



PROFILE OF PREGNANT WOMEN WITH HEPATITIS B IN SURABAYA 2020-2023

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Abstract

Background: Hepatitis B virus (HBV) infection is a major public health issue. Worldwide, approximately 2 billion people have been infected, and more than 240 million are chronic carriers at risk of progressive liver diseases such as cirrhosis, liver failure, and hepatocellular carcinoma (HCC) (WHO, 2015). **Method:** This research method is descriptive with sampling techniques using random sampling that meets the inclusion criteria of 187 samples. The data collection was conducted using secondary data from the SIHEPI application for the years 2020-2023 at the Health Office of Surabaya City. **Result:** The frequency characteristics were obtained from 187 pregnant women with ages between 20-35 years (70.6%) who were in the third trimester of pregnancy (41.7%) and the majority of mothers were unemployed (58.3%). Most babies born to mothers with hepatitis B received HBIG (95.7%), but one baby was infected with hepatitis B (0.5%) **Conclusion :** The majority of babies born to mothers with hepatitis B have received HBIG, and 77.0% of babies were not infected.

keyword : Pregnant women, Infants, Hepatitis B, HBIG

INTRODUCTION

Hepatitis B Virus (HBV) infection is a major public health problem. Worldwide, approximately 2 billion people have been infected and more than 240 million are chronic carriers at risk of progressive liver disease such as cirrhosis, liver failure and hepatocellular carcinoma (HCC) (WHO, 2015). HBV infection accounts for more than 780,000 deaths annually, with HCC currently the fifth most common cancer and the second most common cause of cancer death (Stewart & Will, 2014). The Asia Pacific region accounts for the largest share of Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) infections in the world and 74% of global liver cancer deaths occur in Asia (Wait et al, 2016).

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In Indonesia, a national study was conducted through Riskesdas 2013 covering 33 provinces. The results of the study showed the prevalence of Hepatitis b, anti-HBc, and anti-HBs were 7.1% (from 40,791 samples), 31.9% (from 38,312 samples), and 35.6% (from 39,750 samples) respectively. It should be noted that there has been a decline in the prevalence of Hepatitis b (9.4% in 2007 to 7.1% in 2013) indicating that Indonesia has shifted from high to moderate endemicity of HBV infection.

The most common transmission method found in endemic areas such as Southeast Asia, East Asia and Sub-Saharan Africa is the mother-to-child transmission method, which is 25-30% with a risk of infection reaching 60% during life (Patton and Tran, 2014). Universal screening for hepatitis B infection during pregnancy has been recommended for many years. Identification of pregnant women with chronic HBV infection through universal screening has had a major impact on reducing the risk of neonatal infection (Alan et al, 2016). The percentage of districts or cities implementing Early Detection of Hepatitis B (DDHB) in 2017 in East Java was 23.68% and the percentage of reactive Hepatitis B in pregnant women in East Java was 2.77% (Ministry of Health of the Republic of Indonesia, 2018)

Pregnant women with Hepatitis B infection need to be identified early and require careful monitoring during pregnancy and the postpartum period. Emphasis should be placed on universal coverage of passive-active immunoprophylaxis in infants born to Hepatitis B-positive mothers within 12 hours of birth to reduce the risk of perinatal transmission. Additional antiviral therapy given to mothers with high Hepatitis B viral load in the third trimester has also been shown to be beneficial in preventing perinatal transmission. Among antivirals, tenofovir has the best efficacy and safety profile. However, further RCTs are needed to determine the efficacy and safety of this drug in pregnancy.

In this study, researchers want to know the profile of pregnant women with Hepatitis B in Surabaya in 2020-2023 and see their characteristics. The characteristics seen are the age of the pregnant woman, gestational age, occupation and transmission and prevention. It is hoped that this study can contribute to

providing a general picture of the characteristics of pregnant women with positive Hepatitis B, so that delivery and immunization services can be carried out optimally.

