

INTRODUCTION

Hepatitis B (HGB) is one of the most common and serious infectious diseases globally. About one-third of the world's population has been infected with hepatitis B virus (HBV), with about 5% being chronic carriers and a quarter of those at risk of developing serious liver diseases such as chronic hepatitis. liver disease, cirrhosis and Hepatocellular carcinoma.

In Vietnam, thanks to the introduction of HBV vaccine into the Expanded Program on Immunization (EPI) since 1997, the rate of HBV infection in children of vaccination age has decreased markedly. According to the Global Burden of Disease Assessment of the year 2019, the prevalence of HBV infection among children under 5 years of age has decreased from 7.6% (1990) to 0.8% (2015) and 0.7% (2019). However, Vietnam is still in the group of countries with a high HBV infection rate of over 8% with about 7.7 million people carrying the disease. People of unvaccinated age often have a higher rate of HBV infection and are one of the priority groups in the current HBV infection prevention strategy. Raising people's knowledge and improving practices on HBV prevention are important solutions to reduce the risks of HBV infection. Currently, people have better access to many different sources of information about HBV disease and measures to prevent infection. However, some recent studies show that the knowledge, attitudes and practices of people in the community on preventing HBV infection are still limited.

In Quang Binh province, there are currently no intervention studies on HBV prevention, while the community is demanding the implementation of more active prevention measures. On the other hand, previous studies have only focused on studying in urban areas and have not expanded to mountainous and coastal areas, which are priority areas in the province's socio-economic development strategy, where it is still difficult for people to have access to medical services.

In the above-mentioned context and practical needs, we have conducted the study with the following objectives:

STUDY OBJECTIVES

1) To describe the status of hepatitis B virus infection and some related factors in adults aged 20 - 60 in 2 mountainous communes and 2 coastal communes of Quang Binh province in 2018.

2) To describe the current status of knowledge, attitude and practice on prevention of hepatitis B virus infection in adults aged 20 - 60 in 2 mountainous communes and 2 coastal communes of Quang Binh province in 2018.

3) To evaluate the effectiveness of a number of intervention measures to improve knowledge, attitudes and practices on preventing hepatitis B virus infection in adults aged 20 - 60 in 2 mountainous communes and 2 coastal communes of Quang Binh province in 2018-2019.

SIGNIFICANCE AND NEW CONTRIBUTION OF THE THESIS

1. The topic has described the current situation of hepatitis B virus infection in adults aged 20-60 in 2 mountainous and coastal communes of Quang Binh province at 7.9%. This result contributes to the epidemiological picture of hepatitis B virus infection in Vietnam as well as in the world. At the same time, it shows that some related factors of HBV infection status in this subject are age group, education and tattooing behavior.

2. The results of the study showed that the current state of knowledge and correct practice of the study subjects on preventing hepatitis B virus infection is quite low. Only 38.2% of adults aged 20-60 have ever had access to information about HBV; 85.7% of the subjects knew that the causative agent was a virus; 65.0% of the subjects knew all the transmission routes of the disease; 59.1% of subjects fully knew about subjects at high risk of disease; 58.9% of the subjects knew all about infection prevention measures.

3. The results of the study also showed the effectiveness of a number of intervention measures to improve knowledge, attitudes, and behaviors to prevent HBV infection in adults. The rate of access to

information about HBV increased from 39.3% before intervention to 90.2% after intervention in the intervention group and 37.1% to 40.9% in the control group. There is a statistically significant difference between before and after intervention in the intervention group and between the two groups after intervention.

LAYOUT OF THE DISSERTATION

The dissertation consists of 135 pages (excluding the table of contents, references and appendices), including 4 chapters: Chapter 1: Literature review, 37 pages; Chapter 2: Subjects and research methodology, 28 pages; Chapter 3: Research results, 33 pages; Chapter 4: Discussions, 32 pages. The dissertation has 31 tables, 10 charts and 180 references.

Chapter 1.

LITERATURE REVIEW

1.1. Overview of hepatitis B virus

HBV is a virus belonging to the Orthohepadnavirus genus of the family Hepadnaviridae, with a spherical particle shape of about 42 nm in diameter with a 3-layer structure including: outer uncoated layer, middle Nucleocapside layer and innermost core layer. HBV is transmitted by blood or blood products with an incubation period after blood transfusion of 60-180 days. The virus can also be transmitted through sharing needles when injecting drugs, through some unsafe daily activities such as tattooing, piercing, etc. This transmission route is common in areas with moderate and low HBV prevalence. The rate of HBV infection through direct and long-term sexual intercourse if the subject has HBsAg (+) especially HBeAg (+) and DNA polymerase with high activity is up to 78.3%. Vertical transmission from mother to child mainly occurs around the time of labor, only about 2-5% of cases are transmitted in utero and there is no evidence of transmission through breast milk. The risk of transmission from mother to child depends on the viral load and the presence of HBeAg antigen. The risk of infection

increases from 10-40% in mothers with HBeAg (-) to 70-90% in those with HBeAg. This route of transmission accounts for up to 60% of viral infections in children and is most common in high endemic areas, such as, Southeast Asia, China, and most of Africa.

