

Revealing the Dominant Risk Factor for Hepatitis B in Pregnant Women at the Waena Health Center, Jayapura City

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Abstract

Background: Hepatitis B is an infection of the Hepatitis B virus through fluids and blood. The incidence of Hepatitis B in pregnant women is influenced by the age of first marriage, ethnicity, education, occupation, parity, history of blood transfusions, history of Hepatitis B immunization, hepatitis B status of sexual partners, and family history of living in the same house. Objective: To reveal the dominant risk factor for Hepatitis B in pregnant women at the Waena Health Center, Jayapura City. Method: Type of case-control study with a population of 48 pregnant women. Data were obtained using questionnaires, medical records, chi-square analysis, Odds Ratio, and logistical binary regression. Results: A significant factor affecting the incidence of hepatitis B in pregnant women was the hepatitis B status of sexual partners (p-value 0.007; OR = 12,143; CI 95% (1,947 - 75,736). An insignificant factor with the incidence of hepatitis B in pregnant women was tribe (*p-value* 1,000; OR = 0.880), education (*p*-value 1,000; OR = 1.546), family history of living in the same house infected with hepatitis B (*p*value 0.441; OR = 3,182), hepatitis B immunization (*p-value*1,000; OR = 1,375).

Received: 4/28/2024 Accepted: 6/28/2024 Published: 7/9/2024

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The dominant factor for the incidence of hepatitis B in pregnant women is the status of Hepatitis B in sexual partners. **Conclusion**: The status of Hepatitis B in couples is dangerous to pregnant women and fetuses, so the prevention of Hepatitis B needs to be increased through screening for infectious diseases.

Keywords: Hepatitis B; Pregnant Women; Risk Factors.

1. Introduction

Hepatitis B is a potentially life-threatening infection of the liver caused by the hepatitis B(1) virus. This can lead to chronic diseases and put people at high risk of death from cirrhosis and liver cancer [1]. This hepatitis B virus is transmitted through contact with blood or body fluids from an infected person(2)Pregnant women are a group that is susceptible to being infected with the hepatitis B virus (3).

The World Health Organization (WHO) estimates that 240 million people are chronically infected with hepatitis B and more than 780,000 people die each year from complications from hepatitis B, including cirrhosis and liver cancer. Every year there are 5.3 million pregnant women. hepatitis B (HBsAg) reactive in pregnant women reaches an average of 2.7% and every year there are an estimated 150 thousand babies, 95% of whom have the potential to develop chronic hepatitis (cirrhosis or liver cancer) in the next 30 years [4]. The incidence of hepatitis B in Southeast Asia is around 1,380,000 cases, more than 5.6% of the total population with 300,000 deaths per year the prevalence of hepatitis B virus transmission in Southeast Asia including high, which is more than 8%. Indonesia is one of the regions with a high endemic level and is included in a high prevalence of more than 8% Reference [2]. The Prevalence Hepatitis B in Indonesa is 24,3% [3]. The prevalence of hepatitis in Indonesia increased by 24 million people and there were 50,744 pregnant women infected or positive for hepatitis B and 35,757 babies born positive for hepatitis B Papua has the highest prevalence of hepatitis in Indonesia, which is 0.66%. Central Sulawesi is second with a prevalence of hepatitis disease of 0.62% [5]. The risk of Hepatitis B transmission in pregnant women is caused by blood transfusion factors, in people with hepatitis B [3]. The effect of the use of toothbrushes, ANC visits, and shavers also causes a risk of transmission of hepatitis B (1). In addition, parity, education level, occupation, age at first marriage, frequency of marriage of spouses, hepatitis B status of spouses, history of spouse mobility, history of hepatitis B in the family and history of syringe use are significantly related to the incidence of hepatitis B in pregnant women [4,5]. Data from the Jayapura City Health Office shows that the number of people with Hepatitis B in pregnant women in 2021 was 27 cases, and in 2022 there were 120 cases. Data from the Jayapura City Health Office shows that 913 pregnant women have been screened for hepatitis B (HBsAg) in 2021 and as many as 4067 pregnant women in 2022. In 2022, of the 656 pregnant women who were examined for hepatitis, there were 24 pregnant women tested positive for hepatitis B and have been referred Reference [6].Hepatitis B infection causes increased mortality as well as causes teratogenic effects. However, in VHB infection, acutinicidness for the occurrence of low birth weight and higher prematurity of the baby. Where gestational diabetes, antepartum hemorrhage, and premature labor are more common in chronic hepatitis B infection [1]. Premature birth increases by 25-35%, which is likely due to the severe state of the disease, and the influence of the virus on the fetus or placenta [5]. In 2017, 30% of districts/cities carried out early detection of Hepatitis B, in 2018 60% of districts/cities carried out early detection of Hepatitis B, and 90% of districts/cities carried out early detection of Hepatitis B in 2019 and in 2022 as many as 95% of early detection of Hepatitis B

