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RELATIONSHIP BETWEEN IMMUNIZATION COMPLETENESS AND OF STUNTING IN UNDER FIVE YEARS OLD CHILDREN

Hanggi Hendri Hartia, Rita Kartika Sari
Faculty Medicine, Universitas Islam Sultan Agung, Jl. Kaligawe Raya No.Km.4, Terboyo Kulon, Genuk, Semarang, Jawa Tengah 50112, Indonesia
*30102200088@std.unissula.ac.id

ABSTRACT

Stunting is problem global health that is hampering development children, where the prevalence in Indonesia (21.6%) is still above the WHO target (20%). District Pati, especially the work area Community Health Center Gabus II, has prevalence sufficient stunting significant that is by 20.28%. One of them effort prevention stunting is through giving immunization base complete. For know connection between completeness immunization toddler with incident stunting in the work area Community Health Center Gabus II Regency Starch. Type this research is studies observational with design research conducted at the Community Health Center Cork II. Sample study totaling 76 toddlers, consisting of from group cases and controls. Data were collected through questionnaires and notes KIA book, then analyzed using statistical tests Chi-Square. Analysis bivariate show existence significant relationship between completeness immunization with incident stunting with mark p-value 0.010 ($p < 0.05$). The Odds Ratio (OR) value of 0.000 (95% CI: 0.113-0.759) indicates that immunization base complete play a role as factor protector to incident stunting. There is connection between completeness immunization toddler with incident stunting in the work area Community Health Center Gabus II Regency Pati. Toddlers who get immunization base complete own risk more low For experience stunting compared to toddler with immunization No complete.

Keywords: completeness immunization; stunting; toddlers

INTRODUCTION

Globally, stunting is problems that hinder development children. Organization The World Health Organization (WHO) stated that If number stunting incidents in toddlers reach 20% or more, thing That considered as problem health society. As a result, the significant stunting rate in Indonesia is problem health that must be handled (UNICEF, 2022). WHO statistics on number the incidence of stunting in toddlers in 2021 shows that the stunting rate worldwide in 2020 was 22%, or 149.2 million children . Stunting is increasing seldom happened in Indonesia, which is in the top rank second after Timor-Leste in Southeast Asia. According to the 2022 Indonesian Nutritional Status Study (SSGBI) found that stunting prevalence in Indonesia has decreased. from 24.4% in 2021 to 21.6 %. This figure is still more big from the WHO target of 20%. Stunting is increasing seldom happened, even though lack increasing weight and wasting general occurs. Prevalence lack weight gain from 17% to 17.1%, and the prevalence malnutrition I increase from 7.1% to 7.7% (Marina et al., 2024) . According to survey weighing simultaneously 2018, Regency Starch occupy ranking second in Central Java due to the surge stunting cases between 2018 and 2019. Health Center Jakenan (20.83%) and Community Health Center Gabus II (20.28%) is two center health community (health center) with level significant prevalence of stunting. These figures are higher tall from WHO requirements of 20%. Through Service Health (Health Office, 2024), Government Regency Starch involving doctor children and specialists nutrition clinical in effort intervention at the center health public with high stunting rate in effort lower stunting rate (Roufiana, 2023).

Vaccination base help children build immunity and prevent various disease contagious. While that, condition nutrition deteriorating child Possible caused by the system immunity weakened body, which makes they more prone to to disease. Disease infectious and nutritional toddler each other related. System immunity body child can affected by the shortage nutrition, improve vulnerability they to disease and maybe cause growth hampered. Deficiency nutrition can happen consequence

lust Eat sick child reduced. With number death 36% and 10% respectively, infection channel breathing upper respiratory tract infections (ARI) and diarrhea is reason main death in childhood beginning (Hasanah et al., 2024) .

Give complete primary vaccine to baby new born as soon as possible Possible before age seven day very important. Baby new born must get One dose hepatitis B vaccine (HB 0) between ages 0 and 7 days. At the age of One month, baby Then will get One dose polio and BCG vaccines. Babies must get One dose 5 component vaccine and one dose polio vaccine at age two, three, and four month. Vaccine measles given once at the age of nine month. Although timetable has set as explained Previously, all antigens (except HB 0) were theoretical can given to children before age One year for reach complete primary immunization. A child considered complete If they has get HB 0, BCG, three dose 5 component vaccine, four polio and measles doses before aged One year (Emmaria et al., 2024).

