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Determinants of Stunting among Children Aged 0-59 Months in Gunungpati District, Semarang City

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Abstract

Background: *Stunting, a consequence of chronic malnutrition, is a growth disorder causing children to be too short for their age. This study aimed to identify family and environmental variables that determine stunting in children aged 0–59 months in Gunungpati District, Semarang City, in 2022.*
Methods: *This observational analytic study using a case-control design with 45 cases and 45 controls, selected by simple random sampling. Independent variables assessed were maternal age, birth spacing, number of children in the family, drinking water source, and latrine condition, all derived from secondary data. Data were analyzed using univariate, bivariate (chi-square), and multivariate (logistic regression) methods.*
Results: *Bivariate analysis yielded significant associations for maternal age (p= 0.002) and number of children in the family (p= 0.003). Birth spacing (p= 0.168), drinking water source (p= 1.000), and latrine conditions (p= 0.806) were not statistically significant. Multivariate analysis indicated that the two most significant determinants of stunting incidence were maternal age OR= 4.429 (95% CI: 1.829–10.726) and number of children in the family OR= 4.000 (95% CI: 1.665–9.610).*
Conclusion: *Maternal age and number of children in the family are proven determinants associated with stunting incidence, with maternal age being the most influential determinant.*

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Pendahuluan

Stunting is a growth disorder experienced by children as a result of inadequate nutrition and psychosocial stimulation also repeated infection during the first 1000 days of life. Physically, stunting is also defined as a condition that is too short for its age, which exceeds -2 standard deviations (SD) of the media child growth standards according to the World Health Organization (WHO). Stunting is one of the most important issues in the world of health that has received considerable attention because of the long-term impact it can have on individuals and society, including decreased cognitive and physical development, decreased productive capacity and poor health as well as increase the risk of other degenerative diseases (World Health Organization (WHO), 2014). Stunting is a chronic malnutrition problem caused by insufficient nutritional intake for a long time due to feeding that is not in line with nutritional needs. Based on the index of body length according to age or height according to age, where in the anthropometric standard of assessing the nutritional status of children, the measurement result of children with stunting are at the threshold (z-score) of -3 SD to less than -2 SD (stunted) and less than -3 SD (severely stunted) (Ministry of Health Republic Indonesia, 2020).

Globally, stunting is one of Sustainable Development Goals (SDGs) targets namely preventing stunting which is expected to decrease by 2025. As many as 149.2 million children under five are stunted in 2020, of which more than half, 53% are from Asia. Based on the prevalence data of stunting among children under five collected by WHO, the Southeast Asia region has the second highest prevalence of 30.1% after the African region. Indonesia is second in Southeast Asia with the highest prevalence of stunting among children under five after Timor Leste (World Health Organization (WHO), 2021).

The Indonesian government has a target to reduce the prevalence of stunting to 14% by 2024 (Presidential Regulation, 2021). Whereas, according to WHO, a public health problem can be considered chronic if the prevalence of stunting is more than 20%. Based on the Indonesian Nutrition Status Study result in 2021, the national prevalence of stunting among children under five is 24.4% (Ministry of Health Republic Indonesia, 2021). This number is still above the limit set by WHO and still far from the Indonesian government's target. Indeed, the target is for 2024, which means Indonesia needs to reduce the prevalence rate by at least 10.4% in just a short period of time.

Central Java Province is one of twelve provinces that are prioritized for stunting reduction and one of the five provinces with the highest number of stunted children under five. The prevalence of stunting in Central Java according to the result of Indonesian Nutrition Status Study in 2021 is 20.9% (Ministry of Health Republic Indonesia, 2021). In 2021, Semarang City has a higher prevalence rate than the Central Java prevalence rate of 21.3%. Based on Semarang City Health Profile 2021, Gunungpati District is among the top ten districts with the highest stunting cases according to the prevalence of stunting among children under five (Health Office of Semarang City, 2022).