METHOD

The research design used was cross-sectional. The population in this study were all pregnant women with hepatitis B in Surabaya in 2020-2023 with a total of 2162 mothers. The sampling technique used was random sampling. The sample size was obtained based on the inclusion criteria of 187 samples. The variables in this study were maternal age, gestational age, occupation, infected babies and babies receiving HBIG immunization. Data collection was carried out in February - May 2024 starting with research permits then to determine the research sample, data selection was carried out according to the inclusion criteria. Then data from the SIHEPI application was collected. After the data was collected, data processing and analysis were carried out which were presented in the form of tables and narratives.

RESULT AND DISCUSSION

Characteristics of data on hepatitis B

Based on table 1, data shows that the majority of mothers with Hepatitis B are 20-35 years old (70.6%) in the third trimester of pregnancy (41.7%) and the mother is not working (58.3%).

Data Characteristics	Frequency (n)	Percentage (%)
Age		
Maternal age <20 years	2	1.1
Mother's age 20-35 years	132	70.6
Mother's age >35 years	53	28.3
Gestational Age		
Trimester 1 (1-13 weeks)	47	25.1
Trimester 2 (14-27 weeks)	62	33.2
Trimester 3 (28-40 weeks/until delivery)	78	41.7
Work		
Private sector employee	60	32.1
Self-employed	9	4.8



Doesn't work	109	58.3
Etc	7	3.7
Civil Servants/State-Owned Enterprises/TNI/POLRI	2	1.1

Source: (SIHEPI application data 2020-2023)

Table 1. Presetation of data characteristics

In terms of age, the majority of pregnant women who experience hepatitis B are 20-35 years old, as many as 132 people (70.6%). In line with the research of Pither, M., et al. (2021) that pregnant women in the high-risk age group, namely 20-35 years old, are 54.8% of cases and 45.2% of controls ($p\text{-value} = 0.177$), it was concluded that there was no relationship between age and the incidence of hepatitis B. One of the risk factors for pregnant women to be infected with hepatitis B is age, especially for mothers of productive age because productive age is the peak period of social interaction between the opposite sex and the vulnerable phase of the reproductive cycle. In fact, sexual intercourse also plays a role in the transmission of hepatitis B because apart from blood, the hepatitis B virus is also transmitted through bodily fluids such as saliva, tears, semen, and vaginal mucus, which have the ability to spread infection horizontally.

This is because Hepatitis B infects more adolescents to young adults, higher infections, because in this age range they are more susceptible to Hepatitis B risk factors such as the use of contaminated syringes. There is research that explains the rarer occurrence in the elderly, it is estimated that the virus has disappeared from the body after experiencing acute hepatitis and is healthy (Kolou et al., 2017).

At gestational age, pregnant women with a gestational age of >42 weeks were 67 people (46.9%). In line with research by Alma, et al. (2020), the most gestational age was in the third trimester group as much as 85.1 percent of the total sample. This happens because during the pregnancy process there will be a decrease in the immune system so that it will provide a great opportunity for the virus to multiply which is indicated by the presence of HBsAg in the blood of pregnant women (Kolawole et al., 2012). Pregnant women who are infected with the Hepatitis B Virus are at risk of transmitting it to their babies in the first or second

trimester of pregnancy, the risk is around 10% and will be 75% during the third trimester of pregnancy. In the third trimester, pregnant women with hepatitis B tend to have a higher viral load, which increases the possibility of transmitting the virus to the baby.

Pregnancy does not directly affect HBV. Changes in viral load and liver enzymes are caused by changes in the immune system, namely: changes in the balance of Th1 and Th2, and reducing the immune response to hepatitis B infection, where these changes can prevent fetal rejection of the mother's immune system. This causes an increase in HBV DNA and a decrease in ALT. After giving birth, the immune system will return and cause an increase in ALT and a decrease in HBV DNA (Gozali, 2020).

In this study, the majority of pregnant women with hepatitis B in this study were unemployed, as many as 90 people (62.9%). Based on the results of this study, it shows that work is not a risk factor for Hepatitis B in pregnant women, the majority of pregnant women have jobs that are not at risk, because most are just housewives. Housewives or unemployed mothers have minimal social interaction, so there is less exposure to unwanted things. Compared to mothers who work outside the home, it is possible for mothers to be exposed in any way that may not be visible. One of the jobs related to exposure is health workers (doctors, nurses, midwives, laboratory staff) where health workers often deal with patients who may not be generally known that the patient is infected with Hepatitis B Without laboratory test results. In addition, commercial sex workers (CSWs) who use minimal protection (condoms) are also at risk of being infected with Hepatitis B.

