Relationship of External And Internal Factors In Children Age 1-14 Years With Protective Anti-Hbs Titer From Riskesdas Data 2011

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Abstract- The research results of Noer Indah Pracoyo (2016) showed that based on the 2011 Riskesdas data it was found that the level of immunity to hepatitis B (protective anti-HBs) would decrease after a 6-year-old child even though it was found to decline from the age of 15 years. The purpose of this study: To obtain an overview of the relationship between internal and external factors in children aged 1-14 years found to be protective against hepatitis B (protective anti-HBs) The results of the study found that the results of the chi square test revealed P = 0.266 where P> 0, 05 which means that there is no relationship between age and immunization in children with Anti HBs protective titers. And from the results of the chi square test, it is known that the value of P = 0.294 where P> 0.05, which means that there is a relationship between age and supplementary feeding in children with Anti HBs protective titers. And from the results of the chi square test, it is known that P = 0.880 where P> 0.05 means that there is a relationship between age and the provision of nutritional supplements in children with Anti HBs protective titers. And from the results of the chi square test, it is known that the P value is 0.154 where P> 0.05, which means that there is no relationship between age and immunization in children with Anti HBs protective titers. While the low percentage was in the age group of 5-10 years and did not know about the provision of nutritional supplements which amounted to 0.0% (0 respondents). And from the results of the chi square test, it is known that the value of P = 0.041 where P <0.05, which means that there is a relationship between age and the provision of nutritional supplements in children with Anti HBs protective titers. The benefits of this research are expected to be an input for the main units in the Ministry of Health, especially the Indonesian Ministry of Health P2PL in developing immunization policies and programs. Conclusion: there is a relationship between hepatitis B immunity levels (anti-HBs) with external and internal factors.

Keywords: hepatitis B virus, anti-HBs and external and internal factors

I. INTRODUCTION

Hepatitis B virus infection is still a health problem in Indonesia, this is evidenced by the increase in cases every year. Hepatitis B case, it is estimated that more than 2 billion people worldwide have been infected with the Hepatitis B virus. Of these, 360 million are chronically infected so that it becomes a high risk group to become seriously ill until death. 1 Currently, the prevalence of Hepatitis B in Indonesia is 9 , 4%, so it is classified as a country that has a high incidence of Hepatitis B. 2,3 One early prevention effort, namely Hepatitis B immunization given at the time immediately after the baby is born.4 Complications that can be caused starting from asymptomatic to showing disease chronic liver with complications such as liver cirrhosis,

Hepatitis B is a liver disease caused by the Hepatitis B Virus (HBV), a member of the Hepadnavirus family that can cause acute or chronic liver inflammation which in a small number of cases can progress to liver cirrhosis or liver cancer. So it is very important to protect the transmission of diseases, especially from the hepatitis B virus (HBV). Hepatitis B infection is a public health problem throughout the world. It is estimated that there are 350 million carriers in the world. In patients with chronic hepatitis B, complications can arise such as cirrhosis (hardening of the liver) and liver cancer. The average prevalence of hepatitis B in Indonesia is 10%. Variations range from 3.4 to 20.3% in each region. Outside Java, except Lombok and Sumbawa, generally low prevalence. Vaccination efforts can reduce the number of people with hepatitis B virus and acute morbidity. The Hepatitis B vaccination program is implemented. Hepatic vaccination B which has been done so far is able to reduce morbidity. However, the success of vaccination is threatened by an escape mutant or a mutated virus that passes. This is partly due to vaccines made not based on local viral strains so that the antibodies formed cannot kill the existing hepatitis B virus. Therefore it is necessary to design the right and optimum hepatitis B vaccine for Indonesia (Siswono, 2001).

