



## THE RELATIONSHIP BETWEEN MATERNAL HEIGHT DURING PREGNANCY AND THE INCIDENCE OF STUNTING IN TODDLERS AT THE RONGKOP COMMUNITY HEALTH CENTER, GUNUNG KIDUL IN 2025

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ABSTRACT	Keywords
<p>Stunting is a global nutrition problem. World Health Organization Data shows that as many as 22% of toddlers experience stunting, which can affect children's cognitive development in the future. The incidence of stunting in Indonesia remains high in 2024 according to the SSGI (Indonesian Nutritional Status Survey). The national stunting prevalence is 19.8%. While the target for 2025 is 18.8%, the Indonesian government must continue to strive to reduce stunting cases to reach the target of 18.8%. The government program to provide free nutritious food for pregnant and breastfeeding mothers and children aged 2-5 years has been implemented as an effort to reduce stunting cases, but the issue of maternal height also affects the incidence of stunting. Women of childbearing age who are under 150 cm tall are at high risk of giving birth to stunted babies. Yogyakarta is one of the developed cities in Indonesia known as a city of education, but still has quite high cases of stunting in toddlers in one of the districts in Gunung Kidul. Although maternal height has been identified as a risk factor for stunting, local evidence shows that areas with a higher burden of stunting incidence, such as in the Rongkop Community Health Center working area, have stunting incidences of 60 respondents out of a total of 148 toddlers in 2025. The purpose of this study was to determine the relationship between maternal height and the incidence of stunting in toddlers at the Rongkop Community Health Center, Gunung Kidul in 2025.</p> <p>This study used a quantitative method with a cross-sectional study design, with a total sampling of 148 respondents. Data were analyzed using the chi-square test.</p> <p>The results of the study is that there are 148 respondents who are pregnant with reproductive age characteristics of 20-35 years 85,1%, with employment as a housewife 62,2% and the highest level of education is senior high school 45,9%. Mother's height data short &lt;150 cm is 14,2% and all of them gave birth to incidence of stunting toddlers. The results of the Chi-Square analysis showed a significant relationship (0.001 &lt;0.05).</p> <p>Conclusion There is a relationship between maternal height and the incidence of stunting in toddlers at Rongkop Community Health Center, Gunung Kidul Regency in 2025.</p>	<p><b><i>Pregnant women, Stunted growth, Height</i></b></p>

## INTRODUCTION

Stunting is a condition in which the z-score for a toddler's height/age is less than 2 SD. Factors causing stunting include inadequate nutritional intake and chronic infectious diseases, while indirect factors include the environment and family, including maternal height (Sholeha, 2022). According to the WHO (2022), the global prevalence of stunting is *World Health Organization*) In 2023, the figure was 22.3%, equivalent to 148.1 million children under five worldwide experiencing stunting. Meanwhile, Indonesia ranked second in Southeast Asia with a high stunting rate of 30%, while Africa remained in first place with 31%.

Based on data from the Nutritional Status Survey (PSG) in Indonesia for the past two years, 2023 and 2024, stunting has become a major problem compared to other nutritional problems such as malnutrition, wasting, and obesity. The national prevalence of stunting in toddlers increased from 29.6% in 2017 to 30.8% in 2018 (Ministry of Health of the Republic of Indonesia, 2018). Data from a case study of toddler nutritional status integrated with Susenas shows that the stunting rate has decreased by 3.1%, or 27.67% compared to the 2018 Riskesdas data (Ministry of Health of the Republic of Indonesia, 2019). The incidence of stunting in Indonesia remains high in 2024 according to the SSGI (Indonesian Nutritional Status Survey). The national stunting prevalence is 19.8%. Although the target for 2025 is 18.8%, the Indonesian government must continue to strive to reduce stunting cases to reach the 18.8% target. The prevalence of stunting in the Special Region of Yogyakarta (DIY) in 2024 was 17.4%, while the 2025 target is to reduce it below 10%. Gunung Kidul Regency is the highest contributor to stunting cases in DIY, at 19.7%. Therefore, the incidence of stunting in Gunung Kidul Regency needs to be further improved to reach the DIY provincial target of 10% by 2025. Although maternal height has been identified as a risk factor for stunting, local evidence suggests it is available in high-burden areas such as Gunung Kidul., The incidence of stunting at Rongkop

Community Health Center in Gunung Kidul was 60 toddlers out of a total of 148 toddlers.