In line with research (Pitheret al., 2021) which states that exposure to transmission occurs from family members or partners in the use of personal items, not from work. The high group of Hepatitis B cases in pregnant women who are housewives explains the lack of knowledge of pregnant women regarding the risk factors for Hepatitis B transmission, so they lack knowledge and awareness of disease transmission.

Maternal fetal transmission of hepatitis B

Table 2. Presentation of maternal fetal transmission data

Data Characteristics	Frequency (n)	Percentage (%)
Baby infected with Hepatitis B		
Infected	1	0.5
Not infected	144	77.0
Unknown	42	22.5
Baby gets HBIG		
Yes	179	95.7
Unknown	8	4.3

Source: (SIHEPI application data 2020-2023)

Based on table 5.2, data shows that the majority of babies received HBIG (95.7%) but 1 baby was infected (0.5%).

HBIG immunization injection is a type of passive immunization that involves the creation of antibodies that aim to provide direct immunity, so that the body does not need to create its own active substances to protect its body. HBIG immunization has a success rate of 85% to 95%, which will provide immediate protection even though it only lasts three to six months (IDAI, 2011). This study stated that the majority of infants received HBIG (95.7%) but there was 1 infant who contracted hepatitis B.

In line with the research of Elfon et al, 2019, the results of the analysis of the effect of HBIG administration on the results of HBsAg examinations in infants born to HBsAg positive mothers using Fisher's exact test showed a significance value of $p = 1,000$ ($p > 0.05$) so that it can be said that there is no effect of HBIG administration on the results of HBsAg examinations in infants born to HBsAg positive mothers.

In contrast to the study conducted by Ramadhani (2019) in four health centers in Surabaya City in 2017, five infants (8.9%) did not receive passive HBIG immunization. The results showed that one in five infants (1.8%) were declared reactive to HBsAg when they were more than 9 months old. This was due to the fact that mothers refused to provide active HB-0/HB-1/HB-2/HB-3 immunization to their babies on time at birth. The same results were also shown in the study by Gong & Liu (2017) which stated that HBIG can produce anti-HBs antibodies within

hours after injection. HBIG injection can prevent mother-to-infant transmission of hepatitis B with an effectiveness of 85%-95% when combined with complete active hepatitis B immunization.

The results of Sjahriani's study, 2018 found that transmission of hepatitis B infection in babies born to HBsAg positive mothers was only 5 babies (16.7%). The results of Dwivedi's study, M et al (2011) also explained that vertical transmission from mothers with positive HBsAg was 20%. The results of the study are in accordance with other literature which states that 10% of babies born to women with positive HbsAg are infected with HBV. The percentage of HBsAg (+) mothers for vertical transmission indicating HBsAg (+) in babies who have been given HBIG at birth is 1 person (2.1%) this is because the risk of perinatal infection is 5-20% of babies born to mothers with positive HBsAg and 70-90% if the mother is HBeAg (+) (Shepard CW et al). According to research by Kang G et al (2015), the efficacy of administering the hepatitis B vaccine alone was 75%, the efficacy of administering HBIG alone was 71%, while the efficacy of administering the hepatitis B vaccine and HBIG was 94%.

In this study, it is necessary to conduct regular monitoring of pregnant women and their babies who are infected with hepatitis B. Pregnant women who do not require hepatitis B antiviral treatment still need monitoring with regular HBV DNA examination even though the mother has given birth, so that fast and appropriate treatment can be carried out as early as possible so that chronic cases of advanced/cirrhosis can be reduced. If HBV DNA examination monitoring cannot be carried out, then the health center can conduct SGOT/SGPT examination and clinical symptom monitoring periodically once a year. If there is a 2x increase from the normal limit, this result can be used as a sign of a possible increase in viral load and immediate referral for HBV DNA examination.

Infants in good clinical condition are given HB0 and HBIG vaccines <24 hours, preceded by Vitamin K administration 2–3 hours before. HB0 immunization is given on a different thigh from HBIG and Vitamin K. Furthermore, HB1, HB2 and HB3 immunizations are given according to the immunization program schedule. If the infant's clinical condition is not well, then HB0 administration can be postponed



until the condition improves but HBIG administration <24 hours is still given/should not be postponed.

