



Risk Factors for Hepatitis B in Sidomulyo Subdistrict, Samarinda City

Yasmine Naura Aurelya¹✉, Puspita Wulan Sari¹, Siti Maysarah¹, Muhammad Rizky Aulia¹, Risva¹

¹Faculty of Public Health, Mulawarman University, Indonesia

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Abstrak

Hepatitis B merupakan penyakit infeksi yang disebabkan oleh virus Hepatitis B (HBV) dan dapat berkembang menjadi sirosis hati maupun kanker hati apabila tidak ditangani dengan baik. Penelitian ini bertujuan mengidentifikasi faktor risiko yang berhubungan dengan penyakit Hepatitis B serta kaitannya dengan riwayat vaksinasi Hepatitis B di wilayah kerja Puskesmas Sidomulyo, Kecamatan Samarinda Ilir, Kota Samarinda. Penelitian menggunakan desain potong lintang (cross-sectional) dengan pendekatan survei epidemiologi cepat. Sebanyak 210 responden dipilih melalui teknik cluster sampling, dan data dikumpulkan menggunakan kuesioner terstruktur. Analisis data dilakukan secara univariat dan bivariat menggunakan uji Chi-Square. Hasil penelitian menunjukkan mayoritas responden berusia dewasa (97,1%), berjenis kelamin perempuan (79,5%), berpendidikan SMA (61,9%), dan berpenghasilan kurang dari Rp2 juta per bulan (56,2%). Sebanyak 75,7% responden belum pernah menerima vaksin Hepatitis B, dan hanya 11,0% yang telah memperoleh dosis lengkap. Terdapat hubungan bermakna antara riwayat transfusi darah ($p=0,038$), tindakan operasi ($p=0,007$), dan tingkat pendidikan ($p=0,004$) dengan riwayat vaksinasi Hepatitis B. Cakupan vaksinasi Hepatitis B pada orang dewasa masih rendah sehingga diperlukan program vaksinasi berbasis masyarakat dan edukasi kesehatan yang lebih intensif.

Abstract

Hepatitis B is an infectious disease caused by the Hepatitis B virus (HBV) that can progress to liver cirrhosis and liver cancer if not properly managed. This study aimed to identify risk factors associated with Hepatitis B disease and their relationship with Hepatitis B vaccination history in the working area of Sidomulyo Primary Health Center, Samarinda Ilir District, Samarinda. A cross-sectional design with a rapid epidemiological survey approach was employed. Cluster sampling was used to recruit 210 respondents, and data were collected using a structured questionnaire. Univariate and bivariate analyses were performed using Chi-Square tests. The results showed that the majority of respondents were adults (97.1%), female (79.5%), had senior high school education (61.9%), and earned less than IDR 2 million per month (56.2%). A total of 75.7% had no history of Hepatitis B vaccination, and only 11.0% had received complete doses. Chi-Square analysis revealed significant associations between blood transfusion history ($p=0.038$), surgical history ($p=0.007$), and education level ($p=0.004$) with Hepatitis B vaccination history. No significant associations were found for sex, hemodialysis history, tattoo history, or sharing personal items. In conclusion, Hepatitis B vaccination coverage among adults remains very low. Community-based vaccination programs and intensive health education are urgently needed, particularly targeting low-education and low-income groups.

INTRODUCTION

Public health is a key factor in improving quality of life. Infectious diseases remain a serious health concern, one of which is hepatitis B. Hepatitis B is caused by the hepatitis B virus (HBV), which attacks the liver and can lead to inflammation and long-term liver damage. Chronic Hepatitis B infection has the potential to progress to liver cirrhosis and even liver cancer if not properly treated (Kurniawan et al., 2024).

Hepatitis B is transmitted through contact with infected blood or bodily fluids, including through the use of unsterilized needles, unsafe blood transfusions, vertical transmission from mother to child, unprotected sexual intercourse, and the use of personal items contaminated with blood, such as razors and toothbrushes (Saraswati & Larasati, 2022). Symptoms of Hepatitis B in the early stages are often unclear, so many patients are unaware that they have been infected until liver damage begins to occur.

Research shows that cases of hepatitis B are still prevalent in various regions of Indonesia. Factors contributing to this situation include the public's level of knowledge, attitudes, and behaviors regarding the risk of viral transmission (Kurniawan et al., 2024). Public knowledge about hepatitis plays a crucial role, as a good understanding of transmission routes and risk factors can help the public take more effective preventive measures (Suantika et al., 2024).

METHOD

This study is a rapid epidemiological survey employing a quantitative approach and a cross-sectional

design. The cross-sectional design was used to describe the relationships among the variables under study based on data collected at a single point in time (Abduh et al., 2023). The survey was conducted in the Sidomulyo Village, Samarinda Ilir Subdistrict, Samarinda City, East Kalimantan in 2026. The location was selected purposively based on the availability of target data by name and address and support from the Sidomulyo Community Health Center.