The anti-HBs titre is called protective when the titre has a value of> 10 mg / dl. According to Noer Indah Pracayo and Wibowo (2016) in his research entitled Factors Associated with Immunity Levels of Hepatitis B (anti-HBs) in 1-14 Years Old Children from Data from Riskesdas 2007, it was found that anti-HBs titers began to decline in 6 year old child. However, this effort faces challenges, namely the presence of non-responders or

vaccinated people, but the antibodies are not formed. The reason is, because vaccines are less immunogenic or vaccines are easy to neutralize. In addition, variants and mutants from the hepatitis B virus appear. Virus mutations occur in a shorter period of time. This happens because of pressure from the host due to endurance, for example, because they are given monoclonal antibodies or vaccinated. The hepatitis B antibody titre is said to be protective if the anti-HBsAg antibody titre g (mcg / mL). If μ> 10 titers are below the preventive threshold or negative, repeat replication is needed. The indicator that someone has immunity to hepatitis B is anti-HBsAg which can be examined in the laboratory through blood tests. If the anti-HBsAg test results show g means that the person already has μ> 10 mg / dl

According to Lydia (2013) that subjects with a larger age have lower levels of protective anti-HBs and no significant relationship between sexes, the immunization schedule with anti-HBs levels after 10-12 years of Hepatitis B immunization. With increasing age, there will be a decrease in the level of anti-HBs. In addition to gender, immunization schedule, several factors influence the levels of anti-HBs after vaccination, such as immune status, genetics, quality and quantity of vaccines, malignancies, and chronic diseases. The results showed that gender or gender did not affect anti-HBs titers, this was due to probandus used were nursing D-III students. Gender is related to the type of hormone produced, although there are different types of hormones between men and women that can be influenced by race. The Middleman et al. 2001 study also did not get a significant difference between the levels of anti-HBs and sex. While research conducted in Iran and China, women showed a higher antibody response than men (Chen, 2007 and Shamsizadeh, 2011). In some studies there was a decrease in the number of T lymphocytes in men compared to women. And men have lower serum IgM and IgG levels. Immune responses that differ between men and women are also influenced by sex steroid hormones such as estrogen, progesterone, and testosterone which are different in each sex (Giltay, 2000).

Hepatitis B vaccination serves to provide long-term protection against Hepatitis B infection, and maybe for life for the prevention of hepatitis B, and some serious consequences of Hepatitis B infection, including liver cancer and cirrhosis. Hepatitis B vaccination routinely in children in the US began in 1991. Since then, acute hepatitis B cases among children and adolescents have reported a decline of more than 95% and up to 75% in all age groups. Giving hepatitis B vaccination to adults should be given 3 doses where the second dose is given 4 weeks after the first dose and the third dose is given 5 months after the second dose. After injection, HBSAg can be a temporary positive. But this is immediately followed by increased levels of anti-HBs. The emergence of these antibodies is expected to be able to prevent someone from transmitting the hepatitis B virus.

The administration of Hepatitis B immunization given 3 times to the formation of anti HBs in students shows an increase in its anti HBs titers. The increase in anti HBs titers can be seen in the coding table above. In months 0 to 6 months all anti-HBs titers increase. This can be influenced by the immune system in each student differently. If the immune system in the body decreases the levels of anti-HBs titers also decrease. The recombinant Hepatitis B vaccine is indicated for active immunization at all ages, to prevent infections caused by the Hepatitis B virus, but cannot prevent infections caused by the Hepatitis A virus, Hepatitis C or other viruses that can infect the liver. Vaccination is recommended for people at high risk of infection. Hepatitis B vaccination generally does not provide a risk because the hepatitis B vaccine is a very safe vaccine. Most people don't have problems with it. This vaccine contains ingredients that are not contagious and do not cause hepatitis B. According to reports, minor problems that have occurred include pain in the part of the body being injected (experienced by up to about 1 in 4 people) and body temperature reaching 99, 9 ° F or more (experienced by up to 1 in 15 people). In several studies, there was an anatomical response to low and undetectable levels of anti-HBs. On the other hand, the production of anti-HBs from circulating B cells signifies immune memory (Manatvala, 2003). After the injection of the hepatitis B vaccine, antiHBs titers increased dramatically (Lu, 2008). The presence of memory B lymphocytes after hepatitis B vaccination indicates circulating B cells that produce anti-HBs in vitro, Materials and Methods.

This type of research is quantitative analytic research with cross sectional design, which is looking at the relationship at the same time between internal factors (age and sex) and external factors immunization, supplementary feeding and nutritional supplements) in children aged 1-14 year which was found to be protective anti HBs tier. Internal factors become control variables (dependent) in this study while external factors become independent variables. Furthermore, to examine the relationship between the two variables, the SPSS 21 program was used with the chi square test analysis. Will be significant if P <0.05 and not significant if P> 0.05. The population in this study were children aged 1 - 14 years as many as 1618 children, while the sample in the study were children who had protective anti HBs titers as many as 722 children.