There are several factors that cause stunting among children under five which are very diverse, including lack of nutritional intake in infants, illness in infants, maternal nutrition during pregnancy, and socio-economic condition (Ministry of Health Republic Indonesia, 2018). The causes of stunting are very diverse and complex, but the most commonly used categories are basic causes, indirect (underlying) causes, and direct (immediate) causes (Putri et al., 2023). Included in basic causes are economic, social, and political factors. While direct (immediate) causes are poor diet and disease where these are influenced by indirect (underlying) causes, such as family factors and health services. In addition, household food security, maternal parenting practices and a healthy environment are also underlying causes (Tafesse, 2021).

Children under five are still very dependent on their mother and family, so it cannot be denied that family conditions and the environment around the family, which are included in the underlying factors, will have an impact on children under five nutritional status. Maternal conditions also play an important role in the incidence of stunting among children

under five, one of which is the age of mother. Having children at a very young age is closely related to the incidence of stunting (Wanimbo, 2020). Based on research, it was found that children of adolescent mothers were eight times more at risk of stunting than children of adult mothers (Wemakor, 2018).

The other family condition is birth spacing between children that needs to be arranged ideally. Based on recommendation from WHO, the minimum birth spacing is 2 years and 9 months, so that parenting and child care can run optimally so that the incidence of stunting among children under five can be prevented. This is evidenced by research with the results of the relationship between birth spacing and the incidence of stunting (Azriful, 2018). In addition to birth spacing, the number of children in the family can also increase the likelihood of stunting. Having less than or equal to three children under five in the family is a risk factor for stunting (Tafesse, 2021). This is corroborated by the results of research that there is a relationship between the number of children in the family and the incidence of stunting in children aged 12-59 months (Kusumawardhani, 2020).

Environmental factors around the family can also affect the incidence of stunting, including drinking water sources and latrine conditions. Based on previous research, it was found that there was an association between access to healthy latrines and clean water sources with the incidence of stunting (Hasan, 2019). In addition, improvements in sanitation conditions and hygiene practices that include latrines are also associated with a decrease in the prevalence of stunting (Rah, 2015). Children belonging to families with unprotected water sources and inadequate latrines demonstrate a 1.3 times greater probability of being stunted compared to children from families with protected water sources and adequate latrines (Oginawati et al., 2023).

The difference between this study and previous studies are the place, time, and research variables that focus on family conditions and the environment around the family with the aim of knowing the determinants that can be associate with the incidence of stunting among children aged 0-59 months in the working are of Family Planning Counseling Center Gunungpati District, Semarang City, in 2022.

Method

The type of research used in this study was observational analytic with a case-control design to determine the determinants associated with stunting in children aged 0-59 months. The study was conducted in the work area of Family Planning Counseling Center of Gunungpati District, Semarang City from September to November 2022. The independent variables observed in this study were maternal age, birth spacing, number of children in the family, drinking water source and latrine condition. The dependent variable in this study is the incidence of stunting in children aged 0-59 months.

The samples in this study were families with children aged 0-59 months recorded in the Recapitulation of Stunting Risk Family in Gunungpati District, Semarang City in 2022. The sampling method used was simple random sampling with case samples in families with children aged 0-59 months who experienced stunting, while the control samples selected were families with children aged 0-59 months who did not experience stunting and had stunting risk status. Based on the calculation with the Lameshow formula, the sample used in this study was 45 minimum samples. This study used 45 samples with a case and control ratio of 1:1, so that the case sample obtained was 45 cases and the control sample obtained was 45 controls.

The data used in this research is the secondary data of the Recapitulation of Stunting Risk Family in Gunungpati District, Semarang City in 2022. The research has gone through data request procedures in accordance with the research to be carried out and obtained permission from the relevant agencies. Data were analyzed univariately, bivariately using the chi square test, and multivariately using the logistic regression method with the help of data processing software. In the bivariate analysis, the confidence interval (CI) was calculated with a confidence level of 95%, the p value <0.05 was considered statistically significant. Factors that had a p value of <0.25 were included in the multivariate analysis. This

study has received ethical approval from the Semarang State University Health Research Ethics Committee with ethics permit number 502/KEPK/EC/2022.