The study population consisted of all residents registered in the service area of the Sidomulyo Community Health Center (UPT Puskesmas Sidomulyo) who were targeted for the Hepatitis B screening program. The sample was selected using probability-proportional-to-size cluster sampling. Seven household samples were selected from each cluster, resulting in a total of 210 respondents. Inclusion criteria included being aged ≥ 18 years, residing in the Sidomulyo Community Health Center's service area, willing to sign an informed consent form, and having laboratory evidence of hepatitis. Exclusion criteria included being under 18 years of age, not residing in the study area, unable to provide consent, and lacking evidence of confirmed hepatitis infection.

The dependent variable in this study is the history of Hepatitis B vaccination. The independent variables include respondent characteristics (age, gender, education level, income) as well as risk factors (history of blood transfusion, history of surgery, history of dialysis, history of tattooing, habit of sharing personal items) and level of knowledge about Hepatitis B. Data collection was conducted using a structured questionnaire consisting of nine sections covering demographic data, health history, knowledge, attitudes, behavior,

service accessibility, health facilities, family support, and sources of health information.

The data were processed using SPSS and Microsoft Excel through the stages of editing, coding, data entry, and cleaning. Data analysis consisted of univariate analysis to describe the frequency distribution of each variable, and bivariate analysis using the Chi-Square test to determine the relationship between the independent variables and the history of Hepatitis B vaccination. A relationship was considered significant if the p-value was less than 0.05.

RESULT AND DISCUSSION

The study was conducted in the service area of the Sidomulyo Community Health Center, located in Samarinda Ilir District, Samarinda City. Administratively, this health center's service area borders Sungai Pinang Dalam Village to the north, Sungai Karang Mumus and Bandara Village to the west, the Mahakam River and Sungai Kapih Village to the south, and Sambutan Village to the east. The following presents the results of univariate and bivariate analyses of the 210 respondents who participated in the study.

Table 1. Characteristics of Respondents by Age, Gender, and Education Level (n=210)

Characteristics	Frequency (n)	Persentase (%)
Age		
Adult	204	97,1
Elderly	6	2,9
Gender		
Men	43	20,5
Women	167	79,5
Last Major		
Elementary School	8	3,8
Middle School	38	18,1
High School	130	61,9
College	34	16,2
Income		
<2 million/month	118	56,2
2–5 million/month	83	39,5

Characteristics	Frequency (n)	Persentase (%)
>5 million/month	9	4,3

According to Table 1, the majority of respondents were in the adult age group (97.1%). The dominance of the adult age group reflects high mobility and social interaction, which potentially increase exposure to Hepatitis B risk factors. Respondents were predominantly women (79.5%), reflecting women's greater health awareness and higher frequency of access to healthcare facilities compared to men. High

female participation is also significant given the risk of vertical transmission of Hepatitis B from mother to child. The most common educational level was high school (61.9%), with the majority of respondents having an income below 2 million rupiah per month (56.2%), reflecting limited socioeconomic conditions.

Table 2. Distribution of Risk Factors and Respondents' Knowledge (n=210)

Variabel	Frequency (n)	Persentase (%)
History of Hepatitis B Vaccine		
No	159	75,7
Yes	51	24,3
Hepatitis B Vaccine Dosage		
None	162	77,1
Incomplete	25	11,9
Complete	23	11,0
Blood Transfusion History		
Never	176	83,8
Ever	34	16,2
Surgical History		
Never	154	73,3
Ever	56	26,7
Tatto History		
No	204	97,1
Yes	6	2,9

Variabel	Frequency (n)	Persentase (%)
Sharing Personal Tools		
No	208	99,0
Yes	2	1,0
Knowlegde: Hepatitis B is transmitted through eating utensils		
Don't know	108	51,4
Know	102	48,6
Knowledge: Hepatitis B Causes Liver Cancer		
Don't know	83	39,5
Know	127	60,5

Table 2 shows that the majority of respondents have not received the Hepatitis B vaccine (75.7%) and only 11.0% have completed the full vaccination series. This figure is concerning, given that vaccination is the most effective intervention for preventing Hepatitis B. The low vaccination coverage among the adult population reflects the weakness of vaccination programs, which have historically focused more on children. Furthermore, financial constraints pose a

significant structural barrier for low-income groups in accessing vaccination services (Susilawati et al., 2022). Public awareness regarding the transmission of Hepatitis B through eating utensils remains low (51.4% were unaware), although the majority (60.5%) were already aware that Hepatitis B can cause liver cancer.