Immunization very important for lower risk of stunting in children as well as number death children. Stunting is 1.78 times more Possible occurs in children who do not accept all recommended vaccinations, according to research. In other words, children who receive vaccination appropriate time tend No experiencing stunting, but those who receive it late tend experienceImmunization, which strengthens system immunity body for give protection to infection dangerous that can avoided, operating based on similar principles. Children who do not vaccinated own system immunity weak body and therefore more prone to to disease . This is ultimately can impact on development and growth they as well as increase possibility of stunting (Nuzul and Amin, 2021).

According to A studies entitled "Research about Connection between Complete Basic Immunization and Stunting Incidence in Toddlers at Community Health Centers Singandaru " by Rizkya et al. (2024), Stunting is more seldom occurs in toddlers who have accept all recommended vaccinations. The results of this study are in line with with research conducted in the village Hegarmanah by (Wanda et al., 2021) who found that stunting is 4.9 times more general occurs in children who do not accept all vaccine the basis required. Taswin (2023) observed substantial correlation between stunting frequency and vaccines basic in the village Pasarwaji , Regency Buton, which supports findings this research. (Rizkya et al., 2023).

Focus this research is registered and participating toddlers in services at the Community Health Center Cork II, using the criteria that are proposed with objective research. Statistical test results compared to with results study previously more In general, these results are more specific and relevant customized with situation. Many studies previously only see factor nutrition, pattern foster care and sanitation as causes of stunting. Meanwhile focus This research is on the relationship between completeness immunization toddlers and stunting, which have not yet Lots discussed in this area. With consider the above context and the lack of existing research, researchers want to investigate connection between frequency of stunting in Community Health Centers Gabus II Regency Starch with completeness immunization.

METHOD

This study uses design analytical survey with approach *Retrospective Case* Control Study implemented at the Community Health Center Gabus II, Regency Starch , with range time implementation from stage preparation until reporting in July until September 2025. Population : The target population is all over child ages 2–5 years in the work area Community Health Center Cork II, calculation formula Lemeshow , number sample set as much as 76 respondents , consisting of from 38 respondents group case (toddler *stunting*) and 38 respondents group control (toddler No *stunting*) with ratio . Subject chosen based on criteria inclusion (having KIA book , history immunization base complete , and availability become respondents) and criteria exclusion (toddlers) with disease

default . p retrieval sample use technique *purposive sampling.* Data analyzed in a way univariate For describe distribution frequency every variables . Analysis bivariate done using the *Chi-Square* test with level significance alpha = 0.05 for test connection between variables. Besides that, done calculation *Odds Ratio* (OR) with table 2x2 contingency for measure size risk factor independent to incident *stunting. data processing using computer and SPSS application*.

RESULT AND DISCUSSION

Table 1.
characteristics Parent respondents

Characteristics Respondents	Category	Case		Control	
		f	%	f	%
Age Mother At the moment	<20 Years	0	0.0	0	0.0
	20-35 Years	32	84.2	25	65.8
	>35 Years	6	15.8	13	34.2
Age Mother Moment Pregnant	<20 Years	0	0.0	0	0.0
	20-35 Years	37	97.4	25	65.8
	>35 Years	1	2.6	13	34.2
Work Mother	Self-employed	2	5.3	14	36.8
	Housewife	35	92.1	20	52.6
	Civil servants	1	2.6	4	10.5
Age Pregnancy Moment Give birth to	Preterm	0	0.0	0	0.0
	Aterm	38	100.0	38	100.0
	Postterm	0	0.0	0	0.0
Father's Age	<20 Years	0	0.0	0	0.0
	20-35 Years	28	73.7	20	52.6
	>35 Years	10	26.3	18	47.4
Father's occupation	Laborer	11	28.9	15	39.5
	Entrepreneur	26	68.4	22	57.9
	Civil servants	1	2.6	1	2.6
Economic Status	Very high (>Rp. 3,500,000)	4	10.5	1	2.6
	Tall (Rp. 2,500,000–Rp. 3,500,000)	26	68.4	17	44.7
	Currently (Rp. 1,500,000 – Rp. 2,500,000)	8	21.1	20	52.6
	Low (< Rp. 1,500,000)	0	0.0	0	0.0