Results and Discussion

Table 1 shows that family conditions and the environment around the family in the case and control groups are quite diverse. Based on the maternal age variable, mothers aged <20 years or >35 years, more than half of the case group (66.7%) were in the at-risk category, while in the control group the maternal age of 20-35 years, most (68.9%) were in the non-risk category.

Based on the variable of birth spacing between children, both the case and control groups were mostly in the non-risk category. 24.4% of case group families had a birth spacing of <2 years and 75.6% had a birth spacing of ≥2 years, while 11.1% of case group families had a birth spacing of <2 years and 88.9% had a birth spacing of ≥2 years. Most families in the case group had ≥3 children (66.7%), while 33.3% of control group families had <3 children. This contrasts with the situation in the control group families, where more families had <3 children (66.7%) and families with ≥3 children amounted to 33.3%.

Environmental variables, namely drinking water sources and latrine conditions, have almost the same distribution in the case group and control group where both are mostly included in the decent or not at risk category. In the drinking water source variable, as many as 20% of the case group had not appropriate drinking water sources and 80% were declared appropriate, while in the control group as many as 17.8% had not appropriate drinking water sources and 82.2% were appropriate. A total of 26.7% of the case group had not appropriate latrine conditions and 73.3% of them were appropriate. The condition of latrines in the control group was 22.2% not appropriate and the remaining 77.8% were appropriate.

Table 1. Frequency Distribution of Determinants for Stunting in Children 0-59 Months of Age in Gunungpati District

Variables	Case		Controls		Total	
	F (n=45)	%	F (n=45)	%	F (n=90)	%
Mother's Age						
At risk (<20 years or >35 years)	30	66.7	14	31.1	44	48.9
Not at risk (20-35 years)	15	33.3	31	68.9	46	51.1
Birth spacing						
At risk (<2 years)	11	24.4	5	11.1	16	17.8
Not at risk (≥2 years)	34	75.6	40	88.9	74	82.2
Number of Children in the Family						
At risk (≥3 children)	30	66.7	15	33.3	45	50.0
Not at risk (<3 children)	15	33.3	30	66.7	45	50.0
Source of Drinking Water						
Not Feasible	9	20.0	8	17.8	17	18.9
Feasible	36	80.0	37	82.2	73	81.1
Latrine Condition						
Not Appropriate	12	26.7	10	22.2	22	24.4
Appropriate	33	73.3	35	77.8	68	75.6

Based on the bivariate analysis conducted as shown in Table 2, there is an association between maternal age and the incidence of stunting in children aged 0-59 months in the working area of the Family Planning Counseling Center, Gunungpati District with a p-value = 0.002 and an OR = 4.43. This means that children aged 0-59 months with maternal age <20 years or >35 years have a 4.43 times risk of stunting compared to children aged 0-59 months with maternal age 20-35 years. The results of this study are in line with previous research which states that children with teenage mothers are eight times more at risk of stunting when compared to children with mothers who are old enough to conceive and give birth (Wemakor, 2018). Other studies have found a significant relationship between stunting and maternal age that is too young or too old (<20 years or >35 years). Children with maternal age

<20 years or >35 years are 4 times more likely to experience stunting than children with the ideal maternal age of 20-35 years. The nutritional status of the mother indirectly affects the nutritional status of the child. Mothers who are too young tend to have lower nutritional status and increase the risk of low birth weight, making them vulnerable to stunting (Manggala, 2018). Meanwhile, mothers who are too old also have a high risk of pregnancy due to a decrease in nutrient absorption due to the aging process which can cause an imbalance in nutrient intake (Rahmawati, 2018).