has been carried out by districts/cities. However, the incidence of hepatitis B, especially in pregnant women, is still high in Indonesia [5]. Pregnant women at the Waena Health Center in Jayapura City were chosen as the subject of the study because of the high incidence of hepatitis B even though prevention efforts have been carried out by the Waena Health Center, the incidence of hepatitis B in pregnant women at the Waena Health Center so that the researcher was interested in conducting a study with the title "Factors Affecting Hepatitis B in Pregnant Women at the Waena Health Center, Jayapura City, Papua Province".

2. Research Methods

The type of case-control *study* on the population of pregnant women who underwent hepatitis B examination with a sample number of 1 : 3, namely 12 samples of hepatitis B cases and 36 controls, was carried out on November 4-23, 2023 at the Waena Health Center. The data was obtained using questionnaires and medical record data and analyzed using chi-square and logistical binary regression.

3. Research Results

a. Independent Variables

No	Variable	Frekuensi (n)	Presentase (%)
1	valiable	Flekuelisi (II)	Flesentase (%)
1	Tribe		
		22	50 0
	Papua	33	68,8
			21.2
	Non Papua	15	31,2
2	Education		
		2	<i>(</i>)
	Low	3	6,3
	TT 11	4.5	02.0
	Tall	45	93,8
2			
3	Hepatitis B Immunization		
	NT.	12	90.6
	Never	45	89,0
	F	F	10.4
	Ever	5	10,4
4	Hanatitia D. Status of		
4	Served Couples		
	Sexual Couples	7	14.6
	V	/	14,6
	res	44	05.4
	NT.	41	85,4
	NO		
	Family History Living '		
F	e house infected with		
5	a nouse infected with		
	перания в		
	V		
	res	2	4.0
	No	Z	4,2
	INO	4.5	05.0
		46	95,8
	~	10	
	Sum	48	100

Table 1: Independen

t variable distribution

Source : Primary Data, 2024

Based on Table 1, the respondents to pregnant women with the age of first marriage with an age of less than 20

years and more equal to 20 years each were 24 people (50%). Most of the respondents came from the Papuan tribe as many as 33 people (68.8%), 45 people with higher education (93.8%), and 37 people (77.1%) who did not work. Most of the mothers with parity with the first pregnancy were 32 people (66.7%) and most of the mothers never get imunisasi hepatitis B as many as 43 people (89.6%). The status of sexual partners without a history of hepatitis B was 41 people (85.4%) and as many as 46 families living in the same house were not infected with hepatitis B as many as 46 people (95.8%).

b. Dependent Variable of Hepatitis B Incidence in Pregnant Women

	Hepatitis B	in	Frequency	
	Pregnant			Percentace
No	Women	(n)		(%)
1	Positif	12		25
2	Negatif	36		75
Sum		48		100

Table 2: Distribution of Dependent Variables of Hepatitis B Incidence in Pregnant Women

Source data: Primary Data 2024

Based on Table 2, it shows that 12 pregnant women (25%) are hepatitis B positive and 36 (75%) are hepatitis B negative.