1.2. Current status of Hepatitis B virus infection and related factors

1.2.1. Current status of Hepatitis B virus infection

According to WHO estimates, in 2019 there were 296 million people globally with chronic HBV infection, of which only about 30.4 million people (accounting for 10.5% of the total number of chronic infections) were diagnosed. guess. In addition, each year, about 1.5 million people are newly infected with chronic virus and 820,000 people die from HBV, mainly due to cirrhosis and hepatocellular cancer.

In Southeast Asia, according to the latest estimates in 2016, the average HBV infection rate is 8.6% with more than 44.9 million HBsAg carriers. Among them, the three countries with the highest rate of HBV infection are the Philippines (16.7%), Vietnam (10%) and Myanmar (9.7%). With a prevalence rate of 7.1%, Indonesia has the highest number of chronic HBV infections in the region with nearly 17.7 million people; followed by the Philippines with 10.1 million people and Vietnam with 7.7 million people with chronic HBsAg.

Vietnam is in the group of countries with a high HBV infection rate of over 8%. The prevalence of chronic HBV infection fluctuates around 12% according to WHO estimates in 2015 and 10% according to a 2016 meta-analysis. Community studies show that the prevalence of HBV infection in healthy adults fluctuates. from 5.7% to 27.4% depending on the area and research subjects.

In Quang Binh, we have not received information on the prevalence of HBV infection before the time of vaccination against HBV. Recently, there have been a number of studies on HBV infection in adult subjects. The study of Do Quoc Tiep on 592 subjects tested at

the Center for Preventive Medicine in Quang Binh province showed that the overall hepatitis B infection rate was 11.3% (8.8% carried HBsAg and 2.5% had Anti-HBs antibodies). This rate is higher in women than in men (14.0% and 9.5%) and the rate in rural areas is equivalent to that in urban areas (11.3% and 10.8%).

1.2.1. Factors related to hepatitis B virus infection

In addition to differences between geographical areas and countries as presented above, there are many other factors related to HBV infection, depending on the target group and the routes of infection. Factors related to HBV infection in the general community can be divided into 4 main groups: (1) demographic factors; (2) socioeconomic conditions, (2) behavioral and historical factors, and (4) the group of factors characterizing the mechanism of vertical transmission from mother to child.

1.3. Current status of knowledge, attitude, and practice of preventing HBV infection

Community awareness and practice of HBV disease and prevention measures is also an important factor related to the level of HBV infection. Many studies have shown that countries with high prevalence rates are also places where people's knowledge, attitudes and behaviors to prevent HBV infection are limited. The study by Gebrecherkos (2020) shows that 73.4% of pregnant women in Ethiopia have poor knowledge. Only 18.9% of these pregnant women know that HBV can be transmitted from mother to child during pregnancy; Nearly half of them (43.8) thought they would never be infected with HBV. Health care workers (HCWs) often have better knowledge, attitudes and practices to prevent HBV infection. Mursy's study in Sudan shows that 58.2% of nurses and midwives have correct knowledge, 86.4% have positive attitudes and 65.5% have safe practices to prevent infection. HBV infection.

In Vietnam, research results in recent years show that Vietnamese residents' knowledge, attitudes, and practices about HBV are lower than those in other studies in the world. The study by Vu Dinh Son (2019) in Vinh Phuc shows that only 16.7% of people have satisfactory general knowledge and 47.5% have satisfactory general attitudes in preventing HBV infection. Le Thi Diem Trinh's study (2022) on Khmer people aged 18-60 in Tra Cu, Tra Vinh showed that 20% of the subjects had good general knowledge and 40% had good general practices in preventing HBV infection.

1.4. Strategies and solutions to prevent Hepatitis B virus infection

In 2016, the World Health Organization adopted the Global Strategy for Viral Hepatitis 2016-2021, aiming to end Viral Hepatitis. This strategy addresses all five hepatitis viruses (Hepatitis A, B, C, D and E), but focuses specifically on hepatitis B and C, due to their large impact on the health burden. public health.

In 2015, the Ministry of Health issued Decision No. 739/QĐ-BYT dated March 5, 2015, approving the Plan for prevention of viral hepatitis for the period 2015-2019, of which the prevention of hepatitis B is a key priority task. The overall goal of the Plan is to reduce transmission of hepatitis virus in general and HBV in particular and increase people's access to prevention, diagnosis, treatment and patient care services. There are 5 intervention strategies to prevent and eventually eliminate HBV. These strategies include: (1) vaccination to prevent diseases, (2) performing safe injections, infusions, and surgeries, (3) prevention of mother-to-child transmission; (4) interventions to reduce harms in injecting drug users; and (5) treatment for people with chronic HBV infection. In addition, solutions to raise community awareness about HBV prevention measures are also recommended, especially for developing countries.

