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The Percentage of Hepatitis B Virus (HBV) Infection and Related Factors in Southern Khmer Ethnicity from 18 to 60 years old in Vietnam in 2021

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Abstract
Introduction*: Hepatitis B is one of the leading causes of ill health globally. Although Vietnam currently has a vaccine to prevent HBV, there is no specific treatment to remove it from infected cells altogether. Especially in the Khmer ethnic minority, they face many difficulties accessing and receiving medical care.*
Objective*: Determine the prevalence of hepatitis B virus infection and related factors in Southern Khmer ethnicity from 18 to 60 years old in Tra Cu District, Tra Vinh Province, in 2021.*
Research subjects and methods*: A cross-sectional study was conducted on 420 Southern Khmer from 18 to 60 years old living in some communes of Tra Cu District, Tra Vinh Province.*
Results*: The rate of hepatitis infection was 6.7%, found a statistically significant relationship between the rate of HBV infection and subjects who had experiences with skin stitches, acupuncture, or had a relative who was diagnosed with HBV (p < 0.05).*
Conclusion*: The rate of hepatitis B virus infection is 6.7%. The study also offers some interventions to prevent and limit the spread of the virus to local people and communities.*
Keywords: *Hepatitis B Virus, The percentage of Hepatitis B virus infection*

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I. Introduction

Hepatitis B is one of the major causes of poor health globally, especially in low- and middle-income countries. [10]. Hepatitis B virus is 50 to 100 times more infectious than HIV, causing death in infected people [3,8].

The prevalence of hepatitis B virus infection varies by geographic area. Mediterranean region, Southeast Asia region, Europe region 3.3%, 2.0% and 1.6% [11]. Like other countries in Southeast Asia, Vietnam is a country with a high rate of hepatitis B infection in the world.

In Vietnam, the prevalence of the hepatitis B virus in the population is 15-25%. In addition, in Vietnam, the number of people with chronic HBV infection is high, with 8.1%, and the country ranks 4th out of 10 countries. Furthermore, countries globally have a high incidence of liver cancer (23.2%) associated with hepatitis B and C [7]. According to WHO's national statistical disease burden estimate, in Vietnam in 2017, there were 7,820,525 people with chronic hepatitis B virus and 33,481 deaths [5,9].

The Khmer are an ethnic minority group mainly in the Southwest region of Vietnam, with difficult socio-economic conditions. Studies in this community are few; research on hepatitis B is almost nonexistent. Tra Cu is a remote district of Tra Vinh province. Khmer people account for 62.25% of the population. People face many difficulties in accessing and receiving medical care[1]. For the reasons mentioned above, the study on "Hepatitis B virus infection rate and related factors in Southern Khmer people in Tra Cu district, Tra Vinh province in 2021" is necessary. Therefore, the study was carried out with the following two research objectives.

1. Determining the prevalence of hepatitis B virus infection among Khmer people in the South from 18 to 60 years old living in Tra Cu district, Tra Vinh province in 2021.
2. Determining the relationship between hepatitis B virus infection with the subjects' characteristics and risk factors: Family history of the disease, knowledge, risk factors in health care, beauty activities, living.

II. Methodology

2.1 Research subjects

Southern Khmer people aged 18-60 living in Tra Cu district, Tra Vinh province at the study.

2.2 Time and place of study

Research duration: 01/06/2020 - 30/05/2021

Research place: Tra Cu District, Tra Vinh Province, Vietnam.

2.3 Sample size

The sample was calculated the following formula:

$$n = Z^2_{(1-\alpha/2)} x \frac{p(1-p)}{d^2} x \text{ DE}$$

$Z_{(1-\alpha/2)} = 1.96$ with sigificant 95%.

p = 0.09 (based on the research in Tien Giang, Vietnam) [1].

d = 0.045, the selected errors.The design error (DE) = 2.

$n= 1,96^2 x (0,09x0,91:0,045^2) x 2= 311 < 420$ participants in the research.

2.4 Collecting data

Data was collected by cluster, which was the commune.

Research subjects: Khmer people from 18 to 60 years old lived in communes in Tra Vinh province, Vietnam.

Data collection method: face-to-face interviews with questionnaires

III. Results

Table 3.1 *The prevalence of hepatitis B virus infection in study subjects (n = 420)*

	Frequency	**Percentage**
HBsAg (+)	28	6.7
HBsAg (-)	392	93.3
Total	420	100

According to the results of this study, the rate of hepatitis B infection among Khmer people in the South of Tra Cu district, Tra Vinh province has 28 participants out of 420 study participants with positive results for hepatitis B (6.7%).

