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The relationship between the knowledge factors of pregnant women and the incidence of hepatitis B

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Abstract

Hepatitis is caused by the hepatitis B virus and is a health problem throughout the world including in Indonesia, estimated to infect nearly two billion people in the world and around 350 million people are pregnant women, (World Health Organization). The factor of knowledge of pregnant women about the incidence of hepatitis B is closely related to a person's awareness of the risk of hepatitis infection. The study aims to determine the relationship between the knowledge factors of pregnant women and the incidence of hepatitis B in the work area of the Desideria Sandai Primary Clinic, Ketapang Regency. Comparative Analytical Research Design with Cross-Sectional approach, sampling using total sampling technique with a sample size of 40 pregnant women. This study uses primary data in the form of questionnaires given to pregnant women who conduct pregnancy checks at the Desideria Sandai Primary Clinic and are tested for Hepatitis B by the Rapid Test HbsAg method. The results of the Chi-Square Analysis showed significant relationship between the Knowledge Factor of pregnant women and the incidence of Hepatitis B at the Pratama Desideria Sandai ClinicKetapang Regency as evidenced by the p-value on the Fiscer Exact Test of 0.042 (<0.05). There is a significant relationship between the Knowledge factor of pregnant women and the incidence of Hepatitis B at the Pratama Desideria Sandai Clinic, Ketapang Regency.

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INTRODUCTION

Hepatitis B virus is the cause of hepatitis, a disease that affects people around the world, including in Indonesia because it is estimated to infect nearly two billion people in the world and about 350 million people are pregnant women (Alberts et al., 2022; Iannacone, & Guidotti, 2022; Rizzo, Cabibbo, & Craxi, 2022; Saitta, Pollicino, & Raimondo, 2022; Hsu, Huang, & Nguyen, 2023; Worl Health Organization, 2025). According to scientific research and from a global public health perspective, hepatitis cirrhosis and liver cancer can be caused by 50% of cases of chronic hepatitis B infection worldwide and 80% of patients in high HBV endemic locations. Of the two billion people infected with hepatitis B virus globally, an estimated 240 million people suffer from chronic hepatitis (MacLachlan, & Cowie, 2015; Nelson, Easterbrook, & McMahon, 2016). The prevalence of hepatitis disease based on medical diagnosis in Indonesia from 2013 to 2018 was found to be between 0.2 to 0.4% in West Kalimantan Province in particular (0.29%), depending on the district or city: Based on Riskesdas (2018), the following districts have higher percentages: Sanggau (0.09%), Sekadau (0.10%), Ketapang (0.13%), Sambas (0.16%), Kubu Raya (0.17%), Sintang (0.18%). %), Landak (0.24%), North Kayong Regency (0.33%), Pontianak City (0.36%), Bengkayang (0.49%), Mempawah (0.58%), Kapuas Hulu (0.60%), Singkawang City (0.67%), Melawi 0.67%). There were 275 cases of Hepatitis B in 2022. This virus targets pregnant women and can be transmitted to the fetus (Dinas Kesehatan Kabupaten Ketapang, 2022).

The hepatitis B virus can infect tools such as razors and toothbrushes, medical equipment, blood products containing high concentrations of the virus and metabolic, autoimmune, or semen disorders that can cause inflammation or necrosis of liver tissue called hepatitis (Wang & Duan, 2021; Sheikh, Siddiquee, & Chahande, 2022). Once these people are exposed to the infection, it can develop into an acute infection, which then turns into a chronic disease. The intensity of chronic infection can range from very mild infections that are asymptomatic or asymptomatic to severe disease that requires hospitalization (Gao et al., 2021; Meyerowitz et al., 2021). In addition to horizontal transmission, the Hepatitis B virus can also be transmitted vertically during perinatal development, from mother to fetus. Women with hepatitis B who are pregnant and have positive HBsAg levels have a 90% risk of giving birth to an infected child. Of these, up to 25% may die from liver cancer or chronic hepatitis. In Indonesia, where hepatitis B is widespread, the disease is often transmitted vertically, especially in the prenatal stage, where it can cause chronic hepatitis B in 95% of infected babies. Hepatitis A 19.3%, hepatitis C 2.5%, and hepatitis B 21.8% are common in Indonesia (Hokinson, Sanjaya, & Jo, 2023).