Table 1, According to research, 32 respondents , or 84.2% of group case , is Mother aged between 20 and 35 years in the operational area Community Health Center Gabus II, Regency Pati . On the other hand , 25 respondents , or 65.8% of group control , is Mother aged between 20 and 35 years. A total of 37 respondents (97.4%) in group case is mother aged between 20 and 35 years old at the time pregnancy . Of the 25 respondents (65.8%) in group control , majority is mother aged between 20 and 35 years old. Characteristics work group case includes 35 respondents (92.1%) who are Mother House ladder aged between 20 and 35 years old . Mother House ladder is majority in group control (20 respondents, or 52.6%). Mothers with full-term pregnancies (100.0%) had children in both the case and control groups. Of the 36 fathers in the case group and 36 in the control group, the majority worked as entrepreneurs/business owners (traders, shops, stalls, and service providers) with 26 in the case group (68.4%) and 22 in the control group (57.9%), according to the type of father's employment. The economy in the case group showed that most of the case group had a high economic level, as many as 26 (68.4%), while in the control group control as Lots own level economy currently as many as 20 (52.6%).

Table 2 shows that age children in groups most dominant cases age Preschool (31-60 Months) as many as 36 children (94.7%), and in the group control that is Preschool (31-60 Months) as many as 27 children (71.1%). Meanwhile in the category type sex show group most dominant cases type sex man 28 respondents (73.7%) and in the group control that is type sex 21 boys (55.3%).

Table 2.
Characteristics respondents child

Characteristics Respondents	Category	Case		Control	
		f	%	f	%
Age (Months)	*Toddler* (24-30 Months)	2	5.3	11	28.9
	Preschool (31-60 Months)	36	94.7	27	71.1
Type Sex	Man	28	73.7	21	55.3
	Woman	10	26.3	17	44.7

Table 3.
Completeness Child Immunization

Characteristics Respondents	Category	No *Stunting*		*Stunting*	
		f	%	f	%
Immunization Status	Complete	27	71.1	9	23.7
	No Complete	11	28.9	29	76.3

Table 3 Research results show that vaccination complete is the most common status among 38 children in group case, namely as many as 27 children (71.1%). On the other hand , vaccination partial is the most common condition in the group control, namely as many as 29 children (76.3%). According to findings test *stunting*, 41 respondents (53.9%) and 35 respondents (46.1%) did not experience *stunting*.

Table 4.
Chi Square and OR Tests

Completeness immunization base	Incident *stunting*				Total	P-Value	OR	CI
	Stunting		No *stunting*					
	f	%	f	%				
Complete	11	14.5	25	32.9	36	0.010	0,000	0.113-0.759
No complete	24	31.6	16	19.7	40			

Table 4, 25 (32.9%) non- *stunting* status and 11 (14.5%) *stunting status, the study findings indicate a history of complete immunization. This study shows a correlation between children's stunting status* and basic vaccination, with a *chi-square test p-value* of 0.010 <0.05 and an Odds Ratio (OR) value of 0.000 or <1 (95% CI: 0.113-0.759). This indicates that children who receive complete basic vaccinations are protected from *stunting*. In other words, children who receive all recommended vaccinations have a lower risk *of stunting* than children who do not receive them.

The results of the chi-square analysis, which produced a p-value of 0.010 (p<0.05), rejected H0 and accepted H1, indicating a relationship between information dissemination and the occurrence of *stunting*. According to the odds ratio (OR) value of 0.000 <1 (95% CI: 0.113-0.759), children who received complete basic vaccines were protected from *stunting*. This indicates that children who received complete basic immunizations are often less likely to experience *stunting*. Kurniawaty (2024) found a relationship between vaccination and child development, with a p-value of 0.002 <0.05, indicating that H0 was rejected. This is also in line with Mariene's research (2022), which revealed a relationship between basic immunization and infant growth with a p-value of 0.000 <0.05, which rejected H0. This is also in line with the research findings of Nuniek (2019), which shows a relationship between basic immunization and infant development with a p-value of 0.046 <0.05 and rejects H0.