Research conducted by Wanimbo states that children with a mother's age <20 years when pregnant are more at risk of stunting compared to reproductive age, namely 20-34 years. Younger mothers are still not mature enough in terms of mindset, compared to older mothers, so this affects the nutritional parenting of children (Wanimbo, 2020). Research conducted by Fajrina & Syaifudin (2016) also stated that there was a significant relationship between maternal age during pregnancy and the incidence of stunting, where maternal age was categorized into at risk (<20 years or >35 years) and not at risk (20-35 years). This is supported by the theory that states that the reproductive age of women is 20-35 years, at the age of <20 years the reproductive organs do not function perfectly, and at the age of >35 years there is a reproductive decline (Fajrina & Syaifudin, 2016).

The results of this study show that there is no relationship between birth spacing and the incidence of stunting in children aged 0-59 months in the working area of the Family Planning Counseling Center Gunungpati District with a p-value = 0.168 and OR = 2.59. This is in line with research conducted by Wati in Banyumas, which showed that there was no significant relationship between birth spacing and the incidence of stunting (Wati, 2022). Short birth spacing increases the risk of stunting, but there is no significant relationship between birth spacing and the incidence of stunting (Eliafiana, 2022). The results of this study contradict research by Chungkham (2020), which states that birth spacing plays an important role in the occurrence of under nutrition in children. Birth spacing of 0-23 months between children increases the chance of stunting compared to longer birth spacing (Chungkham, 2020). Azriful's research concluded the opposite result, namely that there is a relationship between birth spacing and the incidence of stunting. Birth spacing affects parenting, especially in feeding where children with a birth spacing of less than two years tend to have a poor diet (Azriful, 2018).

Based on the chi square test, it was found that there is an association between the number of children in the family and the incidence of stunting in children aged 0-59 months in the working area of the Family Planning Counseling Center Gunungpati District with a p-value = 0.003 and OR = 4.00. It can be concluded that children aged 0-59 months with ≥3 children in the family have a 4.00 times risk of stunting compared to children aged 0-59 months with <3 children in the family. This is in line with previous research with the result that having more than three children under five increases the risk of stunting. The large number of toddlers in the family affects maternal care patterns, including reduced maternal care and mothers not being able to breastfeed children optimally (Tafesse, 2021). Families with two or more toddlers have also been shown to play a role as a risk factor for stunting, because mothers who have more than or equal to two toddlers will have less time to take care of children than mothers who only have one toddler (Berhe, 2019). Research conducted by Kusumawardhani in Bandung Regency also stated the same thing, that there was a significant relationship between the number of children in the family and the incidence of stunting. These results support the existing theory that the more children in the family, generally there will be less food availability. Uneven food distribution will affect the fulfillment of inadequate nutrition (Kusumawardhani, 2020).

This study shows no association between drinking water sources and stunting in children aged 0–59 months in the working area of the Family Planning Counseling Center Gunungpati District, with a p-value = 1.000 and an OR of 1.16. This finding is consistent with a study conducted by Rah in India, which concluded that access to improved drinking water sources is not associated with stunting in

children, although improvements in sanitation conditions and hygiene practices have been shown to influence the reduction in stunting prevalence rates (Rah, 2015). However, Rah's findings contradict previous studies and existing theories. Torlesse conducted research in Indonesia and concluded that water treatment is a risk factor for stunting in children aged 0-23 months (Torlesse, 2016). Based on Ramdaniati's (2019) research, there is a significant relationship between water sources and stunting in children under five, where families with inadequate water sources are twice as likely to have stunted children under five than families with adequate water sources (Ramdaniati, 2019). Similar research also found that access to clean water sources is associated with stunting. Children under five from families without access to clean water sources are nearly six times more likely to experience stunting than children under five from families with access to clean water sources (Hasan, 2019).

Based on the bivariate analysis conducted in this study, it was found that there was no relationship between latrine conditions and stunting among children aged 0-59 months in the working area of the Family Planning Counseling Center Gunungpati District with a p-value = 0.806 and OR = 1.27. These findings contradict previous studies that reported a significant association between access to a clean toilet and stunting in infants. Hasan's (2019) study concluded that access to a clean toilet is associated with stunting, with a fivefold higher risk for families without access to a clean toilet compared to those with access (Hasan, 2019). After controlling for other variables, household access to sanitation facilities was found to be associated with stunting among children aged 0–23 months (Rah, 2015).