Hepatitis B virus can infect the mother during pregnancy, whether the mother is pregnant or not (Terrault et al., 2021; Lu, et al., 2023) . Hepatitis B virus infection can also affect mothers in the third trimester of pregnancy. Abortion, early labor, and bleeding due to liver damage are among the risks (Natarajan et al., 2023). Currently, mothers who test positive for the virus transmit the infection to their children in 95 percent of hepatitis B transmission cases. The National Program for Prevention and Control of Viral Hepatitis B focuses heavily on Prevention of Mother-to-Child Transmission (PMTCT). Starting in 2015, Basic Health Services (Puskesmas) and related networks have implemented the Early Detection of Hepatitis B (DDHB) program in pregnant women (Kementerian Kesehatan Republik Indonesia, 2017). Immunochromatography and ELISA (Enzyme Linked Immunosorbent Assay) techniques are commonly used in immunoserological screening for HBsAg. The ELISA method, which is the standard HBsAg test, is rarely performed in laboratories because it is expensive, complicated, requires specialized equipment, and takes longer than the immunochromatographic method, which is also called the Orient Gene HbsAg Test Cassette is one of the rapid test techniques used for HBsAg. High sensitivity

and specificity values are required for laboratory testing methods to be used for diagnostic purposes to prevent errors.

The benefit of immunochromatographic methods is that they allow findings to be read in 10-20 minutes. These techniques include rapid tests that are not only used for screening but also as a reference for diagnosis. Infectious diseases such as hepatitis B continue to be a global health problem, even in Indonesia. One of the most vulnerable populations to Hepatitis B infection is pregnant women, as the virus can be transmitted from mother to child from conception to delivery. Pregnant women's understanding of hepatitis B may have an impact on efforts to avoid and manage the disease. Therefore, the purpose of this study was to determine how the variables of awareness of pregnant women relate to each other and the prevalence of Hepatitis B at the Primary Clinic Desideria Sandai, Ketapang Regency. The reason for choosing the research site at Klinikk Desideria Sandai is because since 2016 the author has conducted screening or Hepatitis B screening examinations on adolescent children from several sub-districts and villages who live together in dormitories managed by Yayasan Pelayanan Kasih Fatima, from each batch in the new school year who are always positive for HbsAg (Hepatitis B), are adolescent children from the Sandai sub-district area and surrounding areas.

METHOD

This study is a comparative analysis with a cross-sectional approach. This study was conducted to determine the level of knowledge of pregnant women about the incidence of Hepatitis B at the Desideria Sandai Primary Clinic. The population used is the entire outpatient who will be studied, all pregnant women who come to check their pregnancy health are involved in this study at the Desideria Sandai Pratama clinic in April to June 2024. The sample used is total sampling, namely all pregnant women who conduct pregnancy health checks at the Desideria Sandai Pratama clinic, Ketapang district. The type of data be collected is primary data, namely data obtained by researchers directly from research participants by distributing questionnaires to participants and conducting HbsAg screening examinations or screening on pregnant women who check their pregnancy health at the Desideria Sandai Pratama Clinic.

RESULTS AND DISCUSSION

Table 1. Recapitulation of Observation Results of the Relationship between Knowledge Factors of Pregnant Women with the Incidence of Hepatitis B at the Desideria Sandai Clinic, Ketapang Regency.

Respondent Code	Age	Parity	Good/Lack Knowledge	Non-reactive HbsAg Screening/ Reactive
0140	22 years old	First	Good (75%)	Non Reactive
0240	31 years	Second	Good (75%)	Non Reactive
0340	23 years old	Second	Less (50%)	Non Reactive
0440	32 years old	Second	Good (90%)	Non Reactive
0540	15 years	First	Good (75%)	Non Reactive
0640	21 years old	First	Less ()	Reactive
0740	20 years	Second	Less (40%)	Reactive
0840	29 years old	First	Good (100%)	Non Reactive
0940	28 years old	Second	Good (85%)	Non Reactive
1040	24 years old	Second	Less (60%)	Non Reactive
1140	26 years old	third	Less (70%)	Non Reactive
1240	28 years old	Second	Less (70%)	Non Reactive
1340	26 years old	First	Good (18%)	Non Reactive

Respondent Code	Age	Parity	Good/Lack Knowledge	Non-reactive HbsAg Screening/ Reactive
1440	20 years	First	Less (50%)	Non Reactive
1540	26 years old	Second	Less (0%)	Non Reactive
1640	25 years	Second	Good (90%)	Non Reactive
1740	31 years	third	Good (75%)	Non Reactive
1840	26 years old	Second	Less (0%)	Reactive
1940	19 years old	First	Good (100%)	Non Reactive
2040	24 years old	First	Good (100%)	Non Reactive
2140	29 years old	fourth	Good (100%)	Non Reactive
2240	33 years old	Second	Good (75%)	Non Reactive
2340	28 years old	Second	Good (90%)	Non Reactive
2440	35 years	third	Good (75%)	Non Reactive
2540	34 years old	third	Good (100%)	Non Reactive
2640	22 years old	First	Good (18%)	Non Reactive
2740	25 years	Second	Less (45%)	Non Reactive
2840	34 years old	Second	Less (60%)	Non Reactive
2940	29 years old	third	Less (55%)	Non Reactive
3040	35 years	Second	Less (60%)	Non Reactive
3140	30 years	third	Less (50%)	Non Reactive
3240	19 years old	First	Less (60%)	Non Reactive
3340	21 years old	third	Good (95%)	Non Reactive
3440	26 years old	third	Good (75%)	Non Reactive
3544	19 years old	Second	Good (85%)	Non Reactive
3640	27 years old	Second	Less (40%)	Non Reactive
3740	24 years old	First	Good (95%0	Non Reactive
3840	28 years old	First	Less (50%)	Non Reactive
3940	22 years old	First	Less (60%)	Reactive
4040	25 years	third	Less (70%)	Non Reactive

