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THE RELATIONSHIP BETWEEN ADOLESCENT PREGNANCY AND STUNTING IN TODDLERS IN THE WORKING AREA OF THE RANCAKALONG PUBLIC HEALTH CENTER, SUMEDANG REGENCY, 2024.

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Abstract **Background**: Stunting is a global problem among toddlers, particularly in Indonesia, where rates remain above the WHO's threshold. Numerous factors contribute to stunting, including adolescent pregnancy. Globally, 10 million children under 18 marry each year, impacting the health of their newborns.
Objectives: The aim of this study was to determine the relationship between adolescent pregnancy and stunting incidence in the Rancakalong Community Health Center work area, Sumedang Regency in 2024.
Method: This study was a quantitative analytical study with a case-control design. The population was toddlers aged 0-24 months in the Rancakalong Community Health Center (Puskesmas) area. The sample consisted of 66 toddlers, using purposive sampling (case group) and simple random sampling (control group).
Results: Bivariate analysis showed a significant association between adolescent pregnancy and stunting in toddlers (p-value 0.008 OR 13.913). Toddlers born to mothers who experienced adolescent pregnancies had a 13.9x greater risk of stunting.
Conclusion: Adolescent pregnancy is associated with stunting in toddlers. Therefore, stunting prevention can be initiated before pregnancy by preventing adolescent pregnancies.

Keywords: Adolescent pregnancy, Stunting

BACKGROUND

Reducing stunting rates is the second target of the Sustainable Development Goals (SDGs), which are global sustainable development goals. The WHO has set a global target of zero stunting, with an upper limit of 20%.[1] Meanwhile, according to the 2022 Indonesian Nutritional Status Survey (SSGI), the stunting rate in Indonesia remains at 21.6%, with 4,558,889 children suffering from stunting. Sumedang is one of the regencies/cities in West Java with the highest number of stunting sufferers in West Java Province, reaching 27.6% in 2022.[2] Rancakalong is a sub-district in Sumedang Regency, home to 10 villages, two of which were once considered stunting hotspots. Determinants of stunting that require specific and sensitive intervention in Sumedang Regency include health insurance, access to clean water and sanitary toilets, worm infections, comorbidities, family smoking habits, and maternal history of pregnancy.[3]

A maternal factor influencing stunting is adolescent pregnancy. Adolescent pregnancy is a pregnancy that occurs in women under 19 years of age. Globally, 10 million children under the age of 18 marry each year. This leads to low educational attainment and impacts the future health of families. Young mothers are also at risk of giving birth to low

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birth weight babies, who are at risk of stunting.[4] The results of the study show that adolescent pregnancy increases the risk of stunting in toddlers by 24 times.[5] In the study area, adolescent pregnancy is a health issue that requires attention. The number of adolescent pregnancies recorded at community health centers (Puskesmas) increases annually. In 2023, the number of adolescent pregnancies reached 35 cases out of 630 pregnancies, an increase from 27 cases in 2022. [6]

Based on the above background, researchers are interested in further examining the relationship between adolescent pregnancy and stunting in toddlers in the Rancakalong Community Health Center, Sumedang Regency. This is because adolescent pregnancy has a relatively high incidence and is included in the 11 specific interventions for stunting management in Indonesia.

METHODS

S*tudy setting and design*

This study was a quantitative analytical study with a case-control design to determine the relationship between maternal factors (maternal nutritional status, anemia during pregnancy, adolescent pregnancy, and hypertension during pregnancy) and stunting. The study was conducted in the Rancakalong Community Health Center, Sumedang Regency, West Java Province, from February to April 2024.

Study population and sampling procedure

The population of this study was all toddlers aged 0-24 months in the Rancakalong Community Health Center (Puskesmas) working area. The sample in this study was divided into two groups: the case group and the control group. The case group consisted of toddlers who were declared stunted at the time of the study based on the Puskesmas report and validated through direct measurements by the researcher. Meanwhile, the control group consisted of toddlers who were not stunted and had the same characteristics, using a simple random sampling technique. The total sample in this study was 33 in the case group and 33 in the control group.

Inclusion criteria:

1. For the case group, toddlers aged 0-24 months were diagnosed as stunted at the time of the study according to a report from the community health center and validated directly by measurements by the researcher.
2. For the control group, toddlers aged 0-24 months were declared not stunted at the time of the study according to a report from the community health center and validated directly by measurements by the researcher.
3. Toddlers presenting during the study
4. Toddlers and their mothers with complete medical records
5. Toddlers and their mothers residing in the Rancakalong District and willing to participate as respondents
6. Mothers of their toddlers who have no communication barriers and can provide the required data completely and clearly.

Exclusion criteria:

1. Toddlers with congenital abnormalities
2. Toddlers suffering from diarrhea, acute respiratory infections, or other serious illnesses.