C. Bivariate Analysis

C.1. The Influence of Ethnicity on the Incidence of Hepatitis B in Pregnant Women

Table 3: The Influence of Tribes on the Incidence of Hepatitis B in Pregnant Women at the Waena Health

Center

					<i>n</i> -	OR		
Tribe		Hepatitis B in Preg	gnant Wom	en	n	%	value	CI95%
		Positive	Negatif					
	n	%	n	%				
Papua	8	66,7	25	69,4	32	68,9		0,880
Non Papua	4	33,3	11	30,6	15	31,3	1,000	(0.218-3.547)
Sum	12	100	36	100	48	100	_	(0,210 0,017)

Source : Primary Data, 2024

Table 3 shows that in the group of Hepatitis B cases in pregnant women from the Papuan tribe as many as 8 people (66.7%) is higher than in pregnant women from the Non-Papuan tribe as many as 4 people (33.3%). The results of the chi-square statistical *test* at a significance value of 95% (a = 0.05) obtained *a p-value* of 1,000 or p $> \alpha$ (0.05), thus the influence of ethnicity was not significant with the incidence of hepatitis B in pregnant women at the Waena Health Center, Jayapura City, Papua Province. When viewed from the OR value = 0.880; CI95% (0.218 – 3.457) with *a lower* value includes the number 1 which is interpreted as insignificant.

C.2. The Effect of Education on the Incidence of Hepatitis B in Pregnant Women

 Table 4: The Effect of Education on the Incidence of Hepatitis B in Pregnant Women at the Waena Health

 Center

	Hepatitis B in Pr	egnant Women	n	%	p-value	OR CI95%
Education	Positive	Negatif				
	n %	n %	_			
Low	1 8,3	2 5,6	3	6,3		
High	1 91,7	3 94,4	45	93,8	1,000	1,546
	1	4			- -	(0,128-18,73)
Sum	$\begin{array}{c}1\\100\end{array}$	3 6	48	100		

Source: Primary Data, 2024

Table 5 shows that in the group of Hepatitis B cases in pregnant women with low education as many as 1 person (8.3%) is lower than that of pregnant women with high education as many as 11 people (91.7%). The results of *the chi-square statistical test* at a significance value of 95% (a = 0.05) were obtained with a p-value of 1,000 or p $> \alpha$ (0.05), thus the influence of education was not significant with the incidence of hepatitis B in pregnant women at the Waena Health Center, Jayapura City, Papua Province. When viewed from the value of OR = 1.546; CI 95% (0.128 - 18.73) with *a lower* value includes the number 1 which is interpreted as not significant education.

C.3. Effect of Hepatitis B Status of Sexual Partners on the Incidence of Hepatitis B in Pregnant Women

Hepatitis	В	Hepatitis B in I	Pregnant Women	n	%	p-value	OR
Status	of						CI95%
Couples		Positive	Negatif				
		n %	n %				
Yes		5 41,7	2 5,6	7	14,6		
							12,143
No		7 58,3	3 94,4	41	85,4	0.007	
			4			0,007	(1,947-
Sum		$ 1 \\ 100 $	3 100	48	100		75,736)
		Z	0				

Table 5: Effect of Hepatitis B Status of Sexual Partners on the Incidence of Hepatitis B in Pregnant Women

Source : Primary Data , 2024

Table 5 shows that in the group of Hepatitis B cases in pregnant women whose sexual partners have a history of hepatitis B disease as many as 5 people (41.7%) and pregnant women whose sexual partners do not have a history of hepatitis B disease as many as 7 people (58.3%). The results of *the chi-square* statistical test at a significance value of 95% (a = 0.05) were obtained *with a p-value* of 0.007 or $p < \alpha$ (0.05), thus the effect of hepatitis B status of sexual partners was significant with the incidence of hepatitis B in pregnant women at the Waena Health Center, Jayapura City, Papua Province. When viewed from the OR value = 12.143; The CI95% (1,947 – 75,736) interpreted that having a history of hepatitis B in sexual partners was 12,143 times more likely to develop hepatitis B than sexual partners without hepatitis B.