Stunting is caused by several direct and indirect factors. Direct factors include infectious diseases and inadequate food intake, both in terms of quality and quantity (Sholeha, 2022). Indirect factors include family economic status, maternal knowledge, and genetics, such as maternal height during pregnancy (UNICEF, 2020).

The results of Sholeha A.'s study entitled *The Relationship between Maternal Height and the Incidence of Stunting in Children Aged 24-59 Months in Wonomerto District, Probolinggo Regency in 2022* stated that there was a significant relationship between maternal height ( $p=0.005<0.05$ ) and the incidence of stunting in children aged 24-59 months in Wonomerto District, Probolinggo Regency. Maternal height <150 cm genetically influences the birth of stunted babies. Therefore, this study focuses on the genetic factors of maternal height <150 cm with the incidence of stunting in toddlers.

## METHOD

The quantitative method used is based on concrete data, namely secondary data presented in numerical form, measured using the SPSS application calculation test tool. The type of research conducted is secondary data, so respondents were not given direct intervention or treatment. The design in this study uses a descriptive qualitative approach. *cros-sectional study* to assess the relationship between 2 variables: maternal height and the incidence of stunting

The study population was 148 toddlers at Rongkop Community Health Center, Gunung Kidul Regency, with a sample size of 148 respondents. The sampling technique used was total sampling. The entire population was sampled.

Secondary data was obtained through the e-PPGBM application and the pregnant women's registration book at the first visit (K1). Data analysis was performed using statistical tests. *Chi-square test* with a

confidence level of 95%, namely  $\alpha = 0.05$  to determine the relationship between the variable of maternal height and the incidence of stunting. Classification of stunting according to WHO with measurement limits is done by calculating the height-for-age Z-score: Z-score  $< -2$  SD is called Stunting and Z-score  $< -3$  SD is called severe stunting (WHO, 2024)

The limit of maternal height during pregnancy is  $<150$  cm (short) which affects stunting. The Ministry of Health of the Republic of Indonesia in the document on stunting-free and national strategy for accelerating stunting prevention 2025–2029) still emphasizes interventions for pregnant women with short stature below average, including mothers with short height  $<150$  cm as stunting prevention in the first 1000 days of life (Dainy et al., 2024).

## RESULTS

### 1. Univariate analysis

<b>Table 1. Respondent characteristics</b>		
Respondent characteristics	Frequency	Percentage %
<b>Maternal Age During Pregnancy</b>		
$<20$ years	10	6,8%
Age 20-35 years	126	85,1%
$>35$ years	12	8,1%
<b>Total</b>	<b>148</b>	<b>100%</b>
<b>Mother's Education</b>		
Elementary school	8	5,4%
Junior High School	64	43,2%
Senior High School	68	45,9%
College	8	5,4%
<b>Total</b>	<b>148</b>	<b>100%</b>

<b>Mother's employment</b>		
House wife	92	62,2%
Farmer	22	14,9%
Laborer	16	10,8%
Self-employed	8	5,4%
Employee	10	6,8%
<b>Total</b>	<b>148</b>	<b>100%</b>

<b>Mother's Height</b>		
Short ( $<150$ cm)	21	14,2%
Normal ( $>150$ cm)	127	85,8%
<b>Total</b>	<b>148</b>	<b>100%</b>

<b>Toddler's gender</b>		
Man	80	54,1%
Women	68	45,9%
<b>Total</b>	<b>148</b>	<b>100%</b>

<b>Toddler age</b>		
1 year	38	25,7%
2 years	40	27%
3 years	29	19,6%
4 years	36	24,3%
5 years	5	3,4%
<b>Total</b>	<b>148</b>	<b>100%</b>