II. RESEARCH RESULT

Table 1. Relationship between Gender and Immunization in 1-14 Years Old Children with Protective Anti HBs Titer

Sex	Immunization						Total		P
	Yes		No		Do not know				
	n	%	n	%	n	%	n	%	
Male	233	59,9	146	37,5	10	2,6	389	100	0,266
Female	219	65,8	107	32,1	7	2,1	333	100	
Total	452	62,6	253	35,0	17	2,4	722	100	

Based on the table above, it can be seen that the highest percentage is in the female group and given immunization that is equal to 65.8% (219 respondents). While the lowest percentage was in the female group and did not know about immunization, which was 2.1% (7 respondents). And from the results of the chi square test, it is known that P = 0.266 where P> 0.05, which means that there is no relationship between sex and immunization in children with Anti HBs protective titers.

Table 2. Relationship between Gender and Supplementary Feeding in 1-14 Years Old Children with Protective Anti-HBs Titer

Sex	Supplementary Feeding						Total		P
	Yes		No		Donot know				
	n	%	n	%	n	%	n	%	
Male	221	56,8	155	39,8	13	2,6	389	100	0,294
Female	206	61,9	114	34,2	13	2,1	333	100	
Total	427	59,1	269	37,3	26	3,6	722	100	

Based on the table above, it can be seen that the highest percentage is in the female group and given additional food which is equal to 61.9% (206 respondents). While the low percentage was in the female group and did not know about supplementary feeding, which was 2.1% (13 respondents). And from the results of the chi square test, it is known that the P value is 0.294 where P> 0.05, which means that there is no relationship between sex and supplementary feeding in children with protective Anti HBs titers.

Table 3. Relationship between Gender and Supplementary Feeding to 1-14 Years Old Children with Protective Anti HBs Titer

Sex	Supplementary Feeding						Total		P
	Yes		No		Donot know				
	n	%	n	%	n	%	n	%	
Male	244	62,7	142	36,5	3	0,8	389	100	0,880
Female	203	61,0	127	38,1	3	0,9	333	100	
Total	447	61,9	269	37,3	6	0,8	722	100	

Based on the table above it can be seen that the highest percentage is in the male group and given nutritional supplements which is equal to 62.7% (244 respondents). While the lowest percentage was in the male group and did not know about the provision of nutritional supplements which was equal to 0.8% (3 respondents). And from the results of the chi square test, it is known that the value of P = 0.880, where P> 0.05, means that there is no relationship between sex and nutritional supplementation in children with Anti HBs protective titers.

Table 4. Relationship of Age and Immunization in Children with Protective Anti Hbs Titer

Age (year)	Immunization						Total		P
	Yes		No		Donot know				
	n	%	n	%	n	%	n	%	
1-4	233	62,9	130	35,1	7	2,0	370	100	0,154
5-10	160	64	87	34,8	3	1,2	250	100	
11-14	59	57,8	36	35,2	7	7	102	100	
Total	452	62,6	253	35,0	17	2,4	722	100	

Based on the table above, it can be seen that the highest percentage is in the age group 1-4 years and given immunization that is equal to 62.9% (233 respondents). While the lowest percentage was in the age group of 5-10 years and did not know about giving immunization which was equal to 1.2% (3 respondents). And from the results of the chi square test, it is known that the P value is 0.154 where P> 0.05, which means that there is no relationship between age and immunization in children with Anti HBs protective titers.

Table 5. Relationship of Age and Supplementary Feeding in Children with a Protective Anti Hbs Titer

Age	Supplementary Feeding						Total		P
	Yes		No		Do not know				
	n	%	n	%	N	%	n	%	
1-4	234	63,2	135	36,4	1	0,4	370	100	0,000
5-10	139	55,6	99	39,6	12	4,8	250	100	
11-14	54	52,9	35	34,3	13	12,8	102	100	
Total	427	59,1	269	37,2	26	3,7	722	100	

Based on the table above, it can be seen that the highest percentage is in the age group 1-4 years and is given additional food that is equal to 63.2% (234 respondents). While the lowest percentage is in the age group 1-4 years and does not know about supplementary feeding which is equal to 0.4% (1 respondent). And from the results of the chi square test it is known that the value of P = 0.000 where P <0.05, which means that there is a relationship between age and supplementary feeding in children with Anti HBs protective titers.

