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Relationship of Internal and External Factors in Children Age 1-14 Years with Anti-HBs Titer Protective: Riskesdas Data 2011.

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ABSTRACT

Background: Based on the previous research, the level of immunity to hepatitis B (protective anti-HBs) will decrease after a 6-year-old child even though there is found a level of immunity decreases from the age of 15 years. The purpose of this study: To get an overview of the relationship between internal and external factors in children aged 1-14 years who were found to be protective against hepatitis B (protective anti-HBs). **Results:** .05 which means that there is no relationship between age and immunization in children with protective Anti HBs 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 the value of P = 0.880 where P> 0.05, which means that there is a relationship between age and 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 value of P = 0.154 where P> 0.05, which means that there is no relationship between age and immunization in children with protective Anti HBs titers. While low percentages are in the age group 5-10 years and do not know about the provision of nutritional supplements that is equal to 0.0% (0 respondents). And from the results of the chi square test is known the value of P = 0.041 where P <0.05, which means that there is a relationship between age and provision of nutritional supplements in children with Anti HBs Protective titers. The benefits of this study are expected to be an input for the main units within the Ministry of Health, especially the Ministry of Health's P2PL in developing immunization policies and programs. **Conclusion:** there is a relationship between the level of hepatitis B immunity (anti-HBs) with external and internal factors.

Keywords: Hepatitis B virus, anti-HBs and external and internal factor.

INTRODUCTION

Hepatitis B virus infection is still a health problem in Indonesia, this is proven by the increase in cases each year. Hepatitis B cases, it is estimated that more than 2 billion people around the world have been infected with the Hepatitis B virus. Of these, 360 million are chronically infected so that they become a high-risk group to become seriously ill until death. At present, Hepatitis B prevalence in Indonesia is 9.4%, so it is classified as a country that has a high incidence of Hepatitis B.[1-3] One of the early prevention efforts, namely Hepatitis B immunization given at the time immediately after the baby is born.[4] Complications that can arise from asymptomatic to showing chronic liver disease with complications in the form of liver cirrhosis.

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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 minority of cases can progress to liver cirrhosis or liver cancer. Thus, it is very important to protect the transmission of diseases, especially from the hepatitis B virus (HBV). Hepatitis B infection is a health problem for people around the world. There are an estimated 350 million carriers in the world. In patients with chronic hepatitis B, complications can arise such as cirrhosis and liver cancer. The average prevalence of hepatitis B in Indonesia is 10%. Outside Java, except Lombok and Sumbawa, generally the prevalence is low. Vaccination efforts can reduce the number of people with hepatitis B virus and acute morbidity. Hepatistic vaccination B which has been done so far can reduce the morbidity rate. However, the success of vaccination is threatened by the escape mutant or virus mutation that escapes. This is partly due to vaccines made not based on local viral strains so that the antibodies that are formed cannot kill the existing hepatitis B virus. Therefore, it is necessary to

design the right and optimum hepatitis B vaccine for Indonesia.[5-7]

Anti-HBs titers are called protective if the titer has a value of> 10 mg / dl. That the anti-HBs titers began to decline in children aged 6 years, however, these efforts face challenges, namely the existence of non-responders or those who were vaccinated, but not formed antibodies. The reason is, it could be because the vaccine is less immunogenic or the vaccine is easily neutralized. In addition, variants and mutants emerged from the hepatitis B virus. Virus mutations occur in a shorter time. This occurs because of pressure from the host due to the body's resistance, for example, because it is given monoclonal antibodies or vaccinated. Hepatitis B antibody titers when said protective antibody titers of anti-HBsAg When □> 10 mg / dl titer was below the threshold necessary preventive or negative then imunsasi replications. The indicator that a person has immunity to hepatitis B is anti-HBsAg which can be examined in the laboratory through blood tests. If the anti-HBsAg examination results show a negative meaning that the person already has immunity> 10 mg / dl.[6,8]

According to Lydia, subjects who were older had lower protective anti-HBs levels and there was no significant relationship between sexes, immunization schedules with anti-HBs levels after 10-12 years of hepatitis B immunization. As age increases, it will occur decrease in anti-HBs levels. In addition to gender, immunization schedule, several factors that influence anti-HBs levels after vaccination, such as immune status, genetics, quality and quantity of vaccines, malignancies, and chronic diseases.[9] The results showed that gender or gender did not affect anti-titers -HBs. 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. Middleman's research, et al. also did not get a significant difference between anti-HBs levels and sex. While research conducted in Iran and China, women showed a higher antibody response than men.[10-13] In some studies there was a decrease in the number of T lymphocytes in men compared to women. And men have lower serum levels of IgM and IgG. The different immune responses between men and women are also influenced by steroid sex hormones such as estrogen, progesterone, and testosterone which are different in each sex.[14-16]

Hepatitis B vaccination serves to provide long-term protection against Hepatitis B infection, and may be lifelong for the prevention of hepatitis B, and some serious consequences of Hepatitis B infection, including liver cancer and cirrhosis.[17]

Routine hepatitis B vaccination in children in the US began in 1991. Since then, cases of acute hepatitis B among children and adolescents have reported a decline of more than 95% and up to 75% in all age groups. Providing hepatitis B vaccination in 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 giving the injection, HBSAg can be a temporary positive. But this was immediately followed by an increase in anti-HBs levels. The emergence of these antibodies is expected to prevent a person from transmitting the hepatitis B virus. The administration of Hepatitis B immunization given 3 times against the formation of anti HBs in students shows an increase in the anti HBs titers.[18-21]

Referring to the results of previous research by Pracoyo and Wibowo, there is a significant relationship between the level of Hepatitis antibody titers B for children aged 1-14 years with age variables. And the age of older or older children has a decreased level of immunity to Hepatitis B. On the basis of this research, further research was carried out related to internal factors attached to individuals aged 1-14 years who had protective anti-HBs such as age and sex related to external factors such as the provision of nutritional supplements, immunization and supplementary feeding.