Table 3.2 *The relationship between hepatitis B infection and hepatitis B prevention practices in medical practice (n = 420)*

Exposure	**HBsAg (+)**		**P**	**PR (95% interval)**
	Yes number (%)	**No number (%)**		
Preventive injection				
Yes	6 (15%)	34 (85%)	**0.039***	1
No	22 (5.8%)	358 (94.2%)		**0.39 (0.17 – 0.89)**
Blood Transfusion				
Yes	26 (7.4%)	326 (92.6%)	0.285*	2.51 (0.61 – 10.33)
No	2 (2.9%)	66 (97.1)		1
Having Surgery				
Yes	19 (12.6%)	132 (87.4%)	**0.000***	**3.76 (1.75 – 8.10)**
No	9 (3.4%)	260 (96.6%)		**1**
Stitched Skin				
Yes	23 (13%)	154 (87%)	**0.000***	**6.32 (2.45 – 16.29)**
No	5 (2.1%)	238 (97.9%)		**1**
Dental Treatment				
Yes	20 (10.8%)	165 (89.2%)	**0,003***	**3.18 (1.43 – 7.05)**
No	8 (3.4%)	227 (96.6%)		**1**
Acupuncture				
Yes	15 (12.2%)	108 (87.8%)	**0,004***	**2.79 (1.37 – 5.68)**
No	13 (4.4%)	284 (95.6%)		**1**
Injected Skin Boils				
Yes	10 (13.9%)	62 (86.1%)	**0,016***	**2.69 (1.29 – 5.57)**
No	18 (5.2%)	330 (94.8%)		**1**

**** Fisher's test***

The rates of subjects who get preventive vaccination for hepatitis B virus (15%) were 2.59 times higher than those who did not (5.8%). The rate of hepatitis B virus infection in subjects who did not get the surgery and stitched skin was 3.76 times and 6.32 times higher than those who never had surgery and stitched skin, respectively, with $p < 0.05$. Subjects who had undergone dental treatment had an infection rate (10.8%) 3.18 times higher than those who had never had dental treatment. Subjects who had received acupuncture had an infection rate (12.2%) higher than 2.79 times. Subjects had never had acupuncture. Vaccination of skin boils (13.9%) with hepatitis B virus infection rate. Subjects who had ever injected skin boils had a hepatitis B infection rate 2.69 times higher than subjects who never injected skin boils.

Table 3.3 *The relationship between hepatitis B infection and hepatitis B prevention practices in beauty activities (n = 420)*

Expose	HBsAg (+)		P	PR (95% interval)
	Yes n(%)	No n(%)		
Lip Spraying Tattoo				
Yes	10 (17.2%)	48 (82.8%)	**0,002***	**3,47 (1,69 – 7,14)**
No	18 (5%)	344 (95%)		**1**
Tattoo				
Yes	5 (16.1%)	26 (83.9%)	**0,046***	**2,73 (1,11 – 6,68)**
No	23 (5.9%)	366 (94.1%)		**1**
Using Acne removal Tools				
Yes	9 (16.4%)	46 (83.6%)	**0,006***	**3,14 (1,50 – 6,59)**
No	19 (5.2%)	346 (94.8%)		**1**

**** Fisher's test***

The percentage of subjects who used to spray lip tattoo (17.2%) and get a tattoo (16.1%) and use acne removal tools (16.4%) was 3.47 times higher, 2, 4 times higher, respectively. Seventy-three times and 3.14 times compared to subjects who had never tattooed their lips, eyebrows and subjects who had never tattooed and used the same tools to remove acne.

Table 3.4 *The relationship between hepatitis B infection and hepatitis B prevention practices in daily life (n = 420)*

Expose	HBsAg (+)		P	PR (95% interval)
	Yes n(%)	No n(%)		
Sharing Toothbrushes				
Yes	6 (15.8%)	32 (84.2%)	**0,031***	**2,74 (1,18 – 6,34)**
No	22 (5.8%)	360 (94.2%)		**1**
Sharing Shaver				
Yes	5 (9.4%)	48 (90.6%)	0,377*	1,51 (0,60 – 3,79)
No	23 (6.3%)	344 (93.7%)		1
Sharing Hair Trimmer				
Yes	8 (6.6%)	113 (93.4%)	0,997	0,99 (0,45 – 2,18)
No	20 (6.7%)	279 (93.3%)		1

**** Fisher's test***

The results showed that the rate of hepatitis B infection was 2.74 times higher for the people who used to share toothbrushes than subjects who did not perform these behaviors.