Table 2. Results of Bivariate Analysis of Risk Factors for Stunting in Children Aged 0-59 Months in Gunungpati District

Variable	Case		Control		*p-value*	OR (95%CI)
	F (n=45)	%	F (n=45)	%		
Mother's Age						
At risk (<20 years or >35 years)	30	66.7	14	31.1	0.002*	4.43 (1.83-10.73)
Not at risk (20-35 years)	15	33.3	31	68.9		
Birth spacing						
At risk (<2 years)	11	24.4	5	11.1	0.168*	2.59 (0.82-8.19)
Not at risk (≥2 years)	34	75.6	40	88.9		
Number of Children in the Family						
At risk (≥3 children)	30	66.7	15	33.3	0.003*	4.00 (1.67-9.61)
Not at risk (<3 children)	15	33.3	30	66.7		
Source of Drinking Water						
Not Feasible	9	20.0	8	17.8	1.000*	1.16 (0.40-3.33)
Feasible	36	80.0	37	82.2		
Latrine Condition						
Not Appropriate	12	26.7	10	22.2	0.806*	1.27 (0.49-3.34)
Appropriate	33	73.3	35	77.8		

*Chi-Square test

Variables with a p-value <0.25 in the bivariate analysis were subjected to logistic regression, namely maternal age, birth spacing, and number of children in the family.

The results of the multivariate analysis in Table 3 show that two of the three variables were found to be risk factors for stunting in children aged 0–59 months, namely maternal age and number of children in the family. The maternal age variable had a p-value = 0.002 and an OR = 4.32, while the number of children in the family variable had a p-value = 0.004 and an OR = 3.90. This means that, after controlling for other variables, children aged 0–59 months with mothers aged <20 years or >35 years are 4.32 times more likely to experience stunting compared to children aged 0–59 months with mothers aged 20–35 years. Children aged 0–59 months with three or more siblings are 3.90 times more likely to experience stunting compared to children aged 0–59 months with fewer than three siblings. Of the two variables,

maternal age has the strongest contribution to predicting stunting in children aged 0–59 months. This is because the mother's age variable has the smallest p-value, which is 0.002, or the largest Wald value, which is 9.42.

According to the National Population and Family Planning Agency, 21 to 35 years is the ideal age for marriage or pregnancy. Women of this age can be said to be physically and mentally ready for marriage or pregnancy. Marrying or becoming pregnant at too young or too old an age carries various risks that can endanger the health of both the mother and the child. The link to stunting lies in the child's nutritional status, which can be influenced by the mother's nutritional status. If the mother's nutritional status is suboptimal, it can increase the risk of low birth weight in infants, making them more susceptible to stunting (Dewey, 2016). One of the causes of suboptimal maternal nutritional status is the mother's age at marriage or pregnancy, which is too young or too old. Young mothers are still in their growth phase and require adequate nutrition to develop properly. During pregnancy, nutritional needs increase significantly as nutrients are required by both the mother and the fetus (Delprato, 2017). According to research conducted by Zulhakim, pregnancy during adolescence can lead to competition for nutrient intake between the fetus and the mother. Inadequate nutrient intake by the mother results in insufficient nutrient intake for the fetus, thereby increasing the risk of low birth weight, which can potentially cause stunting (Zulhakim, 2022).

According to Sukmani (2016) in Rahmawati's (2018) research, there is a possibility that the nutritional needs of children with mothers who are too old are not met. The decreased ability of older pregnant women to absorb nutrients affects their food intake, leading to an imbalance in the fetus's nutritional intake (Rahmawati, 2018). Too young maternal age increases the risk of premature birth, malnutrition, and maternal and infant mortality. Similar risks are associated with too old maternal age, including increased risk of stillbirth, premature birth, and chromosomal abnormalities. Pregnant women of advanced maternal age are more prone to pregnancy-related issues and complications due to declining fertility and vitality with age (Fall, 2015).