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Data Collection and Variable measurement

The data collection technique in this study was observation with primary and secondary data collection. Primary data collection was conducted to obtain data on the height of toddlers aged 0-24 months, while secondary data collection was conducted retrospectively from health center records and KIA books to obtain maternal age and pregnancy data. Researchers reviewed the latest height measurement reports from the health center and obtained toddler data for February with the number of toddlers weighed 2684 toddlers and the number of stunted toddlers 216 toddlers. Based on these data, the researchers then took 3 villages with the largest percentage and the highest number of stunting. Researchers divided toddlers into 2 groups: the case group and the control group. From the 3 villages taken, 36 stunted toddlers aged 0-24 months were obtained. During the study, 3 toddlers were excluded because 2 did not meet the inclusion criteria (incomplete KIA) and 1 had exclusion criteria (congenital abnormalities). So the case group totaled 33 toddlers with the age group 0-6 months 3 people, 6-12 9 people, and 12-24 months 21 people. After determining the case group, researchers determined a control group that met the same criteria as the case group, based on age. Researchers randomly assigned toddlers of the same age attending the integrated health post (Posyandu) during the study, resulting in 33 toddlers in the control group.

Analysis used the chi-square test to determine the association between adolescent pregnancy and stunting, and odds ratio (OR) analysis was used to determine the magnitude of the risk of an effect in the cases.

Ethic Consideration

This research has received ethical approval from the health research ethics commission of the Bandung Ministry of Health Polytechnic and was declared ethically sound based on decision letter number: 61/KEPK/EC/II/2024.

RESULT AND DISCUSSION

This study was conducted in the Rancakalong Community Health Center (Puskesmas Rancakalong) working area, located on Jl. Raya Rancakalong, Rancakalong District, Sumedang Regency, West Java Province, Indonesia. In this study, the authors selected three villages within the Puskesmas working area, selected based on recommendations from the Puskesmas and representing stunting hotspots in the study area. The general characteristics of the study included toddler age, gender, type of birth, maternal age during pregnancy, current maternal age, and maternal height. Table 1 shows the general characteristics of the study subjects.

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Table 1 General characteristics of research subjects

Characteristics	Case group		Control group	
	n	%	n	%
Toddler age				
a. 0-6 month	3	9,1	3	9,1
b. 7-12 month	9	27,3	9	27,3
c. 12-24 month	21	63,6	21	63,6
Gender				
a. Male	19	57,6	18	54,5
b. Female	14	42,4	15	45,5
Type of birth				
a. Preterm	6	18,2	0	0
b. Aterm	27	81,8	33	100
Birth Weight				
a. <2500 gram	6	18,2	1	3,0
b. 2500-4000 gram	27	81,8	32	97,0
c. >4000 gram	0	0	0	0
Maternal age during pregnancy	10	30,3	1	3,0
a. ≤19 years old	23	69,7	32	97,0
b. >19 years old				
Mother's Education				
a. Elementary School	12	36,4	5	15,2
b. Junior high School	13	39,4	18	54,5
c. Senior high School	8	24,2	10	30,3
d. College	0	0	0	0
Mother's height				
a. ≤145 cm	4	12,1	3	9,1
b. >145 cm	29	87,9	30	90,9
TOTAL	33	100	33	100

Table 1 shows that 63.6% of toddlers aged 12-24 months experienced stunting, 27.3% for 7-12 months, and 9.1% for 0-6 months. This indicates that the largest distribution of stunted toddlers is in the 12-24 month age group. The distribution of toddlers based on maternal age during pregnancy was predominantly >19 years, with 69.7% in the case group and 97.0% in the control group. The proportion of mothers aged <19 years in the case group was 12.2%, while in the control group it was 0%. This indicates that the proportion of mothers aged <20 years was higher in the case group than in the control group.

Table 2: Adolescent pregnancies in the case and control groups

Adolescent pregnancy	Case		Control		*p*	*OR* CI
	n	%	n	%		
Adolescent pregnancy	10	30,3	1	3,0	0,008	13,913 (1,663-116,412)
Not adolescent pregnancy	23	69,7	32	97,0		
Total	33	100	33	100		

Based on Table 2, it was found that in the case group (stunting), there were 10 subjects from mothers who experienced adolescent pregnancy (30.3%), and 69.7% from mothers who did not experience adolescent pregnancy. Meanwhile, in the control group,

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there was 1 subject from mothers who experienced adolescent pregnancy (3%) and 32 subjects who did not experience adolescent pregnancy (97%). This indicates that adolescent pregnancy was more common in the case group than in the control group.