Table 3.5 *History of hepatitis B virus infection (n = 420)*

Expose	HBsAg (+)		P	PR (95% interval)
	Yes n(%)	No n(%)		
Relatives with hepatitis B				
Yes	6 (35.3%)	11 (64.7%)	**p<0,001**	**6,47 (3,02 – 13,84)**
No	22 (5.5%)	381 (94.54%)		**1**

The rate of subjects with relatives infected with hepatitis B had an infection rate (35.3%) 6.47 times higher than subjects with no relatives diagnosed with hepatitis B virus.

Table 3.6 *Factors associated with the prevalence of hepatitis B virus infection multivariable regression model (n = 420)*

Expose	Model		Multivariable Regression Model	
	p	PR (95% interval)	p_a	PR_a (95% interval)
Stitched Skin				
Yes	**p<0,001**	6,32 (2,45 – 16,29)	**0,013**	3,53 (1,31 – 9,52)
No		1		1
Acupuncture				
Yes	**0,004**	2,79 (1,37 – 5,68)	**0,008**	3,05 (1,33 – 6,99)
No		1		1
Relatives who get Hepatitis B				
Yes	**p < 0,001**	6,47 (3,02 – 13,84)	**p < 0,001**	7,18 (2,64 – 19,48)
No		1		1

After removing confounding variables, the remaining variables are the actual potential variables (stitched skin, get acupuncture, relatives who get hepatitis B) associated with the infection rate of hepatitis B with $p < 0.05$. Specifically, participants who have had stitched skin have a higher rate of hepatitis B virus infection than 3.53 times (95% interval = 1.31 - 9.52) than subjects who have never had stitched skin with $p = 0.013$. In addition, participants who used acupuncture had a higher rate of hepatitis B virus infection than 3.05 times (1.33 - 6.99) than those who had never had acupuncture with $p = 0.008$. Finally, participants whose relatives were diagnosed with HBV had a 7.18 times higher rate of hepatitis B infection (2.64 - 19.48) compared with participants who had no relatives diagnosed with HBV with $p < 0.001$.

IV. Discussions

According to the results of this study, the prevalence of hepatitis B infection among Khmer people in the South of Tra Cu district, Tra Vinh province has 28 subjects out of 420 research subjects with positive results for hepatitis B (6,7). %). Consistent with the study of Ta Van Tram and Tran Thanh Hai on the prevalence of hepatitis B virus in the community of Tien Giang province in 2015 and the risk factors, the results showed that the hepatitis B virus infection rate was 9% [(6)].

There was a statistically significant relationship between the hepatitis B virus infection rate and vaccination practice in this study, $p < 0.05$. The proportion of subjects who practiced vaccination against the hepatitis B virus (15%) was 2.59 times higher than those who did not practice vaccination (5.8%). Compared with the study of Nguyen Thi Ngoc Bich, showing conflicting results, the percentage of people infected with hepatitis B virus in vaccinated practice subjects (0.7%) is lower than that in vaccinated subjects. Not practicing vaccination (63.3%) [(2)]. This study can explain that the subjects who come to participate in the study are mainly women and are 18-50 years old. Although they have been vaccinated, they do not have time to go to the doctor or get an injection. Again, there may be many difficulties in walking, or it may be due to the subjectivity of the study subjects themselves, which increases the rate of hepatitis B virus infection in vaccinated subjects. This result is consistent with the characteristics of the local population [(1)].

Women dominate the percentage of subjects who come to participate in the research. Most of the family's economy is at a good level - enough to eat, so there will be conditions and easy access to beauty activities. However, the education of the study participants was mainly at the elementary level. Very few people will know about infection in beauty activities (tattooing, lip tattooing, ear piercing, sharing acne removal tools)

(1). This result is likely to increase the risk of hepatitis B virus infection during beauty activities. In this study, we found a statistically significant relationship between the rate of hepatitis B virus infection with the behaviors of ever tattooing eyebrows, lips, tattooing, and sharing tools. take acne kernels $p < 0.05$. Not only that, the study showed a statistically significant relationship between the behaviors of sharing toothbrushes with the rate of hepatitis B virus infection.

Our study results show a statistically significant relationship between the rate of hepatitis B infection and the subjects with relatives diagnosed with hepatitis B virus. The percentage of subjects with infected relatives Hepatitis B prevalence (35.3%) is 6.47 times higher than that of subjects with no relatives diagnosed with hepatitis B virus $p < 0.05$.

V. Conclusion

The hepatitis B virus infection rate with HbsAg (+) was (6.7%). There is a statistically significant relationship between the incidence of hepatitis B and: history of skin stitches, acupuncture, and having a relative with HBV

VI. Recommendation

Health facilities need to strengthen scientific research activities on hepatitis B in Khmer people, especially case-control studies, to have higher applicability. Organize communication and health education activities on transmission routes, consequences, prevention methods, and behaviors at risk of local hepatitis B infection, primarily through the media.

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