Table 3. Association Between Risk Factors and History of Hepatitis B Vaccination (n=210)

Variable	Unvaccinated (n)	Vaccine (n)	Total (n)	p-value
Gender				
Men	33	10	43	0,860
Women	126	41	167	
Blood Transfusion History				
Ever	21	13	34	0,038*

Variable	Unvaccinated (n)	Vaccine (n)	Total (n)	p-value
Never	138	38	176	
Surgical History				
Ever	35	21	56	0,007*
Never	124	30	154	
Last Major				
Elementary School	8	0	8	0,004*
Middle School	31	7	38	
High School	102	28	130	
College	18	16	34	
Blood Transfusion History				
Ever	2	0	2	0,421
Never	157	51	208	
Tatto History				
Yes	6	0	6	0,159
No	153	51	204	
Sharing Personal Tools				
Yes	1	1	2	0,394
No	158	50	208	

**Significancy of $p < 0,05$*

The results of the bivariate analysis in Table 3 show three variables that have a significant association with the history of Hepatitis B vaccination. First, a history of blood transfusion is significantly associated with vaccination history ($p=0.038$). The proportion of respondents who had undergone a blood transfusion and had been

vaccinated (38.2%) was higher than that of those who had never received a transfusion (21.6%). This can be explained by the fact that patients undergoing transfusions generally receive pre-transfusion education regarding the risk of blood-borne infections, making them more aware of the importance of vaccination (Kharie, 2025). This finding aligns with Kharie's (2025)

study, which reported a significant association between a history of blood transfusion and the incidence of Hepatitis B in pregnant women ($p=0.019$).

Second, surgical history showed a significant association with vaccination history ($p=0.007$). The proportion of respondents who had undergone surgery and had been vaccinated (37.5%) was significantly higher than that of those who had never undergone surgery (19.5%). This finding aligns with the recommendation by Edlich et al. (2003), who state that all patients scheduled for surgical procedures should receive the Hepatitis B vaccine beforehand. Patients undergoing surgery typically undergo hepatitis screening as part of preoperative examinations, which provides an opportunity for healthcare providers to administer the vaccine.

Third, educational level was significantly associated with vaccination history ($p=0.004$), with a pattern showing that the higher the educational level, the greater the proportion of vaccinated individuals. In the elementary school group, none of the respondents had a history of vaccination (0%), whereas in the college group, the rate reached 47.1%. This finding is consistent with the study by Kusuma et al. (2023), which reported that educational level is significantly associated with knowledge of Hepatitis B vaccination (OR=2.90; 95% CI=1.21–6.95; $p=0.026$). Individuals with higher education have better access to information and tend to be more proactive in seeking preventive services.

On the other hand, gender ($p=0.860$), history of dialysis ($p=0.421$), history of tattoos ($p=0.159$), and the habit of sharing personal items ($p=0.394$) did not show a significant association with the history of Hepatitis B vaccination. The

absence of a significant association based on gender is consistent with the study by Kusuma et al. (2023) ($p=1.000$) and indicates that sociocultural factors and access to healthcare services are more dominant than biological factors in determining vaccination coverage. Although all respondents with a history of tattoos had no vaccination history (100% unvaccinated out of 6 respondents), the results were not statistically significant due to the very small sample size.

The overall findings indicate the need for a more inclusive Hepatitis B vaccination strategy. Groups that interact with the healthcare system, such as transfusion and surgical patients, tend to have better vaccination coverage, while low-educated and low-income groups are the most vulnerable yet the hardest to reach. Integrating adult Hepatitis B vaccination programs into the National Health Insurance (JKN), community-based vaccination campaigns, and education tailored to the community's literacy levels must be prioritized in efforts to achieve Hepatitis B elimination.

CONCLUSION

This study shows that hepatitis b vaccination coverage among the adult population in the sidomulyo community health center's service area remains very low, with only 24.3% of respondents having ever been vaccinated and 11.0% having received the full course of vaccination. Factors significantly associated with hepatitis b vaccination history include a history of blood transfusion ($p=0.038$), a history of surgery ($p=0.007$), and educational level ($p=0.004$). Groups that have interacted with the formal healthcare system tend to have better vaccination

coverage. Meanwhile, gender, history of dialysis, history of tattoos, and the habit of sharing personal items did not show a significant association with vaccination history.

More comprehensive interventions are needed to increase hepatitis B vaccination coverage in the community, particularly through the integration of adult vaccination into the national health insurance program, the development of community-based vaccination campaigns that reach low-income and low-education groups, and the enhancement of health education utilizing various communication media that are easily accessible to the public. Further research is recommended to include family support and health service accessibility as independent variables to broaden the understanding of the determinants of hepatitis B vaccination coverage among the adult population in urban areas.

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