c.4. The Effect of Family History of Living in a Family Infected with Hepatitis B on the Incidence of Hepatitis B in Pregnant Women

Table 6:	Effect of Blood	Transfusion on	the Incidence	e of Hepatitis B	in Pregnant	Women at W	Vaena Health
	Direct or Droot	11010101011 011		or repairing 2		i onion av i	

Center

Family history of living in a	Hepatitis B Pada Ibu Hamil					ó p-va	lue	OR CI95%
infected with		Positif	Nega	tif				
hepatitis B	n	%	n	%				
Yes	1	8,3	1	2,8	2	4,2		3,182
							0,441	
No	11	91,7	35	97,2	48	95,8		(0,183-55,194)
Sum	12	100	36	100	48	100		

Source : primary Data, 2024

Table 6 shows that in the group of Hepatitis B cases in pregnant women who live in the same house with a family infected with hepatitis B as many as 1 person (8.3%) is lower than pregnant women who live in the same house with a family not infected with hepatitis B as many as 11 people (91.7%). The results of *the chi-square statistical test* at a significance value of 95% (a = 0.05) were obtained *with a p-value* of 0.441 or $p > \alpha$ (0.05), thus the effect of family history living in the same house infected with hepatitis B was not significant with the incidence of hepatitis B in pregnant women at the Waena Health Center in Jayapura City, Papua Province. When viewed from the value of OR = 3.182; CI 95% (0.183 – 22.194) with *a lower value* includes the number 1 which is interpreted that the family history of living in the same house infected with hepatitis B is not significant.

C.5. Effect of Hepatitis Immunization on the Incidence of Hepatitis B in Pregnant Women

 Table 7:
 Effect of Hepatitis Immunization on the Incidence of Hepatitis B in Pregnant Women at Waena

 Health Center

	Hepatitis B in pregnant women				n	%	p- valu	OR
Imunisasi							е	CI95%
	Pos	sitif	N	legatif				
	n	%	n	%				
Never	11	91,7	32	88,9	43	89,6		1,375
							1,000	
Ever	1	8,3	4	11,1	5	10,4		(0,138-13,658)
Sum	12	100	36	100	48	100		

Source : primary Data, 2024

Table 8 shows that in the group of Hepatitis B cases in pregnant women who have never been immunized against hepatitis as many as 11 people (91.7%) is higher than in pregnant women who have been immunized against hepatitis as many as 1 person (8.3%). The results of the chi square statistical test at a significance value of 95% ($\alpha = 0.05$) were obtained *with a p-value* of 1,000 or p > α (0.05), thus the effect of hepatitis immunization was not significant with the incidence of hepatitis B in pregnant women at the Waena Health Center, Jayapura City, Papua Province. When viewed from the OR value = 1.375; CI95% (0.138 – 13.658) with *a lower* value includes the number 1 which is interpreted that the history of hepatitis B immunization is not significant.

d. Multivariate Analysis

Multivariate analysis is used to obtain answers to which factors affect the incidence of hepatitis B in pregnant women, so it is necessary to conduct a bivariate analysis and continue with the multivariate test. Bivariate modeling using logistic regression test begins with bivariate modeling with a p-value category < 0.25 using the enter method where each independent variable is tested against the dependent variable.

	В	Sig.	Exp(B)	95% C.I.fo	or EXP(B)
				Lower	Upper
Hepatitis B Status of	-4.371	.001	.013	.001	.171
Sexual Couples					
tribe	-1.797	.162	.166	.013	2.059
Family history of	2.877	.100	17.768	.577	547.061
hepatitis B					
Constant	4.189	.298	65.931		

Table 8: Bivariate Analysis Between Dependent and Independent Variables

Source : Primary Data, 2024

Table 8 above, obtained the status of Hepatitis B of sexual partners as the dominant factor in the incidence of hepatitis B in pregnant women at the Waena Health Center, Jayapura City, Papua Province.