Table 6. Relationship of Age and Provision of Nutritional Supplements in Children with Protective Anti Hbs Titer

Age	Supplementary Feeding						Total		P
	Yes		No		Do not know				
	n	%	n	%	n	%	n	%	
1-4	232	62,7	137	37,0	1	0,3	370	100	0,041
5-10	156	62,4	94	37,6	0	0,0	250	100	
11-14	59	57,8	38	37,2	5	5,0	102	100	
Total	447	61,9	269	37,2	6	0,9	722	100	

Based on the table above, it can be seen that the highest percentage is in the age group 1-4 years and given nutritional supplements in the amount of 62.7% (232 respondents). While the low percentage was in the age group of 5-10 years and did not know about the provision of nutritional supplements which amounted to 0.0% (0 respondents). And from the results of the chi square test, it is known that the value of P = 0.041 where P <0.05, which means that there is a relationship between age and the provision of nutritional supplements in children with Anti HBs protective titers.

III. DISCUSSION

From a number of public health variables that were

analyzed in children with protective anti-HBs titers, namely supplementary feeding, nutritional supplements, and immunizations associated with gender and age showed that there were several related variables. These variables are:

1. Age and provision of nutritional supplements in children with protective Anti HBs titers

The highest percentage is in the age group 1-4 years and given nutritional supplements amounting to 62.7% (232 respondents). While the low percentage is in the age group of 5-10 years and does not know about the provision of nutritional supplements which is equal to 0.0% (0 respondents). And based on the results of the analysis test, it is known that there is a relationship between age and nutritional supplementation in children with protective anti-HBs titers, namely the value of P = 0.041 where P <0.05. Children aged 1 - 14 years with protective anti-HBs titers need to be fulfilled their nutritional needs so that their immune levels can function properly.

This needs to be done because based on the research of Lydia Aswati, et al. About Factors Associated with Anti-HBs Levels in Elementary School Children After 10-12 Years of Hepatitis B Immunization in Padang City it was found that there was a decrease in protective anti-HBs levels in older children. greater than. So that the more children step on the age for the following year need to be balanced with the provision of adequate and balanced nutritional supplements. Balanced nutritional intake will affect a person's immune system and with a good diet is one way to make protective anti-HBs titers in children aged 1-14 years can increase

2. Age and supplementary feeding in children with protective Anti HBs titers

The highest percentage was in the age group 1-4 years and was given additional food that is equal to 63.2% (234 respondents). While the lowest percentage is in the age group 1-4 years and does not know about supplementary feeding which is equal to 0.4% (1 respondent). And from the results of the chi square test it is known that the value of P = 0.000 where P <0.05, which means that there is a relationship between age and supplementary feeding in children with Anti HBs protective titers.
In addition to fulfilling nutritional adequacy, children aged 1 - 14 years with protective anti-HBs titers need to be accompanied by supplementary feeding. Because there can be fluctuations in the number of protective children. Children aged ≥ 5 years are likely to have an anti-HBs titre and can be sure to decrease after more than 14 years, the decrease in anti-HBs titers occurs starting at 6 years of age.

And some of the other results of the analysis test prove that there is no relationship between the two variables, namely between sex and immunization in children with Anti HBs Protective titers (P = 0.266 where P> 0.05); between Gender and supplementary feeding in children with Anti HBs Protective titers (P = 0.294 where P> 0.05); between sex and nutritional supplementation in children with Anti HBs Protective titers (P = 0.880 where P> 0.05); between age and immunization in children with an Anti HBs Protective titre (P = 0.154 where P> 0.05)

IV. CONCLUSION

From this study it can be concluded that there is a relationship between age and nutritional supplementation in children with Anti HBs Protective titers (P = 0.041 where P<0.05) and there is a relationship between age and supplementary feeding in children with Anti HBs Protective titers (P = 0,000 where P <0.05).

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