Table 1 presents a frequency distribution that represents all variables that will be used in the study. Univariate analysis was conducted to see the frequency distribution of each independent and dependent variable. The results of the frequency distribution for each dependent and independent variable are shown in the univariate analysis that follows.

Table 2. Results of Univariate Analysis of Knowledge Factors of Pregnant Women with Hepatitis B Incidence at Desideria Sandai Primary Clinic

Free Variable	Frequency (40)	Percentage (%)
Knowledge		
Good	21	52.5%
Less Good	19	47.5%
Age		
< 20 years	4	10%
20 - 35 years	36	90%
Education		
Low	36	90%
High	4	10%
Jobs		

Work	19	47.5%
Not working	21	52.5%
Parity		
First Pregnancy	14	35%
Second/more pregnancy	26	65%

Table 2 explains the distribution of good knowledge factors in pregnant women as many as 40 respondents, 21 respondents (52.5%), have good knowledge while 19 respondents (47.5%) have poor knowledge based on questionnaire answers which are categorized into two answers, namely yes and no. The distribution of answers based on categories is presented in the appendix. The distribution of answers by category is presented in the appendix. Assuming the category of good knowledge if the minimum value is ≥15 and poor knowledge if the value is <15. The age of pregnant women with a total of 40 respondents with an age of< 20 years as many as 4 people (10%), while the age of 20-35 years as many as 36 pregnant women respondents (90%). Based on the table above, it shows that most respondents have a low education as many as 36 responses (90%), namely elementary, junior high and high school levels, while those with high education, namely diplomas and degrees are 4 respondents (10%). Based on the data above, 19 respondents (47.5%) worked while 21 respondents (52.5%) did not work. Based on the data table above for parity, 14 respondents (35%) were first pregnant and 26 respondents (65%) were second or more pregnant.

Table 3. Frequency and Percentage Distribution of Hepatitis in Pregnant Women in the Incidence of Hepatitis B at Primary Clinic Desideria Sandai.

Dependent Variable	**Frequency**	**Percentage (%)**
Reactive	4	10%
Non Reactive	36	90%
Total	40	100%

Table 3 above explains the distribution of Hepatitis B examination with the Rapid Test method on serum samples of pregnant women with a total of 40 respondents with reactive rapid test results as many as 4 respondents (10%) and Non Reactive as many as 36 respondents (90%).

To ensure cross-tabulation, this bivariate study was conducted using the SPSS (Statistical Package for Social Science) application. Relationship analysis will use cross tabulation and Chi Square statistical test. Determining the significance and strength of the relationship between each of the study variables is the purpose of this study. The Ho hypothesis was tested using the chi square test, with a significance threshold of alpha = 0.05.

Table 4. *Chi-Square* Analysis of the Relationship between Knowledge Factors of Pregnant Women and the Incidence of Hepatitis B at the Desideria Sandai Primary Clinic, Ketapang Regency.

	Value	**df**	**Asymptotic Significance (2-sided)**	**Exact Sig. (2-sided)**	**Exact Sig. (1-sided)**
Pearson Chi-Square	4.912a	1	0.027		
Continuity Correction[b]	2.852	1	0.091		
Likelihood Ratio	6.450	1	0.011		
Fisher's Exact Test				0.042	0.042
Linear-by-Linear	4.789	1	0.029		

Association	
N of Valid Cases	40

a. There are 2 cells (50.0%) that have an expected frequency of less than 5. and the minimum expected number is 1.90.
b. Computed only for a 2x2 table

Based on the results of the *Chi-Square* analysis, it shows that there is a significant relationship between the relationship between the knowledge factors of pregnant women and the incidence of Hepatitis B at the Pratama Desideria Sandai Clinic, as evidenced by the *p-value* on the *Fisher Exact Test of* 0.042, this value is smaller than < 0.05 (0.042< 0.05), it is concluded that there is a relationship between the knowledge factors of pregnant women and the incidence of hepatitis B at the Pratama Desideria Sandai Clinic, so the H0 hypothesis is accepted. The Fisher Exact Test concept is an alternative test to the *Chi Square* test which is used for correlation analysis of the relationship between two variables when there is an expected count value <5.