4. Discussion

a. The Influence of Ethnicity on the Incidence of Hepatitis B in Pregnant Women

The results of the study showed that the influence of tribe was not significant in the incidence of hepatitis B in pregnant women at the Waena Health Center, Jayapura City, Papua Province. When viewed from the OR value = 0.880; The CI 95% (0.218 - 3.457) does not include 1 which is interpreted that a tribe is not a risk factor for the occurrence of hepatitis B in pregnant women. Although the prevalence of Hepatitis B cases in pregnant women from the Papuan tribe is 66.7% higher than that of pregnant women from non-Papuan tribes by 33.3%. The high incidence of hepatitis B in pregnant women from Papua can be caused by cultural practices. The results of this study are the same as Suratno's findings which found that garbage pickers who are highly educated, namely high

school >, were found to be 11 (34%) positive for Hepatitis B compared to those with low education (not school) as many as 1 (3.1%) [29].

Research conducted by Cui and his colleagues, (2017) based on their research is known that 327 people out of 513 pregnant women with HBsAg positive are caused by geography, variation, and differences in cultural practices. Differences in race, ethnicity, or ethnicity affect their disease susceptibility. Each particular tribe or ethnicity has a certain culture that is adhered to. Habits that are a form of culture can directly or indirectly carry disease agents or cause predisposing factors for a disease [13]. These cultural practices are related to the community's clean and healthy living behavior towards health problems, including eating behavior with balanced nutrition, drinking patterns according to the standards of body needs, sexual interaction, and behavior of using health facilities as well as disease prevention behavior [14]. Each particular tribe or ethnicity has a certain culture that is adhered to. Habits that are a form of culture can directly carry disease agents or cause predisposing factors [14]. Each particular tribe or ethnicity has a certain culture that is adhered to. Habits that are a form of culture can directly or indirectly carry disease agents or cause predisposing factors of a disease that cause cultural behavior to become a genetic disease as a result of cultural practices [13].

It is also found in the prevalence of hepatitis B can also be seen in the ethnic Chinese population in the USA, where the prevalence of chronic VHB is higher than that of the white population in the USA. The same situation exists in New Zealand where the prevalence of hepatitis B is higher in the Maori population compared to the white group of European origin. Genetic factors, namely *Human Leucocyte Antigen* (HLA), also seem to be related to the high incidence of hepatitis B([15]...

b. The Effect of Education on the Incidence of Hepatitis B in Pregnant Women

Education can affect a person's mindset and perspective, both towards themselves and their environment. A person with a higher level of education usually has better knowledge than someone with a low level of education so it is more likely to avoid disease. Meanwhile, the occupational factor can make it easier for a person to get information about hepatitis B in the surrounding environment [1,7,8].

The results of the study showed that the influence of education was not significant and at risk with the incidence of hepatitis B in pregnant women at the Waena Health Center, Jayapura City, Papua Province. This was obtained from the group of Hepatitis B cases in pregnant women with low education as many as 1 person (8.3%) lower than pregnant women with high education as many as 11 people (91.7%).

Education is another factor that determines the incidence of hepatitis which means that the level of higher education allows a person to be more open and is one of the factors that will affect a person's success in understanding health information. A person with a low level of education is due to economic factors and is more at risk if there is less counseling about hepatitis B in an educated community [17].

In line with research [9]. Which found that the level of education of pregnant women with the incidence of Hepatitis B is related to the knowledge of pregnant women about Hepatitis B or risk factors for Hepatitis B transmission, where the lower the education, the less knowledge pregnant women have about Hepatitis B infection. However, according to Anaedobe and his colleagues, (2015) the knowledge and information obtained

will be better even though the mother is poorly educated, but the information she obtains can prevent hepatitis B disease so education is affected by the information obtained by pregnant women [10,11,17]. If information about the incidence of hepatitis B in pregnant women with a high level of education will increase a person's awareness of the risk of hepatitis B infection so that it is more possible to avoid the disease [12]. Compared to the low level of education, the risk of being infected with hepatitis B increases, especially in illiterate pregnant women [8]. Pregnant women with primary education are twice as likely to develop hepatitis B as pregnant women with upper secondary education. In addition, pregnant women with a better level of education usually have awareness in carrying out preventive efforts such as vaccination. However, this is influenced by the information it receives Reference [13].