Bivariate analysis was conducted to see the relationship between the variable of adolescent pregnancy with the incidence of stunting in children aged 0-24 months in the working area of Rancakalong Community Health Center, Sumedang Regency, West Java, with the statistical test used was Chi Square and with a significance level (α = 0.05). The results of the bivariate analysis obtained a p-value of 0.008 (0.008 <0.05), so Ho was rejected and Ha was accepted. This shows that there is a significant relationship between the variable of adolescent pregnancy with the incidence of stunting in children aged 0-24 months in the Rancakalong Community Health Center area, Sumedang Regency, West Java in 2024. The odds ratio obtained from the calculation is 13.913, meaning that mothers with adolescent pregnancy are 13.9 times more likely to have stunted children than mothers with age at pregnancy >19 years. The odds ratio is accompanied by the desired confidence interval (CI) of 90%. The results of this study obtained a 95% CI of 1.663-116.412.

Based on the analysis results, there is a significant relationship between adolescent pregnancy and the incidence of stunting in toddlers, meaning that adolescent pregnancy is a factor significantly associated with the incidence of stunting in toddlers aged 0-24 months in the Rancakalong Community Health Center work area. The odds ratio obtained based on the calculation obtained an OR value of 13.913 (OR>1, risk factor), meaning that mothers with adolescent pregnancies are at 13.9 times the risk of having stunted toddlers compared to toddlers born to mothers who are not adolescent pregnancies. The results of this study are supported by previous research that showed toddlers born to adolescent mothers have an eight times greater risk of experiencing stunting. This is because adolescent mothers are less empowered to ensure adequate food intake, access to clean water, and good sanitation conditions for their children. Meanwhile, during pregnancy, the adolescentr's rapidly developing body may compete with the fetus that is also developing in the womb. As a result, the fetus does not get the nutrients it needs. In addition, adolescent mothers may be psychologically unprepared to breastfeed their babies after giving birth, or may not have adequate financial resources to provide for their babies due to poor socioeconomic conditions.[7]

Adolescent pregnancies can also be unintended. This can lead to mothers experiencing other challenges, such as being rejected by their parents, experiencing social pressure from their environment, facing significant stigma, dropping out of school, experiencing personal stress due to the pregnancy, or even being forced to leave home by their parents. Their partners may also be adolescentrs without a stable source of income. This increases the risk of preterm births for pregnant teens. Furthermore, mothers with adolescent pregnancies are three times more likely to be malnourished than adult mothers.[7]

Research by Larasati et al. (2018) also showed that adolescent pregnancy was significantly associated with stunting in toddlers (p = 0.016) with an odds ratio of 3.86. This means that adolescent pregnancy increases the risk of stunting in children by 3.86 times.[8] Adolescent pregnancy is closely linked to stunting. Most adolescent mothers have low levels of education and economic well-being, which can lead to poor health. Adolescent pregnancy can lead to pregnancy risks, low birth weight, and bleeding during delivery, which can increase maternal and neonatal mortality. Adolescent mothers are also more likely to have low birth weight babies, which can lead to stunting.[9] Similar research results show that adolescent mothers increase the prevalence of LBW as a result of premature birth, and chronic malnutrition in toddlers is significantly higher in adolescent mothers than in non-teen mothers.[10]

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Research conducted by Hasansi et al. (2019) also showed a significant relationship between maternal age during pregnancy and the incidence of stunting in toddlers. Pregnant mothers under 20 years of age are at 14 times greater risk of having stunted children. This is because women under 20 years of age have an immature reproductive system, and blood circulation to the cervix and uterus is not yet fully developed, which can disrupt the process of nutrient distribution from mother to fetus. Therefore, the fetus's energy and nutrient needs in the womb are not met, which can lead to nutritional problems at birth.[11]

Adolescence is considered a life stage worthy of strategic health investment because it is a critical period of physical and neurodevelopment. Adolescent pregnancy is a serious health problem because it has negative effects on the health of both mother and baby. Adolescents have not yet reached physical, psychological, and social maturity, making adolescent pregnancy a significant issue.[12] Adolescents are more likely to have lower decision-making abilities, have poorer feeding practices, and are less likely to access health services regarding nutrition which can lead to stunting in toddlers.[13] Adolescent mothers tend not to complete breastfeeding because they are less sensitive to their babies and are not emotionally stable because they are easily disturbed. [14] Early pregnancy in adolescence, when the mother is still growing, increases the mother's risk of further stunting and leads to adverse obstetric outcomes..[15] Therefore, efforts that can be made are preventing adolescent marriage to prevent pregnancy and childbirth in adolescentrs, evaluating the nutritional status of adolescentrs regularly, and providing adequate nutritional interventions to prevent malnutrition. [7]

CONCLUSION

There was a significant association between adolescent pregnancy and stunting in toddlers aged 0-24 months (p-value 0.008 OR 13.913). This means that mothers with adolescent pregnancies are 13.9 times more likely to have stunted toddlers. Therefore, stunting prevention needs to be implemented before pregnancy by planning a healthy pregnancy and preventing adolescent pregnancies.

COMPETING INTERESTS

All authors had none to declare

AUTHOR'S CONTRIBUTION

Dina Kurniasih conceived of the presented idea, data analysis, and writing manuscript; All authors contributed to the final manuscript.

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