Chapter 2. STUDY SUBJECTS AND METHODOLOGY

2.1. Research area, duration and subjects

Research area: The study was carried out in Minh Hoa and Quang Trach districts, Quang Binh province.

Research duration: The study was carried out during the period from January 2018 to December 2019.

Research subjects: People aged 20 to 60 are living in selected communes of the research area.

2.2. Research methodology

Research design:

The study consists of 2 phases, meeting 3 objectives: Phase 1: cross-sectional descriptive research design to serve the objective 1 and 2; Phase 2: community intervention study with comparison before and after intervention to serve the objective 3.

Cross-sectional sample size for objectives 1 and 2

$$n = Z_{1-\alpha/2}^2 \frac{p(1-p)}{(d)^2}$$

In which: n: minimum sample size; p: Rate of HBV infection in the community in the previous study; $Z_{(1-\alpha/2)}$: reliability coefficient, with $\alpha=0.05$ then $Z_{(1-\alpha/2)} = 1.96$. d: desired deviation between the obtained rate and the actual rate of the population. Substituting into the above formula we get $n=1015$. In fact, 1,120 people aged 20-60 were surveyed.

Sample size for community intervention for objective 3

$$\frac{\left(Z_{\frac{\alpha}{2}} \sqrt{2p(1-p)} + Z_{\beta} \sqrt{(p_1(1-p_1) + p_2(1-p_2))} \right)^2}{(p_2 - p_1)^2}$$

The minimum sample size of each group is 408 subjects. In fact, 560 subjects were investigated both before and after the intervention.

Sampling method:

Select districts: Select Minh Hoa district as a mountainous district and Quang Trach district as a coastal district.

Select communes: Randomly select 2 communes from each district for the study: In Minh Hoa district, Hoa Tien and Quy Hoa communes were selected; In Quang Trach district, Canh Duong and Canh Phu communes were selected.

Select subjects: In each commune, choose a starting point from a T-junction or intersection near the communal health centre, turn the pen to choose a direction, then conduct a house-to-house investigation to conduct interviews until there are enough 280 people/commune. If there are 2 or more eligible people in the household aged 20-60, a lottery will be drawn to randomly select only one participant.

Data collection method:

- Direct interview with subjects using a pre-prepared set of questions.

- Take a blood sample to test for HbsAg.

Some intervention activities:

- Organize training sessions periodically twice in the first and sixth months of the intervention for communication collaborators who are leaders of commune and village authorities; Representatives of associations and unions: women, youth union, front line, veterans; Commune health station staff, village health workers, teachers, etc.

- Enhance community communication activities for all people in the area through the following forms: Through the commune's loudspeaker system (weekly); through regular meetings (monthly, quarterly) of villages and mass organizations.

- Particularly for people infected with HBV, communication consultation will be conducted at home with the content focusing on measures to limit disease and complications and prevent infection; Health check and timely treatment when disease is detected.

Data processing:

Use STATA 17.0 software to analyze data. The applied statistical significance level is $\alpha=0.05$

Calculate the efficiency index to evaluate intervention effectiveness. Evaluate the efficiency index (%) of the intervention research group according to the following formula: efficiency index (%) = $(|p1 - p2|/p1) \times 100$. In which: p1: Evaluation index before intervention time. p2: Evaluation index after intervention time.

Chapter 3.
RESEARCH RESULTS

3.1. Current status of HBV infection in adults aged 20-60

Table 3.1. Some demographic characteristics of research subjects

Variable	Number (n)	Ratio (%)
Sex		
Male	294	26.2
Female	826	73.8
Age		
20 – 30	178	15.9
31 – 40	261	23.3
41 – 50	285	25.4
51 – 60	396	35.4
Mean ± SD	44.1±11.5	
Median number of family members (25%-75%)	4 (3-5)	
Median number of people in working age (25%-75%)	2 (2-3)	
Total	1,120	100.0

Of the 1,120 subjects participating in the initial survey, women made up the majority (73.8%). The average age of the research subjects is 44.1±11.5 years old with the structure of age groups gradually increasing from the lowest level of 15.9% in the 20-30 age group to the highest level of 35.4% in the 51-60 age group. In general, each household has 4 members, of which 2 members are of working age.

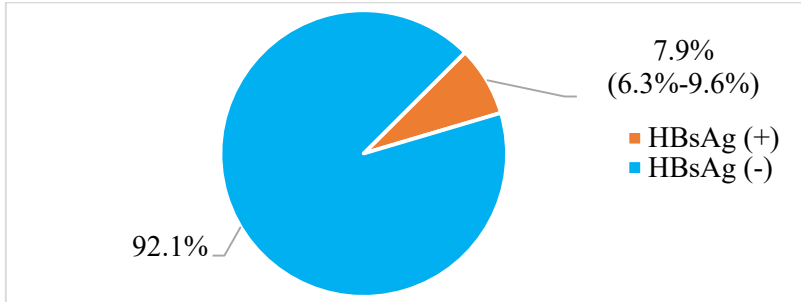


Chart 3.1. Prevalence of HBV infection in adults aged 20-60 (n=1120)

Survey results showed that 7.9% (6.3%-9.6%) of study subjects was infected with HBV (HBsAg +).