Table 3. Final Logistic Regression Model of Risk Factors for Stunting in Children Aged 0-59 Months in Gunungpati District

Variable	B	S.E	Wald	*p-value*	OR	95%CI
Mother's age	1.46	0.48	9.42	0.002	4.32	1.70-10.10
Number of children in the family	1.36	0.48	8.14	0.004	3.90	1.53-9.91

Conclusion

Based on research that has been conducted, the determinants proven to be associated with stunting incidence were maternal age and number of children in the family, with maternal age being the most influential determinant. Whereas, birth spacing, source of drinking water, and latrine condition are not determinants that are contributing of the occurrence of stunting.

References

Azriful. (2018). Determinan Kejadian Stunting pada Balita Usia 24-59 Bulan di Kelurahan Rangas Kecamatan Banggae Kabupaten Majene. *Al-Sihah: Public Health Science Jorunal,* 10(2), 192–203. https://doi.org/10.24929/jik.v6i1.1347

Berhe, K. (2019). Risk factors of stunting (chronic undernutrition) of children aged 6 to 24 months in Mekelle City, Tigray Region, North Ethiopia: An unmatched case-control study. *PLoS ONE*, 14(6), 1–11. https://doi.org/10.1371/journal.pone.0217736

Chungkham, H. S. (2020). Birth interval and childhood undernutrition: Evidence from a large scale survey in India. *Clinical Epidemiology and Global Health,* 8(4), 1189–1194. https://doi.org/10.1016/j.cegh.2020.04.012

Delprato, M. (2017). The Effect of Early Marriage Timing on Women's and Children's Health in Sub-Saharan Africa and Southwest Asia. *Annals of Global Health,* 83(3–4), 557–567. https://doi.org/10.1016/j.aogh.2017.10.005

Dewey, K. G. (2016). Reducing stunting by improving maternal, infant and young child

nutrition in regions such as South Asia: Evidence, challenges and opportunities. *Maternal and Child Nutrition,* 12, 27–38. https://doi.org/10.1111/mcn.12282

Eliafiana, R. (2022). Relationship between Mothers Birth Spacing and Incidence of Stunting in Children 24 - 59 months. *Jurnal Biomedika Dan Kesehatan,* 5(1), 42–49. https://doi.org/10.18051/jbiomedkes.2022.v5.42-49

Fajrina, N., & Syaifudin. (2016). *Hubungan Faktor Ibu Dengan Kejadian Stunting Pada Balita Di Puskesmas Piyungan Kabupaten Bantul.* Fakultas Ilmu Kesehatan Universitas 'Aisyiyah Yogyakarta, 10. http://digilib.unisayogya.ac.id/2051/1/NASKAH PUBLIKASI %28NURUL FAJRINA 201510104302%29.pdf

Fall, C. H. D. (2015). Association between maternal age at childbirth and child and adult outcomes in the offspring: A prospective study in five low-income and middle-income countries (COHORTS collaboration). *The Lancet Global Health,* 3(7), e366–e377. https://doi.org/10.1016/S2214-109X(15)00038-8

Hasan, A. (2019). Akses ke Sarana Sanitasi Dasar sebagai Faktor Risiko Kejadian Stunting pada Balita Usia 6-59 Bulan. *Jurnal Kesehatan,* 10(3), 413. https://doi.org/10.26630/jk.v10i3.1451

Health Office of Semarang City. (2022). *Profil Kesehatan Kota Semarang Tahun 2021.* Dinas Kesehatan Kota Semarang.

Kusumawardhani, A. (2020). Hubungan Riwayat Bayi Berat Lahir Rendah dan Jumlah Anak dalam Keluarga dengan Kejadian Stunting Usia 12-59 Bulan di Desa Panyirapan Kabupaten Bandung. *Jurnal Integrasi Kesehatan & Sains,* 2(1), 81–85. https://doi.org/10.29313/jiks.v2i1.5582

Manggala, A. K. (2018). Risk factors of stunting in children aged 24-59 months. *Paediatrica Indonesiana,* 58(5), 205–212.