Babies born to mothers with reactive HBsAg can be given exclusive breast milk. Until now there has been no evidence of hepatitis B transmission from breast milk, but to minimize transmission, breastfeeding can be given after HB0 and HBIG immunization. Early initiation of breastfeeding (IMD) in babies from mothers with reactive HBsAg is carried out according to the advice of the doctor in charge.

CONCLUSION AND SUGGESTION

The results of this study can be concluded that majority pregnant women with hepatitis B in Surabaya in 2020-2023 were aged 20-35 years, at a gestational age of >42 weeks in the 3rd trimester and the mother was not working. The majority of infants received HBIG and the majority of infants were not infected, but one infant was infected with hepatitis B. It is expected that health workers can ensure that all pregnant women who have hepatitis B when giving birth to their babies must receive HBIG. For health services, Infectious disease screening needs to be monitored and evaluated periodically to ensure that procedures can be carried out consistently and appropriately. By increasing screening and continuing fetal maternal prevention efforts. And for the author, The results of this study can be used as a basis and reference material for further research. Other studies can be continued on subjects in various geographical locations and ethnicities in Indonesia. Other studies can be developed further by adding the results of serological examinations in hepatitis B patients to be a source of research data in relation to fetal maternal transmission and its prevention. Other studies can consider other factors that can affect the characteristics of hepatitis B patients.

DECLARATION

Conflict of Interest

There is no conflict of interest in this research.

Authors' Contribution

All authors contributed to research and writing of the manuscript. The first author contributed more to the preparation of the manuscript and data collection. The second author contributed more to the preparation of the manuscript and review of the manuscript. The third author contributed more in reviewing the preparation of the manuscript, data analysis, and finalizing the manuscript.

Ethical Approval

Ethical approval of this research by ethics committee faculty of Medicine Airlangga University Surabaya No.78/EC/KEPK/FKUA/2025

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Data Availability

If further study is conducted on this topic in the future, the researcher is open to being contacted, and we are prepared to assist with this.

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REFERENCE

- Gong J; & Liu X. (2018). Effect of HBIG Combined with Hepatitis B Vaccine on Blocking HBV Transmission Between Mother and Infant and Its Effect on Immune Cells. *Experimental And Therapeutic Medicine*, 15(1), pp. 919-923.<https://doi.org/10.3892/etm.2017.5474>
- Gozali, AP (2020). Diagnosis, Management, and Prevention of Hepatitis B in Pregnancy. *Mirror of the World of Medicine*, 47(5), 354–358.
- Kolawole OM, Wahab AA, Adekanle DA, et al 2012. Seroprevalence of surface antigenemia and its effects on hematological parameters in pregnant women in Osogbo, Nigeria. *Virology Journal* 2012, 9:317, 3



- Pither, M., Yusuf, A., & Aziz, R. (2021). Risk Factors for Hepatitis B Incidence in Pregnant Women in East Luwu District: Risk Factors for Hepatitis B Incidence in Pregnant Women in East Luwu District. Indonesian Health Promotion Publication Media (MPPKI); Vol. 4 No. 3: SEPTEMBER 2021 - Indonesian Health Promotion Publication Media (MPPKI); 432-438; 2597-6052.
<https://jurnal.unismuhpalu.ac.id/index.php/MPPKI/article/view/162>
- Ramadhani, AKS, et al (2019). Provision of Hepatitis B Immunization (Passive). Indonesian Midwifery and Health Sciences Journal, 3(2), 114–119.
- Shepard, C.W., Simard, E.P., Finelli, L., Fiore, A.E., & Bell, B.P. (2016). Hepatitis B virus infection: epidemiology and vaccination. Epidemiologic reviews, 28(1), 112-125
- Sjahriani, T., & Agustin, DA (2018). The rate of transmission of hepatitis B from mother to baby in babies who received HBIg at the Kedaton Health Center, Way Halim Health Center and Labuhan Ratu Health Center, Bandar Lampung City in 2016. Journal of Medical and Health Sciences, 5. Pp. 287-293