Table 3.2. Prevalence of HBV by communes

Communes	HBsAg (+)		HBsAg (-)		p
	n	95% CI	n	95% CI	
Minh Hoa (n=560)	34	6.1 (4.2-8.4)	526	93.9	0.026
Quang Trach (n=560)	54	9.6 (7.3-12.4)	506	90.4	
Total	88	7.9 (6.3-9.6)	1032	92.1	

The prevalence of HBV infection in the coastal plain area (Quang Trach) is OR = 9.6 (7.3-12.4), which is statistically significantly higher than in that in the mountainous area (Minh Hoa, with OR=6.1 (4.2-8.4); $p < 0.05$).

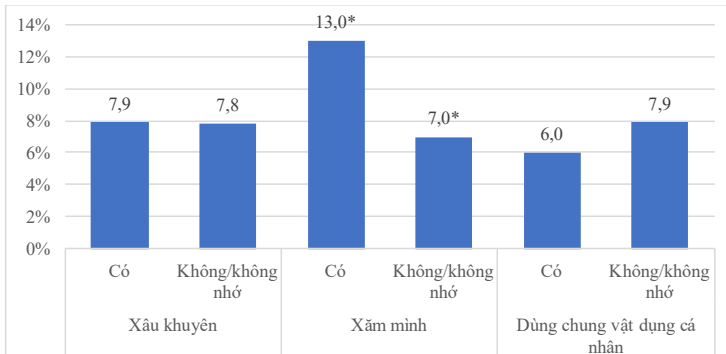


Chart 3.2. Prevalence of HBV infection according to personal history of risky behavior (n=1120)

The prevalence of HBV infection in the group with a history of tattooing (13.0%) was statistically significantly higher ($p < 0.05$) than that in the group without a history of tattooing (7.0%). Differences according to other historical factors such as piercings, sharing personal tools such as razors, etc. were not statistically significant ($p > 0.05$).

3.2. Knowledge, attitudes, and practices on preventing HBV infection

Table 3.3. Status of access to information about HBV disease

Access to information	Mountainous (n;%)	Seaside (n;%)	Total (n;%)
Have heard about VGB	(n=560)	(n=560)	(n=1120)
No	350 (62,5)	342 (61,1)	692 (61,8)
Yes	210 (37,5)	218 (38,9)	428 (38,2)
Information sources	(n=210)	(n=218)	(n=428)
Meetings and training	62 (29,5)	54 (24,8)	116 (27,1)
Books, newspapers, magazines	88 (38,1)	81 (37,2)	161 (37,6)
Radio, television, internet	148 (70,5)	151 (69,3)	299 (69,9)
Medical staff	124 (59,1)	146 (67,0)	270 (63,1)
Friends, relatives	62 (29,5)	67 (30,7)	129 (30,1)

38.2% of the study subjects had ever heard of (or have accessed information) about HBV disease, with the main sources of information coming from mass media (radio, television, internet, with 69,9%), from medical staff (63.1%) and from books, newspapers, and magazines (37.6%). There are still 30.1% who got the information from unofficial sources such as friends and relatives.

Table 3.4. Knowledge of HBV prevention measures

Knowledge	N	% of the group that had access to information (n=428)	% of total subjects (n=1120)
Preventive measures			
Do not inject drugs	337	78,7	30,1
Use personal items separately	295	68,9	26,3

Have healthy sex	315	73,6	28,1
Isolate sick people	174	40,7	15,5
Vaccination	336	78,5	30,0
The most effective measure			
Vaccination	324	75,7	28,4
Do not inject drugs	72	16,8	6,4
Other measures	32	7,5	2,9

The most frequently mentioned prevention measures were: not injecting drugs (78.7%), vaccination (78.5%), and safe sex (73.6%), but Still 40.7% believed that infection was prevented by isolating patients. The majority of subjects said that vaccination was the most effective preventive measure (75.7%).

Table 3.5. Knowledge about HBV treatment

Information	N	% of the group that had access to information (n=428)	% of total subjects (n=1120)
The disease is treatable			
Yes	212	49,5	18,9
No	216	50,5	19,3
Know where to get treatment			
Yes	194	91,5	17,3
No	18	8,5	
	926		82,7

Only 49.5% of subjects thought that HBV could be treated and 91.5% knew where to treat the disease.

Table 3.6. Practice of vaccination to prevent diseases

Thông tin	N	% of the group that had access to information (n=428)	% of total subjects (n=1120)
Vaccinated against HBV			
Yes	204	47,7	18,2

No	224 916	52,3	81,8
Ways to get vaccinated			
Get oneself vaccinated	159	77,9	14,2
Appointed by medical officer	45	22,1	4,0
Average number of vaccination shots (X±SD)	2,9 ± 1,1		

Among those who knew about the disease, 47.7% had been vaccinated, the majority of whom proactively got vaccinated (77.9%), with an average of 2.9 ± 1.1 vaccinations per person.