c. Effect of Hepatitis B Status of Sexual Partners on the Incidence of Hepatitis B in Pregnant Women

A sexual partner is a person who is involved in a sexual relationship. Sexual activities are usually carried out by married couples, sexual activity is one of the ways to spread infectious diseases including hepatitis B, faithful couples will usually avoid various infectious disease problems. Sexual intercourse is one of the transmission routes of the hepatitis B virus, so the more sexual partners you have, the greater the risk of infection. People who change partners can be more easily infected with the hepatitis B virus [1,12].

The results of the study obtained the effect of hepatitis B status of sexual partners significantly on the incidence of hepatitis B in pregnant women at the Waena Health Center, Jayapura City, Papua Province. The presence of a history of hepatitis B in sexual partners was 12,143 times more likely to develop hepatitis B compared to sexual partners without hepatitis B.

Transmission of hepatitis B virus through blood or body fluids containing hepatitis B virus [22]. Transmission through sexual intercourse due to the hepatitis B virus is also found in sperm and vaginal mucus and saliva [15].. Sexual intercourse is one of the transmission routes of the hepatitis B virus, so the more sexual partners you have, the greater the risk of infection. People who change partners may be more susceptible to hepatitis B virus infection Reference [4,1].

The results of the study were also obtained that pregnant women who tested positive for hepatitis B at the Waena Health Center had more than 1 sexual partner. mothers who have a history of >1 sexual partner have a greater impact on the occurrence of hepatitis B in pregnant women, there are several causes of mothers having sex with>1 sexual partner, one of which is the promiscuity of mothers who do not know the impact that will occur if they change partners [9].

The results of the study found that couples with hepatitis B status were not contagious Hepatitis B in pregnant women is caused by the genitals in good and healthy condition. Hepatitis B can be transmitted through injured fluids and genitals, and HBV will enter liver cells through blood vessels easily [12,4].

When a partner maintains (only one partner), it is likely to protect against the risk of transmission of the hepatitis B virus. However, if a person engages in sexual activity by changing partners, this can increase the risk of the occurrence of infectious diseases, including hepatitis B, through unhealthy sexual relations Reference[1],

The Effect of Family History of Living in a Family Infected with Hepatitis B on the Incidence of Hepatitis B in Pregnant Women

Family or people who live in the same house as people with Hepatitis B are one of the most at risk of contracting Hepatitis B. The use of shared household tools, such as nail clippers, razors, or toothbrushes has been proven to be a source of transmission of Hepatitis B Reference [3].

The results of the study obtained the influence of the family history of living in the same house infected with hepatitis B was not significant and at risk of hepatitis B incidence in pregnant women at the Waena Health Center, Jayapura City, Papua Province. In line with research [23]. which found that the history of families living in the same house infected with hepatitis B did not affect the incidence of hepatitis B in pregnant women.

The results of this study are different from Widyanti's research which found that living in the same house with Hepatitis B patients is 20.4 times more likely to be infected with Hepatitis B with an OR=20 value (95% CI = 9.35 - 45). The mechanism of transmission is horizontally through body fluids, both the mucous membranes of the mouth, eyes, nose, lower food tract and the mucous membranes of the genetalia. The family here is the husband and younger sister. So transmission from sexual intercourse or the use of glasses or toothbrushes at the same time Reference [30]

The group of Hepatitis B cases in pregnant women at the Waena Health Center who live in the same house with a family infected with hepatitis B is 1 person (8.3%). This is because if parents, husbands, wives, or close relatives have a history of Hepatitis B, then there is a very high risk of transmission of Hepatitis B. Media or tools used together can increase the risk of VHB transmission. After all, people with VHB can have a history of contact through tools used in their daily lives. Most infected people appear healthy and asymptomatic but have carried the VHB [1].

