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# The Risk Factors of Hepatitis B in Pregnant Woman in Banjarmasin on August – October Period 2017

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## ABSTRACT

Hepatitis B is one of the top 3 infectious diseases in the world. Kalimantan Selatan is a province included in 13 provinces of Indonesia that have a prevalence rate above the national average of 1.4 %. The purpose of this study was to determine the risk factors of Hepatitis B in pregnant women conducted in Banjarmasin, Kalimantan Selatan on August - October 2017 from secondary data 2,837 pregnant women population with the case-control approach. Risk factors recorded in form 9B (register of pregnant women who performed early detection of Hepatitis B) were analyzed. From 7 of risk factors were analyzed only vaccination history that influenced the incidence of hepatitis B in pregnant women (p 0.000, OR 0.321).

***Keywords**: hepatitis B, pregnant women, risk factors*

## INTRODUCTION

Hepatitis is an infectious disease that is a public health problem, which affects morbidity, mortality, public health status, life expectancy and other socio-economic impacts. Kalimantan Selatan is province included in 13 provinces with prevalence rates above the national average of 1.4%.[1] Transmission of hepatitis B virus (HBV) through contact with blood, semen and other body fluids such as wound exudate, secretion of saliva from patients who anchovies the infection of Hepatitis B.[2] Prevalence of HBsAg was higher in pregnant women compared with health workers in the Sana'a Hospital, Yemen ie 54/543 (9.9%) and 19/546 (3.5%).[3]

Vertical transmission from mother to child is the main way of transmission of HBV in many countries in the world, especially in developing countries with high prevalence, and this is the reservoir for horizontal spread of HBV infection. Without prophylaxis, 80% - 90% of infants born from mothers with HBsAg and HBeAg will have chronic hepatitis B, cirrhosis and hepatocellular carcinoma.[4]

Various factors affecting the prevalence of Hepatitis B in pregnant women include age, working as a health workforce, history of blood transfusion, history of hemodialysis, history of hepatitis B vaccination, number of sexual partners and family history of hepatitis.[5,6,7]

## MATERIALS AND METHOD

This research uses a case-control study on 2837 data population of pregnant women were screened for Hepatitis B in Banjarmasin from August to October 2017 that noted in the registration form in pregnant women who had early detection of Hepatitis B (9B Form). Method of data sampling with purposive sampling technique as much as 36 and control sampling from data of pregnant women-HBsAg nonreactive with systematic random sampling counted 36.

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## RESULTS AND DISCUSSION

**Table 1. Bivariate Analysis of Variables**

| Variable | Category | HBsAg | | p-value | OR |
|---|---|---|---|---|---|
| | | Reactive | Non-reactive | | |
| Age | Adult | 24 | 19 | 0.336 | |
| | Youth | 12 | 17 | | |
| Occupancy | Workforce | 0 | 3 | 0.239 | |
| | Non-workforce | 36 | 33 | | |
| Transfusion | Yes | 0 | 5 | 0.054 | |
| | None | 36 | 31 | | |
| Hemodialysis | Yes | 0 | 2 | 0.493 | |
| | None | 36 | 34 | | |
| History of Hepatitis B Vaccination | Yes | 0 | 19 | 0.000 | 0.321 |
| | None | 36 | 17 | | |
| Family History of Hepatitis B | Yes | 2 | 2 | 1.000 | |
| | None | 34 | 34 | | |
| Sexual Partners | >1 | 2 | 0 | 0.493 | |
| | 1 | 34 | 36 | | |

The result of the research on the sample of 72 pregnant women, obtained the frequency distribution of pregnant women's characteristics of age category dominated by an adult of 59.7% and youth of 40.3%. Pregnant women who work not as health workforce dominate 95.8% and pregnant women who work as health workforce of 4.2%. Pregnant women with no history of blood transfusion dominated 93.1% and those with a blood transfusion history of 6.9%. Pregnant women with no history of hemodialysis dominated 97.2 % and who had a hemodialysis history of 2.8%. Pregnant women with no family history of hepatitis B dominated 94.4 % and had a family history of hepatitis B of 5.6%. Pregnant women with no history of Hepatitis B vaccination dominated 73.6 % and those with a history of Hepatitis B vaccination by 26.4%. Pregnant women who had the number of sexual partners 1 dominated 97.2 % and pregnant women who had sexual partners > 1 couple by 2.8%. From bivariate analysis with Chi-Square test only the history of Hepatitis B vaccinations that affect the incidence of Hepatitis B in pregnant women (*p-value* 0.000; 95% CI; OR 0.321).