3.3. Effectiveness of health education intervention activities to prevent HBV infection

Table 3.7. Access information about HBV before and after intervention

	Intervention group (%)			Control group (%)			p ^{2,4}
	Before ¹ (n=560)	After ² (n=560)	P	Before ³ (n=560)	After ⁴ (n=560)	P	
Have heard about VGB							
Yes	39.3	90.2	0.001	37.1	40.9	0.198	0.001
No	60.7	9.8		62.9	59.1		
Sources of information about VGB							
Meetings and training	26.8	80.0	0.001	27.4	28.4	0.820	0.001
Books, newspapers, magazines	37.7	73.5	0.001	37.5	40.6	0.506	0.001
Radio, television, internet	71.8	88.1	0.001	67.8	67.7	0.982	0.001
Medical staff	63.2	83.8	0.001	63.0	65.1	0.650	0.001
Friends, relatives	28.7	26.3	0.522	31.7	26.2	0.203	0.964

The rate of people knowing about HBV disease in the intervention group increased from 39.3% before intervention to 90.2% after

intervention, compared to from 37.1% to 40.9% in the control group. There was a statistically significant difference between before and after intervention as well as between the intervention group and the control group after intervention ($p < 0.05$).

Table 3.8. Improve knowledge about disease prevention measures

Knowledge	Intervention group (%)			Control group (%)			p ^{2,4}
	Before ¹ (n=220)	After ² (n=505)	P	Before ³ (n=208)	After ⁴ (n=229)	P	
Disease prevention measures							
Do not inject drugs	76.8	90.3	0.001	80.8	79.5	0.735	0.001
Use personal items separately	68.2	85.2	0.001	69.7	63.8	0.187	0.001
Have safe sex	72.7	89.5	0.001	74.5	78.6	0.314	0.001
Vaccination	82.7	95.1	0.001	74.0	83.8	0.012	0.001
<i>Isolate sick people</i>	43.6	12.3	0.001	37.5	39.7	0.631	0.001
The most effective measure							
Vaccination	80.0	95.1	0.001	71.2	77.7	0.115	0.001
Do not inject drugs	13.6	4.8	0.001	20.2	14.4	0.109	0.001
Other measures	6.4	0.2	0.001	8.7	7.9	0.763	0.001

The rate of the subjects with correct knowledge about infection prevention measures as well as the most effective intervention (vaccination) in the intervention group after the intervention increased compared to before the intervention and was higher than the control group. The difference is statistically significant ($p < 0.001$). The rate of the subjects with incorrect knowledge about preventive measures decreased compared to before the intervention and was lower than that in the control group. Meanwhile, in the control group, the subjects' knowledge after intervention did not have a statistically significant difference compared to that before intervention.

Table 3.9. Improve vaccination practices

Get vaccinated against disease	Intervention group (%)			Control group (%)			p ^{2,4}
	Before ¹ (n=220)	After ² (n=505)	p	Before ³ (n=208)	After ⁴ (n=229)	p	
Yes	48.6	87.9	0.001	46.6	59.8	0.006	0.001
No	51.4	12.1		53.4	40.2		

After the intervention, the rate of the subjects vaccinated against HBV increased with statistical significance among those who knew about HBV disease in both groups, in which the increase in the intervention group was statistically significantly higher than that in the control group. (p<0.05).

Table 3.10. Intervention effectiveness improves attitudes and practices

Attitude and practice	Intervention group (%)			Control group (%)			IE
	Before ¹ (n=560)	After ² (n=560)	EI	Before ³ (n=560)	After ⁴ (n=560)	EI	
HBV is a dangerous disease	35.5	88.6	149.6*	35.2	38.8	10.2	139.4
Treat properly when suspected of having the disease	35.7	88.6	148.2*	35.9	39.6	10.3	137.9
Handle properly when husband or wife is infected	18.2	57.5	215.9*	17.0	20.4	20.0	195.9
Handle properly when neighbors get infected	32.5	89.3	174.8*	29.6	32.1	8.4	166.4
Get vaccinated against the disease	19.1	79.3	315.2*	17.3	24.5	41.0*	274.2

*: Difference between two rates with p<0.05

EI=Efficiency index

IE=Intervention effectiveness

After the intervention, the proportion of subjects with attitudes and practices appropriate to the content of HBV infection prevention in both groups improved. The difference is statistically significant ($p < 0.05$), recorded for all contents in the intervention group and vaccination practices in the control group. In the intervention group, the efficiency indexes ranged from 148.2% to 315.2% compared to 8.4% to 41.0% in the control group. The effectiveness of the intervention in improving the survey's attitude and practice contents was the lowest at 137.9% with correct handling when he or she suspected of having the disease and the highest at 274.2% with vaccination.

Chapter 4. DISCUSSIONS

Our study was conducted on 1,120 adults aged 20-60 years in 2 districts of Minh Hoa (mountainous area) and Quang Trach (coastal area) of Quang Binh province to determine HBV infection status; people's knowledge, attitudes, and practices of HBV infection prevention and implementation of interventions to improve HBV infection prevention in the community.