<b>Stunting Incident</b>		
No stunting	88	59,5%
Stunting	60	40,5%
<b>Total</b>	<b>148</b>	<b>100%</b>

Data source: Secondary

Based on Table 1, the characteristics of the respondents above, there were 148 respondents, and characteristics based on maternal age during pregnancy showed that the majority were of normal reproductive age 20-35 years, as many as 126 people (85.1%). The most common characteristic based on the highest education was 68 (45,9%) Senior High School. Respondent characteristics based on Mother's employment the majority are housewives (unemployment) total of 92 (62.2%)

respondents. Respondent characteristics based on maternal height were short (<150 cm) as many as 21 (14.2%) respondents, while mothers with a height of >150 cm as many as 127 (85.8%) respondents.

The characteristics of the respondents were toddlers, dominated by 2 years old, as many as 40 (27%) respondents, with the dominant gender being boys, as many as 80 (54,1%). the category of stunting incidents is as many as 60 (40,5%) respondents and toddlers were not stunting as many as 88 (59.5%) respondents.

## 2. Bivariate analysis of the relationship between maternal height and the incidence of stunting in toddlers.

**Table 2.1 Relationship between maternal TB and stunting in toddlers**

Mother's Height	Stunting incidents					
	No stunting		Stunting		Total	P Value
	N	%	N	%	N	%
Short	0	0%	2	14,1%	2	3,5%
Normal	8	59,5%	3	26,4%	11	6,0%
Total	8	59,5%	5	40,5%	13	100%

Data source: processed with SPSS

**Table 2.2 Odds Ratio Values**

Variable	Odds Ratio	95% CI
Mother's Height	1.538	1.278-1.852
Stunting Incident	3.256	2.508-4.229

Data source: processed with SPSS

Based on table 2.1, it was found that respondents with short stature (<150 cm) had toddlers with stunting, amounting to 21 (14.2%) respondents, while mother with normal height stature experienced stunting

amounting to 39 (26.4%) respondents. Meanwhile, mothers mother with normal height (>150 cm) who had toddlers without stunting, amounted to 88 (59,5%) respondents. Results *bivariate statistics* with *Chi-square* result *P value*= 0.001 < 0.05, with the Odds ratio (OR) value 1.538 (95% CI 1.278-1.852) This shows that mothers who are short (<150cm) are 1,538 times the risk of having stunted toddlers. Therefore, it can be concluded that this study has a relationship between maternal height during pregnancy and the incidence of stunting in toddlers at the Rongkop Gunung Kidul Community Health Center in 2025.

## DISCUSSION

### 1. Univariate analysis

This study shows that the maternal age category that is reproductive age (20-35 years), the highest was 85.1% of the 148 research respondents. However, there were still mothers who were at risk for gestational age, that is <20 years (6.8%) and >35 years (8.1%) respondents. This is one of the causes of stunting in toddlers, in line with the results of previous research which found that pregnant women at a young age (<21 years) as many as 136 respondents (17%), young pregnancy has a significant relationship with the incidence of stunting (Catur et al., 2021). In Cemangal Hamlet, Munding Village, it was shown that pregnant women aged <20 years had a 14 times greater risk of having toddlers experiencing stunting (Litta et al., 2019). Therefore, in this study it can be concluded that one of the indirect factors contributing to the high rate of stunting in toddlers, besides maternal height during pregnancy, is pregnant women with risk factors such as age <20 years.

Education is always associated with knowledge levels. This study found that the average level of education of mothers during pregnancy was senior high school 45.9%, so maternal knowledge also influences

nutritional patterns for toddlers. This is in line with research that found statistically significant results ( $P=0,000$ ) From this, it can be concluded that the lower the mother's education level, the greater the impact on stunting in toddlers (Alfi et al., 2022). In this study, the results obtained were that mothers with an average education level of senior high school were 45.9%, while 43.2% are junior high school, very few have the opportunity to attend college only 5.4%. Thus, education level influences mothers' knowledge in the practice of providing additional food to toddlers, such as the complementary foods for breast milk menu. This is in line with research.