In this study, age did not affect the incidence of hepatitis B in pregnant women (*p-value* 0.336 > 0.05). There is no difference in risk between adolescents and adults for HBV infection, this is in line with the study Trisnaningtyas *et al*, that there is no study that states there is a relationship between age and magnitude of Hepatitis B infest infant.[8] The phenomenon that occurs in pregnant women in Banjarmasin caused by the nutritional status of pregnant women so although adult levels of Anti-HBs have been reduced, the body is still able to protect itself because it has a strong body resistance against HBV infection. Conversely less nutritional status leads to susceptibility to viral infections of any kind including HBV because it has low cellular immunity so that immune responses and immunologic memory have not been fully developed.

From the result analysis, there is no relation between work as health workforce on the incidence of Hepatitis B (*p-value* 0.239 > 0.05), description of pregnant women's characteristics based on work the majority of pregnant women. The decrease in the incidence of Hepatitis B in health workforce is closely linked with increased knowledge of them about HBV transmission, hepatitis B vaccination and the adoption of standardized operational procedures and awareness based on transmission in improved health services.[9] The incidence of HBV

infection in low-density care workers in the population who routinely vaccinates, HBV transmission from the health care provider to the patient is rare whereas the risk of transmitting HBV is positive from the patient to the healthcare provider is higher. The risk of transmission of HBV through the sharpening of sharps (infected with HBeAg positive patients) is estimated to be 1: 3. Although HBV is highly infectious there are only 24 cases of work-related transmission from sharps injuries reported in Germany during 2013. This small number may be related to the high percentage of health workers vaccinated against Hepatitis B.[10]

There was no effect of blood transfusion history on the incidence of Hepatitis B, 100% of pregnant women with reactive HBsAg had no history of blood transfusion. The characteristics of pregnant women based on the history of blood transfusion, the majority of pregnant women who performed early detection of hepatitis B in Banjarmasin did not have a history of blood transfusion. Pregnant women with a blood transfusion history of 5 (6.9%) and all (100%) had non-reactive HBsAg results. Pregnant women with HBsAg reactive everything (100%) have no history of ever blood transfusion. Several studies reported HBV transmission through the blood component of an asymptomatic individual Hepatitis B.[11,12] Blood donors or organs with HBsAg (-) screening tests may still contain HBV, so that a recipient who receives blood transfusions or organs from a non-reactive HBsAg screening donor will suffer post-transfusion Hepatitis, this is due to the window period or recovery or post-infection HBsAg examination results will be negative but still contain HBV (13). One of the causes of the absence of Hepatitis B post-transfusion because it is now a good blood donor screening strategy at PMI. In addition to HBsAg examination is also done another routine so that blood donor acceptance is more selective against HBV and another blood-borne virus (BBV).[14, 15]

All pregnant women with reactive HBsAg (100%) had no history of hemodialysis and all pregnant women with a history of hemodialysis (100%) had nonreactive HBsAg results, the facts that occurred in pregnant women in Banjarmasin. When some patients receive concurrent dialysis, there is a recurring opportunity for patient-to-patient transmission, directly or indirectly through contaminated equipment, equipment, and equipment, or through officer hands, increasing their chances of exposure to nosocomial infections such as HBV infection.[16,17] This phenomenon describes the transmission of the blood-borne virus in Banjarmasin does not occur through hemodialysis because the process of implementing the therapy in accordance with standard operating procedures have been established. From an investigator conducted in Tunisia, the implementation of hemodialysis in accordance with the standard operating procedure and work instructions also reduced the prevalence of Hepatitis B and Hepatitis C in hemodialysis patients.[18]