Table 5. The Relationship between Knowledge Factors of Pregnant Women with the Incidence of Hepatitis B at the Desideria Sandai Clinic, Ketapang Regency.

Variable			Result HbsAg		
			Reactive	**Non Reactive**	**Total**
Knowledge	Less	Count	4	15	19
	Good	Expected Count	1.9	17.1	19.0
		% within Knowledge	21.1%	78.9%	100.0%
		% within Result_HbsAg	100.0%	41.7%	47.5%
		% of Total	10.0%	37.5%	47.5%
	Good	Count	0	21	21
		Expected Count	2.1	18.9	21.0
		% within Knowledge	0.0%	100.0%	100.0%
		% within Result_HbsAg	0.0%	58.3%	52.5%
		% of Total	0.0%	52.5%	52.5%
Total		Count	4	36	40
		Expected Count	4.0	36.0	40.0
		% within Knowledge	10.0%	90.0%	100.0%
		% within Result_HbsAg	100.0%	100.0%	100.0%
		% of Total	10.0%	90.0%	100.0%

Table 5 shows that the result of the calculation or *Crostabulation* between the factor of poor knowledge and the results of the Reactive HbsAg rapid test examination obtained a count value of 4 respondents by 10% while poor knowledge with the results of the Non Reactive HbsAg rapid test examination obtained a count value of 15 respondents by 37.5%, so that the total for poor knowledge and the results of the Reactive and Non Reactive HbsAg rapid test examination amounted to 47,5% while in the calculation results for the good knowledge factor with the results of the reactive HbsAg rapid test examination obtained a count value of 0 by 2.1% while good knowledge with the results of the Non Reactive HbsAg rapid test at get a count value of 21 by 18.9% so that the total value for good knowledge and the results of the Reactive and Non Reactive HbsAg rapid test examination is 52.5%.The total calculation results obtained poor knowledge and Reactive HbsAg results of 4 (10%)

and Good Knowledge with Non-Reactive HbsAg results of 36 (90%). Total sample 40 respondents.

DISCUSSION

The study was conducted at the Primary Clinic Desideria Sandai Ketapang Regency for 21 days in 3 months, namely April, May and June 2024. Respondents in this study were pregnant women who performed pregnancy checks at the Desideria Sandai Primary Clinic and were willing to become respondents. In the study 40 pregnant women who were willing to become respondents. Hepatitis B screening there were 4 respondents reactive pregnant women with HbsAg rapid test results and 36 respondents with non-reactive HbsAg rapid test results. At the end of June 2024, the study procedures and data collection were completed, and the researchers proceeded with data analysis. After calculation, the respondents' questionnaire findings were transformed into scores. The results of this transformation were then described in detail to provide solutions to the research problems. Following the data analysis procedure and drawing conclusions from the research findings, the researcher prepared a report summarizing the thesis research findings. Lack of knowledge can be caused by a number of complex and interrelated issues. A person's knowledge can be influenced by various things, including their level of education (Shavkidinova, Suyunova, & Kholdarova, 2023). Education makes it easier for a person to receive information and expand their knowledge base (Alenezi, Wardat, & Akour, 2023). However, in this study, higher education does not guarantee a person's knowledge about the incidence of hepatitis B and its transmission process, especially in pregnant women.

The process by which humans know something when they see it is called knowledge. Sight, hearing, smell, taste and touch are the five senses that humans have. Humans basically acquire information through their senses of hearing and sight. Respondents who feel these things have a variety of insights and experiences that help them maintain and improve their health as well as possible (Notoatodjo, 2014). The results of the calculation of the questionnaire filled in by the respondents showed that the knowledge of hepatitis B in pregnant women at the Pratama Desideria Sandai Clinic of 40 respondents had good knowledge as many as 21 respondents (52.5%), and those with poor knowledge were 19 respondents (47.5%) and there were 4 respondents (10%) with reactive HbsAg rapid test results and 36 respondents with non-reactive HbsAg rapid test results.

Research by Tungka (2014) revealed that among 39 respondents with low education, 18 respondents (46.2%) had good knowledge, while 63 respondents with low education also had low knowledge, 44 respondents (69.8%). Low education levels lacked adequate expertise (Rattay et al., 2021). Based on the results of this study can be concluded that pregnant women respondents with good knowledge about the incidence of Hepatitis B as many as 21 respondents (52.5%) have a low risk of being infected with hepatitis B while pregnant women respondents with low knowledge about the incidence of hepatitis B as many as 19 respondents (47.5%) have a high risk of hepatitis B.

CONCLUSION

It can be concluded that pregnant women respondents with good knowledge about the incidence of hepatitis B as many as 21 respondents (52.5%) have a low risk of being infected with hepatitis B while pregnant women respondents with low knowledge as many as 19 respondents (47.5%) with the incidence of hepatitis B have a high risk of hepatitis B.

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