MATERIALS AND METHODS

Material in the form of samples was obtained from the Basic Health Research (Riskesdas) data in 2007, namely data collection conducted by the Ministry of Health's Health Research and Development Agency, a survey conducted in a cross-sectional manner. From the 2007 Riskesdas data, it can describe the health profile up to the district or city level which is included in the sample frame, a number of census blocks are proportionally taken against the number of households in the district / city (probability proportional to size). Overall based on the census block in the 2007 SUSENAS, the selected census blocks totaled 17,357. In Riskesdas 2007 successfully visited 17,150 census blocks from 440 districts.

RESULTS

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

Sex	Immunization						Total		P
	Yes		No		Do not know				
	n	%	n	%	n	%	N	%	
Boys	233	59,9	146	37,5	10	2,6	389	100	0,266
Girls	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 1], it can be seen that the highest percentage was in the group of men and were given immunization, which was 65.8% (219 respondents). While the lowest percentage was in the group of women and did not know about immunization, which amounted to 2.1% (7 respondents). And from the results of the chi square test, it is known that the value of P = 0.266 where P> 0.05, which means that there is no relationship

between age and immunization in children with protective Anti-HBs titers.

Based on the [Table 2], it can be seen that the highest percentage is in the women's group and given additional food, which is 61.9% (206 respondents). Whereas the low percentage was in the women's 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 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.

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

Sex	Complementary feeding						Total		P
	Yes		No		Do not 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 3], it can be seen that the highest percentage is in the male group and given nutritional supplements, which is 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 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, which means that there is a relationship between age and the provision of nutritional supplements in children with protective Anti-HBs titers.

Table 3: Relationship between Gender and Supplementary Feeding for Children Aged 1-14 Years with Protective Anti-HBs Titer.

Sex	Nutrition Supplement Provision						Total		P
	Yes		No		Do not 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 4, it can be seen that the highest percentage is in the age group 1-4 years and immunization is 62.9% (233 respondents). While the lowest percentage is in the age group of 5-10 years and do not know about immunization that is equal to 1.2% (3 respondents). And from the results of the chi square test it is known that the value of P = 0.154 where P> 0.05, which means that there is no relationship between age and immunization in children with protective Anti-HBs titers.

Table 4: Relationship between Age and Immunization in Children with Protective Anti-HBs Titer

Age	Immunization						Total		P
	Yes		No		Do not 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	

Table 5: Age Relationships and Supplementary Feeding in Children with Protective Anti-HBs Titer

Age	Complementary 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 5], it can be seen that the highest percentage is in the 1-4-year age group and given additional food, which is 63.2% (234 respondents). While the lowest percentage is in the age group 1-4 years and do not know about the provision of additional food that 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 a protective Anti HBs titre.

Based on the [Table 6], it can be seen that the highest percentage is in the age group 1-4 years and given nutritional supplements that is equal to 62.7%

(232 respondents). While low percentages are in the age group 5-10 years and do not know about the provision of nutritional supplements that is equal to 0.0% (0 respondents). And from the results of the chi square test is known 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.

Table 6: Relationship of Age and Provision of Nutritional Supplements in Children with Protective Anti-HBs Titer

Age	Nutrition Supplement Provision						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	

DISCUSSION

It can be seen that the highest percentage was in the group of men and were given immunization, which was 65.8% (219 respondents). While the lowest percentage was in the group of women 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 the value of P = 0.266 where P> 0.05, which means that there is no relationship between age and immunization in children with protective Anti-HBs titers.

The highest percentage is in the women's group and given additional food, which is 61.9% (206 respondents). Whereas the low percentage was in the women's 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 value of P = 0.294 where P> 0.05, which means that there is a relationship between age and supplementary feeding in children with protective Anti-HBs titers.

Based on the table above it can be seen that the highest percentage is in the male group and given nutritional supplements, which is 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 0.8% (3 respondents). And from the results of the chi square test is known the value of P = 0.880 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.

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

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CONCLUSION

From this study it can be concluded that the factors that are significantly associated with the level of hepatitis B antibody titers in children aged 1-14 years are age variables. it was found that from the results of the chi square test, it was found that the value of P = 0.266 where P> 0.05, which means that there is no relationship between age and immunization in children with protective Anti HBs 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 the value of P = 0.880 where P> 0.05, which means that there is a relationship between age and 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 value of P = 0.154 where P> 0.05, which means that there is no relationship between age and immunization in children with protective Anti HBs titers. While low percentages are in the

age group 5-10 years and do not know about the provision of nutritional supplements that is equal to 0.0% (0 respondents). And from the results of the chi square test is known the value of P = 0.041 where P <0.05, which means that there is a relationship between age and provision of nutritional supplements in children with Anti HBs Protective titers.

It was found that age and the provision of nutritional supplements have something to do with the formation of anti-HBs as immunity to hepathy B. The need for compulsory programs of supplementation to pregnant women and infants so that immunity is expected in these children.

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