4.1. HBV infection status and some risk factors in people aged 20-60 years

4.1.1 Characteristics of research subjects

Table 3.1 shows that among the 1,120 research subjects, women accounted for the majority (73.8%), with an average age of 44.1; Of which the age group with the highest proportion is 51-60 (35.4%).

Age and gender are basic demographic characteristics and are factors related to knowledge, attitudes, practices of HBV infection prevention, vaccination status as well as HBV infection rate.

4.1.2 HBV infection status

The results in chart 3.1 show that the prevalence of HBV infection in the study population is 7.9% (95%CI: 6.3%-9.6%).

Like many other studies, in our study, HBV infection status was assessed through the proportion of subjects with HBsAg testing positive (+). The rate of 7.9% of adult subjects carrying HBsAg in our study is slightly lower than the latest estimate in 2016 of the average HBV infection rate in Southeast Asia of 8.6% with more than 44.9 million people have HBsAg (+).

4.1.3 Some factors related to HBV infection

Our study results show that many demographic and socioeconomic factors are associated with HBV infection in healthy adults in the community.

- Relationship between location and HBV infection rate

The results in table 3.2 show that in univariate analysis, the prevalence of HBV infection in the coastal delta (Quang Trach) is 9.6%; statistically significantly higher than that in the mountainous region (Minh Hoa) with 6.1% with $p < 0.05$. This result is associated with differences in geographical, economic, and socio-cultural conditions between two research areas in two different regions.

- Relationship between gender, age and HBV infection status

Our study results show that the prevalence of HBV infection in both sexes is similar (7.2% in men and 8.1% in women, respectively). This result is different from many other studies in Vietnam and around the world, which show that the prevalence of HBV infection in men is often higher than that in women. For example, in Pham Ngoc Thanh's study in the Central Highlands (2018), the prevalence of HBV infection in men was also statistically significantly higher than that in women (12.9% compared to 9.8%).

Immunology studies show that women have a better immune system response than men, so they are less susceptible to infectious diseases. This contributes to explaining why men often have a higher prevalence of HBV infection than women. In addition, men also often have more behavioral risk factors than men such as injecting drugs, having unsafe sex, etc.

- Relationship between history, risky behavior and HBV infection

Many studies have shown that HBV infection is closely related to the history of using certain medical, health care, beauty services and other risky behaviors related to the possibility of infection through the two main routes of blood and sexual contact.

Our study did not record a higher risk of HBV infection in people with a personal history of previous use of health services. However, people who used to donate blood have a statistically significant lower prevalence of HBV infection than people without this history (chart 3.2). This can be explained by the fact that blood donors are screened and HBV-positive

people are often not accepted to donate blood, so subjects with a history of blood donation often have a higher probability of being "HBV-free" compared to others.

An interesting point is that the prevalence of HBV infection in our study had no relationship with vaccination status when the prevalence of HBV infection in the vaccinated and unvaccinated groups was 7.7% and 77.9%, respectively. This is completely contrary to the effectiveness of vaccines in preventing HBV infection, which has been recorded in the medicine and proven in many previous studies. One of the reasons is that the vaccination rate in our study population is quite low because these subjects are all over the age to be vaccinated in the Expanded Programme on Immunization. Meanwhile, most people who get vaccinated are pre-screened and those with positive test results will no longer be vaccinated.

Among the risky behaviors of tattoos, piercings, sharing personal tools such as toothbrushes, razors, etc., our study shows that the prevalence of HBV infection in people with a history of tattooing is 13.0%, statistically significantly higher than the rate of 7.0% in people without this history (Chart 3.2).

4.2. Current status of knowledge, attitude, and practice of preventing HBV infection

4.2.1 Current status of knowledge on prevention of HBV infection

Table 3.3 shows that only 38.2% of the study subjects have ever known about HBV disease; Nearly 2/3 of the remaining subjects have never heard of this disease. The low rate of knowledge of HBV disease will limit the proportion of people with correct knowledge, attitudes and practices on preventing HBV infection. In this study, we evaluate the current status of knowledge, attitude and practice of preventing HBV infection for each specific question on subjects who have known about the disease (or subjects who have had access to information about the disease). disease) and evaluate the entire research population when evaluating each content.

The rate of access to information about HBV disease in our study is much lower than that in the previous studies of Tran Ngoc Dung's study in Can Tho (2010) showing that 83.4% of people have ever heard about HBV disease. This rate is very low when placed in the context of the large disease burden caused by HBV and its complications nationwide in general and Quang Binh in particular. Especially in the context that the

health sector has implemented activities to prevent HBV infection for many years and have implemented vaccination to prevent the disease in the EPI Program for more than 10 years. This requires further strengthening of health propaganda and education measures for people about HBV and HBV disease.

