore the government and the Ministry of Health should consider health strategies in this group. Promoting and campaigning for HBV prevention and control needs to be launched to draw attention from the government and the Ministry of Health. Education for knowledge on hepatitis B aimed at the low level of education group should be combined with good practices on health behavior. Information on HBV is also needed among the Stieng tribe through the media. Also important is maintaining a high

coverage rate of 3 doses of HBV immunization among infants. Most of the Stieng tribe are Christians, therefore the Health Department in the province can co-operate with the churches to educate church members about hepatitis B or with other local organizations. Health centers also can combine HBV with other infectious disease education. Further study can support interventions to improve knowledge on HBV and health behavior in the Stieng tribe.

ACKNOWLEDGEMENTS

I gratefully acknowledge to my advisor and Professor Robert Sedgwick Chapman, M.D, M.P.H for your advising. This paper is publishing with partial support provided by the funds made available under the Higher Education Research Promotion and National Research University Project of Thailand, Office of the Higher Education (Project AS1148A).

REFERENCES

1. World Health Organization [WHO]. Hepatitis B fact sheet no. 204. [cited 16 April 2012]. Available from: http://www.who.int/mediacentre/factsheets/fs204/en/print.html
2. Nguyen VT. Hepatitis B infection in Vietnam: current issue and future challenges. Asia Pac J Public Health. 2012 Mar; 24(2): 361-73. doi: 10.1177/1010539510385220.
3. Nguyen VT, Law MG, Dore GJ. An enormous hepatitis B virus-related liver disease burden projected in Vietnam by 2025. Liver Int. 2008 Apr; 28(4): 525-31. doi: 10.1111/ j. 1478-3231. 2007. 01646. x.
4. Nguyen VT, McLaw ML, Dore GJ. Highly endemic hepatitis B infection in rural Vietnam. Sydney: School of Public Health and Community Medicine, The University of New South Wales; 2007.
5. Taylor VM, Choe JH, Yasui Y, Li L, Burke N, Jackson JC. Hepatitis B awareness, testing, and knowledge among Vietnamese American men and women. J Community Health. 2005 Dec; 30(6): 477-90.
6. Zhang H, Li Q, Sun J, Wang C, Gu Q, Feng X, et al. Seroprevalence and risk factors for hepatitis B infection in an adult population in Northeast China. Int J Med Sci. 2011; 8(4): 321-31.
7. Shin HR, Kim JY, Kim JI, Lee DH, Yoo KY, Lee DS, et al. Hepatitis B and C virus prevalence in a rural area of South Korea: the role of acupuncture. Br J Cancer. 2002 Jul 29; 87(3): 314-8.
8. World Health Organization [WHO]. Hepatitis B surface antigen assays: operational characteristics (Phase1).
9. Duong TH, Nguyen PH, Henley K, Peters M. Risk factor for hepatitis B infection in rural Vietnam. Asian Pac J Cancer Prev. 2009 Jan-Mar; 10(1): 97-102.
10. Hipgrave DB, Nguyen TV, Vu MH, Hoang TL, Do TD, Tran NT, et al. Hepatitis B infection in rural Vietnam and the implications for a national program of infant immunisation. Am J Trop Med Hyg. 2003 Sep; 69(3): 288-94.
11. Ly VX, Phan TQ. KAP of patients and relevant factors on prevention of viral B hepatitis at Binh Phuoc hospital in March 2009. Y Hoc TP Ho Chi Minh. 2010; 14(Supl 1): 189-95.