Education level can also influence the incidence of stunting, but not significantly; this is likely influenced by each parent's ability to access information (Aris et al., 2024). One factor influencing stunting is low maternal education. Mothers with low education tend to have less knowledge about nutritional intake before, during, and after pregnancy, resulting in children being born with stunting compared to mothers with higher education. A meta-analysis study showed that low maternal education significantly increased the risk of stunting in toddlers by 3.01 times compared to mothers with high education (OR=3.01; 95% CI=1.92 to 4.73), with statistical significance ( $P=0.000$ ). This suggests that lower maternal education significantly increases the risk of stunting in toddlers (Azizah et al., 2022). The conclusion of this study is that education is an indirect factor that can influence the incidence of stunting.

Mother's employment in this study shows that many respondents are housewives.62,2%, indirectly mothers who do not work are a factor that influences the incidence of stunting, this is in line with the results of previous research that work

influences the incidence of stunting ( $P\text{-value}=0.01 < 0.05$ ) (Dewi et al., 2024). Housewives with economic income based on only 1 source from their husbands with an average income according to the minimum wage of Gunung Kidul Regency certainly affect the provision of quality nutrition if even for daily meals it is still not met properly for one family. This is in line with previous research in Uganda that household income shows a relationship with the incidence of stunting. Children from households with two or more members who work and have an income have a significantly lower prevalence of stunting compared to those without members who work and have an income (adjusted prevalence rate ratio = 0.50; 95% confidence interval: 0.26, 0.97) (Matovu N et al. 2026). So it can be concluded that unemployed families can reduce food resilience in the household, this has an impact on the nutrition consumed by toddlers, although in this study no detailed family income assessment was carried out, only calculating the average minimum wage of Gunung Kidul Regency of Rp. 2,330,263.67. This is also supported by the Malawi Multiple Indicator Cluster Survey (MICS), where we examined a sample of 12,139 children under five years of age. Our results showed that children living in energy-poor households had significantly lower height-for-age (HAZ) z-scores, reflecting poorer long-term nutritional status (Mwale Martin, 2026).

All mothers who have a short height <150 cm who have stunted toddlers as many as 14.2% is much less than mothers with normal height >150 cm as much as 26.4%. This is due to other factors such as nutrition, infection and socio-economic factors etc. which were not studied further by researchers, but according to previous research, it says that prolonged lack of nutritional intake and frequent or chronic

diseases make it an important marker of long-term malnutrition (Arqam Lailan et al., 2026).

## 2. Results of bivariate analysis regarding the relationship between maternal height and the incidence of stunting in toddlers.

The results of the bivariate analysis in this study found that maternal height <150 cm had an influence 14,2% on the incidence of stunting in toddlers. This is in line with the results of research that found a relationship between maternal height (*p-value*= 0.026) with stunting (Oktavia et al., 2022). Other research shows that maternal height is a risk factor for stunting in toddlers aged 0-59 months (Futihatul et al., 2021). This study found that *p-value*= 0,001 < 0,05, with the Odds ratio (OR) value 1.538 (95% CI 1.278-1.852) matter this also shows that maternal height during pregnancy is related to the incidence of stunting in toddlers at the Rongkop Gunung Kidul Community Health Center in 2025. In this study, it was also found that mothers with normal height but had stunted toddlers. This could be influenced by other factors such as a history of infection, nutritional intake included in the practice of providing breast milk and complementary foods, and indirect factors such as socioeconomic state related to income in a household.

## CONCLUSION

The conclusion of this study is that there are 148 respondents who are pregnant with reproductive age characteristics of 20-35 years 85,1%, with employment as a housewife 62,2% and the highest level of education is senior high school 45,9%. Mother's height data short <150 cm is 14,2% and all of them gave birth to incidence of stunting toddlers. The results of the bivariate test analysis show this study found a statistically significant relationship between maternal height and the incidence of stunting

in toddlers at Rongkop Gunung Kidul Community Health Center in 2025.

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