Febriyanti's (2022) study, which revealed that 73.6% of toddlers in Gilingan had received all recommended vaccinations, corroborates this study. Similarly, Putra (2022) found that 65.6% of toddlers at the Sako Community Health Center in Palembang had received all recommended basic vaccinations. "Toddlers who do not receive basic vaccinations are more susceptible to infection because their immune systems are compromised. Weight loss due to persistent illness can lead to worsening nutritional conditions. The study conducted" (Ujang Daud, 2023) showed that 33 children

(80.5%) experienced stunting with complete immunization, while 37 children (90.2%) did not experience stunting with complete immunization. Four children (9.8%) did not experience stunting due to inadequate immunization, but eight children (19.5%) did. There was no association between the frequency of stunting in children aged 24-59 months in the South Cimahi Community Health Center (Puskesmas) work area and complete basic immunization status, according to statistical tests, which showed a p-value of 0.208 (> α0.05). Stunting was 1.562 times more common in toddlers with inadequate immunization compared to toddlers with complete immunization (95% CI: 0.123 - 1.618). The study results show limitations that do not account for other factors, including parental attitudes and understanding. Hanum's child growth theory states that vaccination plays a vital role in reducing the risk of morbidity (illness) and mortality (death) in children due to vaccine-preventable diseases. These diseases include polio, measles, hepatitis B, tetanus, whooping cough, diphtheria, and tuberculosis, among others. One indicator of interaction with health services, which will help in addressing new dietary issues, is the child's vaccination status. Long-term nutritional status is also expected to benefit from immunization status (Mastuti, 2025).

By producing antibodies against a specific organism, immunization occurs independently of the disease that causes it. The immune system then responds to vaccination by creating antibodies and eliminating the invasive microbe, just as it would when the microbe invaded the body (Aprilia and Tono, 2023) “The purpose of vaccination is to help the body adapt to the disease and strengthen the child's immune system, making them less susceptible to infection. According to the 1000 Days of Life campaign, stunting in toddlers is caused by a lack of vaccination, which weakens their immune system and makes them vulnerable to infectious diseases including worms, diarrhea, and acute respiratory diseases” (ARI) (Afrida & Irmayani, 2020).

According to research, the purpose of vaccination is to protect the immune systems of children and toddlers as they develop (Wanda et al., 2021). To prevent disease, immunization stimulates antibodies against specific pathogens. The immune system then responds to vaccination by producing antibodies that destroy the invading microbes, just as it would in the event of an invasion. The idea that vaccination can reduce the risk of child mortality is also refuted by the findings of this study. Stunting can be prevented by early immunization. Stunting may become more common if vaccination is delayed (Berendsen et al., 2022).

According to research (Sarah, 2025), infants aged six to twelve months who received all recommended basic vaccinations had stronger immune systems, as indicated by a decrease in disease rates over the previous three months. Although most toddlers were fully vaccinated, some were not, according to the Child Health and Child Protection (KIA) standards. Because complete immunization can strengthen a toddler's immune system, a mother's lack of interest or knowledge about toddlers can lead to incomplete immunization status, which conflicts with the immunization schedule. If young children do not receive immunizations with proper supervision, they are susceptible to disease, loss of appetite, and lack of adequate nutritional intake. All of this will cause the baby to require more intensive health care. To support the rapid growth stage, toddlers in the first two years of life require a lot of micro and macro nutrients (Modjo, et al. 2024) .

According to Kurniawaty (2025), development is greatly influenced by basic vaccinations. Providing complete basic vaccinations to babies can provide protection, reducing their vulnerability to diseases that can hinder their growth. Children's health impacts how quickly they grow and develop; on the other hand, if they are unhealthy, their growth and development will be hampered. Children who suffer from long-term illnesses will be less able to grow (Kaunang, 2020). The polio vaccine, which attempts to prevent poliomyelitis in babies, which can lead to paralysis, is one example of a vaccination that has a significant impact on infant development, according to Soetjiningsih (Mariene, 2023). One way to prevent children from stunting is through immunization. In addition, various other factors, such as maternal education, economic status, vaccinations, breastfeeding, infectious diseases,

parenting styles, and nutritional needs, must be taken into account in efforts to prevent *stunting* in children (Modjo, *et al.* 2024) .

CONCLUSION

Based on findings studies about history vaccination, the majority of people (71.1%) have immunization status complete. While in the group control most dominant namely immunization status No complete (76.3%). Research results in condition stunting is found as big show group intervention No stunting (84.2%). Meanwhile, in the group control most dominant that is stunting (76.3%). There is connection Vaccination base complete to incident stunting, according to chi-square test findings, which show p -value 0.010 <0.05 and Odds Ratio (OR) 0.000 <1 (95% CI: 0.113-0.759). With Thus, the children received it all immunization recommended basis tend more small the possibility suffer stunting compared to those who don't accept it.

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