Ministry of Health Republic Indonesia. (2018). *Situasi Balita Pendek (Stunting) di Indonesia.* Kementerian Kesehatan RI.

Ministry of Health Republic Indonesia. (2020). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 2 Tahun 2020 Tentang Standar Antropometri Anak.* Kementerian Kesehatan RI.

Ministry of Health Republic Indonesia. (2021). *Hasil Studi Status Gizi Indonesia (SSGI).* Kementerian Kesehatan RI.

Oginawati, K., Yapfrine, S. J., Fahimah, N., Salami, I. R. S., & Susetyo, S. H. (2023). The associations of heavy metals exposure in water sources to the risk of stunting cases. *Emerging Contaminants,* 9(4), 100247. https://doi.org/10.1016/j.emcon.2023.100247

Presidential Regulation. (2021). *Peraturan Presiden Republik Indonesia Nomor 72 Tahun 2021 Tentang Percepatan Penurunan Stunting.* Peraturan Presiden Republik Indonesia (Perpres RI).

Putri, A. N., Dewi, Y. L. R., & Priyatama, A. N. (2023). Factors Associated with Stunting in Adolescents in Pariaman, Padang, West Sumatera, Indonesia. *Journal of Maternal and Child Health,* 8(4), 421–428. https://doi.org/10.26911/thejmch.2023.08.04.04

Rah, J. H. (2015). Household sanitation and personal hygiene practices are associated with child stunting in rural India: A cross-sectional analysis of surveys. BMJ Open, 5(2). https://doi.org/10.1136/bmjopen-2014-005180

Rahmawati, V. E. (2018). Determinants of Stunting and Child Development in Jombang District. *Journal of Maternal and Child Health,* 03(01), 68–80. https://doi.org/10.26911/thejmch.2018.03.01.07

Ramdaniati, S. N. (2019). HUBUNGAN KARAKTERISTIK BALITA, PENGETAHUAN IBU DAN SANITASI TERHADAP KEJADIAN STUNTING PADA BALITA DI KECAMATAN LABUAN KABUPATEN PANDEGLANG. *HEARTY Jurnal Kesehatan Masyarakat*, 7(2), 47–54.

Tafesse, T. (2021). Factors associated with stunting among children aged 6–59 months in Bensa District, Sidama Region, South Ethiopia: unmatched case-control study. *BMC Pediatrics,* 21(1), 1–11. https://doi.org/10.1186/s12887-021-03029-9

Torlesse, H. (2016). Determinants of stunting in Indonesian children: Evidence from a cross-sectional survey indicate a prominent role for the water, sanitation and hygiene sector in stunting reduction. *BMC Public Health,* 16(1), 1–11. https://doi.org/10.1186/s12889-016-3339-8

Wanimbo, E. (2020). Hubungan Karakteristik Ibu Dengan Kejadian Stunting Baduta (7-24 Bulan). *Jurnal Manajemen Kesehatan Yayasan RS Dr. Soetomo*, 6(1).

Wati, E. K. (2022). Stunting Incidence in Infant Related to Mother ' s History During Pregnancy. *Jurnal Kesehatan Masyarakat,* 17(4), 535–541.

Wemakor, A. (2018). Young maternal age is a risk factor for child undernutrition in Tamale Metropolis, Ghana. *BMC Research Notes,* 11(1), 1–5. https://doi.org/10.1186/s13104-

018-3980-7

World Health Organization (WHO). (2014). Global Nutrition Targets 2025: Stunting Policy Brief. *In World Health Organization* (Vol. 122, Issue 2). World Health Organization.

World Health Organization (WHO). (2021). *Levels and trends in child malnutrition: key findings of the 2021 edition of the joint child malnutrition estimates*. World Health Organization.

Zulhakim, Z. (2022). Hubungan Pernikahan Usia Dini Dan Pola Asuh Baduta (0- 23 Bulan) Terhadap Kejadian Stunting. *Jurnal Kesehatan Kusuma Husada*, 13(1), 84–92. https://doi.org/10.34035/jk.v13i1.802