4.2.2 Current status of attitudes and practices on prevention of HBV infection

Table 3.6 shows that 92.5% of the study subjects considered HBV to be a dangerous disease. The main emotions reported when getting infected with HBV are sadness (50.0%) and anxiety, fear (37.9%). The patients' biggest worries are fear of passing the disease to other family members (52.3%) and worry about treatment difficulties (31.8%). According to the report, when getting infected, 62.1% of subjects chose to share first with family members and 33.2% chose to share with medical staff.

People's negative emotions and worries when getting infected reflect the reality of limited knowledge and attitudes towards the disease. People's attitude when getting infected affects the choice of disease prevention and treatment measures. Research results show that in addition to strengthening propaganda to raise people's awareness and improve people's attitudes towards HBV disease, health workers need to create trust and sharing from people when infected with the disease.

Our results show that according to the study subjects, when suspected of being infected with HBV, the vast majority (93.7%) went for examination at a medical facility; Only 4.4% got self-treated and 1.9% sought treatment from traditional healers. In the case of a spouse suffering from the disease, 72.0% of subjects reported still living together and living normally; 65.2% of subjects reported treating for infected family member and 65.4% reported having healthy family members vaccinated. However, there are still 26.4% of subjects reporting restrictions on their spousal relationship; 23.8% restricted eating and drinking together and even 16.1% reported having the infected person vaccinated. Similarly, in the case of having a neighbor with HBV; there are still 10.8% who do not know how to handle the disease; 7.9% think it is necessary to limit relationships and contact to the infected person. This once again shows that there is still a significant proportion of people who misunderstand the transmission route, effects and indications of disease vaccination, leading to inappropriate reported practices.

4.3. Intervention effectiveness of health education to improve knowledge, attitudes, and practices

In this study, the results of the health promotion intervention were evaluated from three perspectives: increasing the rate of people's access to information about HBV disease (increasing the rate of people knowing about the disease); increase the proportion of people with correct knowledge, attitudes, and practices on disease infection prevention among those who have access to the disease; and overall intervention effectiveness assessed through Efficiency indexes in each content, area and overall intervention effectiveness.

4.3.1 Intervention effectiveness in increasing access to information about HBV

In this study, we carried out enhanced health education communication activities both indirectly and directly in two intervention communes. These include activities of hanging posters, distributing leaflets, broadcasting in the two intervention communes and talking sessions incorporating leaflet distribution. Many intervention activities related to communication, capacity building and service access have been implemented. These activities are carried out with the aim of increasing knowledge and behavior for both health workers and people in preventing HBV infection. Health workers and health station collaborators also attend training classes to contribute to capacity building as well as help implement other intervention activities.

The results of intervention activities are shown first of all in increasing people's access to information about HBV disease. On the basis of the subjects assessed after the intervention to be quite similar in terms of gender and age structure between the two research groups and compared to before the intervention, the results in table 3.8 show that after the intervention, the proportion of people who knew HBV disease increased in both intervention and control groups. While in the control group, this rate only increased from 37.1% to 40.9%, in the intervention group it increased from 39.3% to 90.2%.

4.3.2 Effectiveness in improving knowledge, attitudes and practices in subjects who have accessed information about HBV disease

With knowledge about pathogens, transmission routes and at-risk subjects, the study results showed that the proportion of subjects who knew the correct cause of viral diseases in the intervention group after

intervention (87.5%) is still at a high level equivalent to before the intervention and higher than that in the control group at the same assessment time (79.5%). Meanwhile, the rate of misunderstanding the cause of disease due to bacteria and parasites has decreased compared to before the intervention and is statistically significantly lower than the control group ($p < 0.05$). Similarly, the rate of subjects with correct understanding of the disease's transmission routes has also increased while the rate of those with incorrect understanding of the transmission route has decreased compared to before the intervention and compared to the control group. These differences are all statistically significant with $p < 0.05$. This trend is also noted for knowledge about at-risk subjects.

Similar to the effects on knowledge, the effectiveness of the communication intervention program on attitudes and practices on preventing HBV infection was also recorded in our study with a general trend of improvement. There was significant improvement in the intervention group compared to before intervention and compared to the control group. Although evaluation methods and indicators are different, this trend has been recorded in many health education and communication intervention studies to improve awareness, attitudes and behaviors to prevent HBV infection in the community.

In addition, although the rate of vaccination against HBV increased in both study groups, the intervention group had a larger increase (19.1% to 79.3%), the difference was statistically significant, compared to those in the control group (17.3% to 42.4%). Thus, unlike Pham Ngoc Thanh's study, in our study, intervention activities helped improve knowledge and practice of HBV vaccination significantly. However, this positive result may partly be due to the fact that disease prevention vaccination services have been strongly deployed in the past 5 years and people have significantly improved their knowledge and practice of vaccination to prevent diseases thanks to Health education communication.

4.3.3 Overall effectiveness of the intervention

The overall effectiveness of the intervention was evaluated on the basis of integrating expanding access to information about HBV and improving knowledge, attitudes and practices of infection prevention. After 12 months of applying the communication intervention, the results

showed that there was a statistically significant difference between before and after the intervention and between the intervention group and the control group in terms of knowledge, attitude and behavior.