Majority of pregnant women who did early detection of hepatitis B in Banjarmasin did not have a history of Hepatitis B vaccination as many as 53 people (73.6%) from 72 people. There is an influence of the history of vaccination against the incidence of Hepatitis B (p-value, 0.000 <0.05; OR 0.321), this analysis showed Hepatitis B vaccination is protecting against Hepatitis B virus infection of 0.321 times. The results of this study are in line with several studies conducted in several other countries that get Hepatitis B vaccination can reduce the prevalence of Hepatitis B patients by 90-95%. The prevalence of hepatitis B decreased in US children, declining in the age range 6-19 years from 1.9 % to 0.6%; p <0.01.[19] In Egypt, the implementation of hepatitis B vaccination in national in infancy produces adequate protection against HBV within 1-16 years after vaccination.[20] The success of vaccination was assessed by detection of anti-HBs in serum after complete Hepatitis B vaccination as much as 3-4 times.[21] Hepatitis B antibodies titer is said to be protective when anti-HBsAg antibody titer >10 mcg/mL which means the person already has immunity to Hepatitis B and does not need to be vaccinated, and vice versa if.[22] Research in Padang, only about 18-24% of protective anti-HBs are present after 10 years of vaccination, about 17-21% of protective anti-HBs after 11 years of vaccination and 6-7% of protective anti-HBs remaining after 12 years of hepatitis B vaccines.[23]

In research at Pondok Pesantren Putri Ibnul Qoyyim Yogyakarta, there are factors related to the incidence of Hepatitis B that is a family history of Hepatitis B with (p<0,05) OR 7,636. This suggests that having a family history of Hepatitis B has a 7 times more risk of HBV infection than they do not have a family history of hepatitis B.[24] The research about pregnant women in Banjarmasin obtained no effect family history of Hepatitis against Hepatitis B incidence, this fact shows there are other factors that served to protect against

HBV infection, if the community has a strong immune system so when there is infection with HBV, a defense mechanism in his body will be able to form anti-HBs in a protective level (>10 mUI/ml) or family with home contact with Hepatitis B patients to protect Hepatitis B vaccination to provide special protection against HBV infection.

There is no effect on the number of sexual partners on the incidence of Hepatitis B. This result is not compatible with research conducted by Su & Chow, *et al* in China which states that transmission of Hepatitis B through unprotected sexual intercourse on heterosexual is another major transmission route after vertical transmission (from mother to child born) this is evidenced by the high prevalence of hepatitis B in female sex workers is10.7% (7.3-15.5%).[25] Similarly, factors affecting heterosexual for sexually transmitted infections including Hepatitis B are individuals who frequently switch sexual partners and engage in unprotected sexual intercourse.[26] This phenomenon is different because pregnant women who have the number of sexual partners > 1 in the city of Banjarmasin very little (2.8%) so that statistically meaningless.There are 2 pregnant women with sexual partner > 1 and show reactive HBsAg result and seen from Hepatitis B vaccination status it turns out that 2 of these pregnant women have never received Hepatitis B immunization.

## CONCLUSION

There is the only history of Hepatitis B vaccination that affects the incidence of Hepatitis B in pregnant women in the city of Banjarmasin. Government programs for Hepatitis B vaccination are only done for infants and toddlers, not yet targeted for other at-risk groups. It is recommended to be given Booster Hepatitis B vaccination at the age of 15 years because the protection of Hepatitis B vaccination given in infancy-toddlers has decreased can even be lost. So that the teenager as a future mother and father will become protected from HBV infection and will not transmit to her child.

**Ethical Clearance:** Before conducting the data retrieval, the researchers conducted a decent test of ethics conducted at the Faculty of Medicine, Lambung Mangkurat University to determine that this study has met the feasibility. Information on an ethical test that the study is eligible to continue. The feasibility of the research was conducted in an effort to protect the human rights and security of research subjects.

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**Conflict of Interest:** The authors declare that they have no conflict interests.

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