The absence of a family history of living in the same house with the incidence of hepatitis B in pregnant women can be caused by family members who maintain good personal hygiene, especially by using or using objects that are not used together. In addition, the lack of samples with a family history of living in the same house infected with hepatitis B affects the analysis of the incidence of hepatitis B in pregnant women.

According to Siswanto (2020), the prevention of hepatitis disease can be done easily by maintaining personal hygiene and the environment. Personal hygiene includes taking a shower at least 2 times a day, washing hands will help to prevent hepatitis [14]. Maintain the cleanliness of the environment such as the cleanliness of foodstuffs, food utensils, and the environment where food is placed. Most of the causes of hepatitis transmission occur because the food consumed is not well maintained in hygiene and does not share personal items or use them together [3,2,9,17].

e. Effect of Hepatitis Immunization on the Incidence of Hepatitis B in Pregnant Women

Vaccines can be antibodies in the human body, but the *Hepatitis* B vaccine is not the main factor causing pregnant women to be infected *with Hepatitis* B [3,2,17,24]. The results of the study showed that the effect of hepatitis

immunization was insignificant and risky with the incidence of hepatitis B in pregnant women at the Waena Health Center, Jayapura City, Papua Province. However, in the group of Hepatitis B cases in pregnant women who have never been immunized against hepatitis as many as 11 people (91.7%), it is higher than in pregnant women who have been immunized against hepatitis as many as 1 person (8.3%).

Previous research by [25]. stated that pregnant women infected with *Hepatitis* B were quite low because pregnant women had received the *Hepatitis B Vaccine/Immunization*. However, there are still pregnant women who suffer from hepatitis B. In line with previous research by Atmaja & Lisnawati (2022) found that hepatitis B immunization is not a factor related to the incidence of hepatitis B in pregnant women [26].

The hepatitis B vaccine can be given as an infant or in an adult, in infants the vaccine is usually given 4 times, and covers Hb0, Hb1, Hb2, and Hb3, while the vaccine given to adults is referred to as passive immunization, this vaccine is is can be given before exposure or after exposure to the virus, given 3 times at predetermined intervals, (0, 1 month and 6 months) and a booster after 5 years, specifically for groups with risk factors [2,3,14]... (Nurhidayati and his colleagues, 2019; Diniarti and his colleagues, 2022; Jalaluddin, 2018; Hidayah & Afridah, 2023))

The Hepatitis B vaccine contributes to a decrease in the incidence of Hepatitis B even though there are still cases of hepatitis B in a person who has received the Hepatitis B Vaccine. If the place we live in is dirty or there is someone positive *for Hepatitis* B, it will have an impact on ourselves and our families, especially pregnant women who are vulnerable to exposure (24). Previous research by Estiyana and his colleagues, (2018), stated that the large amount of garbage scattered around the house causes the risk of the virus developing. Factors that affect the development of *the Hepatitis* B virus such as poor environmental sanitation, *Hepatitis* B infection in the residential environment, and the habit of littering [2,3,14]. (Nurhidayati and his colleagues, 2019; Diniarti and his colleagues, 2022; Jalaluddin, 2018; Hidayah & Afridah, 2023).

The factor of a poor living environment is the same as the factor of pregnant women who have a history of *Hepatitis* B vaccine, these two factors are not the main cause of pregnant women being infected *with Hepatitis* B, but it is equally important to keep doing good things for the good of the fetus they are carrying. It is known that *Hepatitis* B is an infectious disease, so it is very important to have a living environment for health, especially for pregnant women. Not only does environmental sanitation need to be considered, but the living environment also needs to be considered. A poor living environment will affect bad behavior as well [2,3,14]..(Hidayah & Afridah, 2023; Diniarti and his colleagues, 2022; Jalaluddin, 2018; Hidayah & Afridah, 2023).

d. Dominant Factor in the Incidence of Hepatitis B in Pregnant Women

The results of a multivariate analysis of the variables studied were obtained that the status of Hepatitis B in sexual partners was the dominant factor in the incidence of hepatitis B in pregnant women at the Waena Health Center, Jayapura City, Papua Province. This shows that the incidence of hepatitis B in pregnant women occurs as a result of direct contact with a sexual partner who suffers from hepatitis B.