In this study, to evaluate the level of improvement in knowledge, attitude and practice on HBV infection prevention, we did not perform scoring or general classification for each area. Instead, we choose a number of important indicators in each field to evaluate the comparison before and after the intervention as well as compare the intervention group with the control group, including the rate of knowing the correct pathogen, treatment, diagnostic methods, rate of full knowledge of HBV infection routes and prevention measures,...

Our research results show that the intervention group has a superior efficiency index compared to the control group in all evaluation indexes from knowledge about pathogens, transmission routes, and preventive measures, knowledge of measures to handle a number of hypothetical situations to practice according to the declaration of situations when getting infected with HBV. The efficiency indexes in the fields of knowledge, attitude and practice in the intervention group all reached over 100% (ranging from 128.0% to 218.5% for knowledge indexes and from 148.2% to 315.2% with attitude and practice indexes) compared to fluctuating below 30% in the control group. Thanks to that, the intervention effectiveness calculated on each index of knowledge, attitude and behavior also reached over 100%, with the lowest being 119.3% with access to information about HBV disease reaching the highest of 274.2% for the practice of vaccination to prevent HBV infection.

CONCLUSIONS

1. HBV infection status and some related factors in adults aged 20-60 years in the community of Quang Binh province

The prevalence of HBV infection based on the rate of HBsAg carriage in adults aged 20-60 years calculated for both mountainous and coastal plain areas of Quang Binh is 7.9% with a separate rate for each area is 6.1% and 9.6%, respectively. Multivariate analysis results showed that the prevalence of HBV infection had a statistically significant association with age group, education, and tattooing behavior. Specifically, the infection rate is higher

in the age group 41-50 (OR = 1.82; 95%CI: 1.03-3.20) compared to the age group 51-60, in the age group with primary school education or lower compared to the group with high school graduation or higher (OR=2.14; 95%: 1.08-4.27) and in the group with tattoos compared to the group without tattoos (OR=1.96; 95%CI: 1 ,14-3.80).

2. Knowledge, attitude and practice of preventing HBV infection in adults aged 20-60 years

Only 38.2% of adults aged 20-60 years used to have access to information about HBV disease, with the two main information channels being mass media such as television, radio, internet, etc. (69.9%) and from medical staff (63.1%).

Regarding knowledge, among those who used to have access to information about HBV disease, 85.7% of the subjects know that the causative agent is a virus; 65.0% of the subjects fully know the transmission routes of the disease. 89.3% of subjects know the correct ways to diagnose HBV disease is a blood test; 48.4% of the subjects know all the symptoms of the disease, 55.6% know all the consequences; 74.5% know at least one appropriate treatment when there is an HBsAg (-) test result and 66.1% know the appropriate treatment when there is an HBsAg (+) result.

Regarding attitudes and practices, among those who used to have access to information about the disease, 92.5% are aware that HBV is a dangerous disease; 93.7% of subjects have appropriate treatment when they suspected the disease; 46.0% have appropriate measures when their spouse gets infected and 81.3% have appropriate measures when a neighbor gets infected. 47.7% of subjects were vaccinated against HBV.

3. Intervention effectiveness in improving knowledge, attitudes and behaviors to prevent HBV infection in adults

The rate of access to information about HBV increased from 39.3% before intervention to 90.2% after intervention in the intervention group and 37.1% to 40.9% in the control group. There is a statistically significant difference between before and after intervention in the intervention group and between the two groups after intervention.

Among people who used to have access to information about HBV disease, the proportion of subjects with correct knowledge about the disease's causative agent, transmission route, risk subjects, infection prevention measures, diagnostic measures, and symptoms and consequences of the disease; The rate of subjects having correct attitudes and practices about disease infection prevention in the intervention group after intervention also increased statistically significantly compared to those before intervention and compared to those of the control group.

Overall, across all study subjects, the efficiency indexes in each content of knowledge, attitude and practice in the intervention group reached over 100% (from 128.0% with knowing the causative agent of the disease to 315.7% with vaccination) compared to a range from 4.1% with knowing correct preventive measures to 41.0% with vaccination in the control group. The intervention effectiveness on each index of knowledge, attitude and practice surveyed also reached over 100%; The lowest rate of 119.3% for knowing about HBV disease to the highest rate of 274.2% for vaccination.

RECOMMENDATIONS

1. It is necessary to continue to strengthen health education communication, raise awareness, attitudes and practices of the community in the whole province about HBV, HBV disease and prevention measures to thereby reduce the rate of infection and disease burden in the province.

2. The choice of communication methods, means and content should be based on the characteristics of each local, focusing on two main communication channels: mass media and the role of medical staff, with content focusing on infection prevention measures, especially disease vaccination and testing to detect disease carriers.

3. Based on lessons learned from implementing this research, develop specific intervention solutions for each area to replicate the model and achieve greater effectiveness. Identify the shortcomings of this intervention and related factors. Review and evaluate the sustainability of health information and education interventions in preventing HBV infection in the area.