A sexual partner is a person who is involved in a sexual relationship. Sexual activities are usually carried out by

married couples, sexual activity is one of the ways of spreading infectious diseases, including hepatitis B. If a person does sexual activities by changing partners, this can increase the risk of the occurrence of infectious diseases including hepatitis B, through unhealthy sexual relations, hepatitis B can be transmitted through fluids and injured genitals, and HBV will enter liver cells through blood vessels easily [2,3,14]. (Nurhidayati and his colleagues, 2019; Hidayah & Afridah, 2023; Diniarti and his colleagues, 2022; Jalaluddin, 2018; Hidayah & Afridah, 2023)).

The level of marriage at a young age is associated with the first sexual relationship in young women and can increase the risk of exposure to sexually transmitted diseases, including Hepatitis B. The age relationship of pregnant women in Hepatitis B is where the best age of pregnant women is 20-35 years old. Because that age is a productive age for sexual activity and can increase the risk of hepatitis B virus transmission [2,3,8].

Pregnancy in mothers with hepatitis B can occur due to sexual activity with people with hepatitis B, where the hepatitis B virus is found in body fluids, such as blood, saliva, sperm, vaginal fluids, and sweat so that it can infect pregnant women. The results of this study are the theory that pregnancy in mothers with hepatitis B at productive age can occur due to risky sexual activity so that transmission of hepatitis B in pregnant women can occur [2,3,28]

5. Conclusion

- The influence of tribe was not significant with the incidence of hepatitis B in pregnant women at the Waena Health Center, Jayapura City, Papua Province (*p-value* 1,000; OR = 0.880; CI95% (0.218 – 3,457).
- 2. The effect of education is not significant with the incidence of hepatitis B in pregnant women at the Waena Health Center, Jayapura City Provinsi Papua (*p-value* 1,000; OR = 1,546; CI 95% (0,128 18,73).
- 3. The effect of hepatitis B status of sexual partners was significant with the incidence of hepatitis B in pregnant women at the Waena Health Center, Jayapura City, Papua Province (*p-value0.007*; OR = 12,143; CI95% (1,947 75,736) of sexual partners with a history of hepatitis B were 12,143 times more at risk of developing hepatitis B compared to sexual partners without hepatitis B.
- 4. The effect of a family history of living in the same house infected with hepatitis B was not significant with the incidence of hepatitis B in pregnant women at the Waena Health Center, Jayapura City, Papua Province (*p-value* 0.441; OR = 3,182; CI95% (0.183 22.194).
- The effect of hepatitis immunization was not significant with the incidence of hepatitis B in pregnant women at the Waena Health Center, Jayapura City, Papua Province (*p-value* 1,000; OR = 1,375; CI 95% (0.138 13,658).
- 6. The dominant factor for the incidence of hepatitis B in pregnant women at the Waena Health Center, Jayapura City, Papua Province is the status of Hepatitis B in sexual partners.

6. Suggestion

a. For Waena Health Center

Increasing information and education to pregnant women about the transmission of hepatitis disease as well

as screening and immunizing pregnant women for hepatitis B as an effort to prevent hepatitis B and providing education to women in planning marriages over 20 years old as well as education about age and healthy sex.

- b. For pregnant women
- Get vaccinated against hepatitis B before planning a marriage, Doing a health check-up before planning a pregnancy, Conducting regular pregnancy check-ups as an effort to prevent hepatitis B.
- c. For the next researcher
- Adding variables of first-time sex, personal hygiene, and family members, especially if there are family members who suffer from hepatitis B.

Acknowledgments

I would like to thank the Waena Health Center and the respondents who have been willing to take their time in this research.

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