

**Jurnal Info Kesehatan**

Vol. 23, No. 1, March 2025, pp. 145-153

P-ISSN 0216-504X, E-ISSN 2620-536X

DOI: [10.31965/infokes.Vol23.Iss1.1626](https://doi.org/10.31965/infokes.Vol23.Iss1.1626)Journal homepage: <https://jurnal.poltekkeskupang.ac.id/index.php/infokes>**RESEARCH****Open Access****Analysis of Risk Factors for Stunting in Central Java****Sri Sumarni<sup>1a\*</sup>, Suryati Kumorowulan<sup>2b</sup>, Suharyo Hadisaputro<sup>1c</sup>, Eka Apriadi Farkhati Nafi'ah<sup>1d</sup>**<sup>1</sup> Poltekkes Kemenkes Semarang, Semarang, Central Java, Indonesia<sup>2</sup> Badan Riset Nasional, Semarang, Central Java, Indonesia<sup>a</sup> Email address: [srisumarnimmid@poltekkes-smg.ac.id](mailto:srisumarnimmid@poltekkes-smg.ac.id)<sup>b</sup> Email address: [suryatiyk@yahoo.co.id](mailto:suryatiyk@yahoo.co.id)<sup>c</sup> Email address: [prof\\_haryo@yahoo.co.id](mailto:prof_haryo@yahoo.co.id)<sup>d</sup> Email address: [ekaapriadifn@gmail.com](mailto:ekaapriadifn@gmail.com)

Received: 26 June 2024

Revised: 19 November 2024

Accepted: 22 January 2025

**Abstract**

The prevalence of stunting in Indonesia was 24.4% in 2021 in Central Java at 20.9%, which is still above the WHO target of 20%. There are many direct and indirect risk factors that cause stunting events. The purpose of this study is to analyze the risk factors for stunting events in Central Java. This research is an observational study with a cross-sectional approach. The collected data was analyzed using the Chi-Square test to assess the relationship between the independent variable (risk factors) and the dependent variable (stunting incidence). In addition, the odds ratio calculation is used to determine the risk level of each factor in influencing the incidence of stunting. The population is all mothers who have toddlers aged 0-59 months in Central Java Province. Data were collected via Google Form for two weeks in December 2023 using the Accidental Sampling technique with a total of 2671 mothers involved in this research. The result shows that the prevalence of stunting is 24.3%. There was no relationship between maternal parity OR 0.865, working mother OR 0.878, maternal BMI OR 0.898, economic status OR 0.954, and the incidence of stunting in toddlers. There was a relationship between maternal education OR 2.120, maternal height OR 1.955, exclusive breastfeeding OR 1.616, the diet OR 3.160, gestational age OR 1.410, the birth weight OR 1.670, and the incidence of stunting in toddlers. It is concluded that several factors collaborate to the high number of stunting, which are maternal education, maternal height, exclusive breastfeeding, diet, gestational age, and birth weight. Further research needs to consider a wider sample, the number of other risk factors which are competency of health provider to diagnose stunting, family support, and extend the length of observation time.

**Keywords:** Stunting, Risk Factor, Prevalence.

---

**Corresponding Author:**

Sri Sumarni

Poltekkes Kemenkes Semarang, Semarang, Central Java, Indonesia

Email: [srisumarnimmid@poltekkes-smg.ac.id](mailto:srisumarnimmid@poltekkes-smg.ac.id)

©The Author(s) 2025. This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.

## 1. INTRODUCTION

Stunting is a health problem caused by chronic malnutrition caused by a lack of nutritional intake for a long time, then interfering with the growth of children resulting in the child's height being lower or shorter (dwarf) than the standard age. The prevalence of stunting in Indonesia in 2021 is still high at 24.4%. The prevalence of stunting in Central Java is 20.9% and for the Banyumas Regency area is 21.6%, which means that it is greater than the limit set by WHO (Kementerian Kesehatan Republik Indonesia, 2021)

The direct causes of stunting include genetics, low birth weight, infectious diseases and nutrition of toddlers, while indirect factors include antenatal visits, immunization, integrated service post or posyandu, exclusive breastfeeding history, parental education level, mother's work, number of family members, family economic status, access to clean water and environmental sanitation (Maryati, Annisa, & Amira 2023).

Toddlers who experience stunting can be at risk of decreased immunity so that they get sick easily and have a high risk for diabetes, obesity, heart and vascular disease, cancer, stroke, and disability in old age as well as decreased productivity levels, decreased cognitive ability and learning achievement. Ultimately, widespread stunting will be able to hinder economic growth, increase poverty and widen inequality. International experience and evidence show that stunting can hinder economic growth and reduce job market productivity, resulting in a loss of 11% of GDP (Gross Domestic Product) and a reduction in adult employment income by up to 20%. The impact caused by stunting in the short term can increase the risk and inhibit the growth and development of children, decrease cognitive function and decrease immune function (Lating et al., 2023).

One of the efforts to prevent stunting in Indonesia is the National Strategy (Stranas) for the Acceleration of Stunting Prevention 2018-2024. This government program will last until 2024. Stranas stated that the prevalence of stunting in Indonesia is still very high so it requires treatment from various sectors. Health workers, especially midwives, in this case can try to prevent stunting by implementing the First 1000 Days of Life (HPK) which starts from the beginning of life to toddlers (Eliafiana, & Fadilah, 2022). The age period of <2 years is a very important period in life as the golden period because of very rapid growth and development which might affect the future. Malnutrition during this period and is not immediately addressed can persist into adulthood. Malnutrition during this period are also more at risk of suffering from degenerative diseases faster than children with normal nutritional status (Fauziah et al. 2023).

The gap of this study are some previous studies state that the prevalence of stunting on the view number of samples, focused on one direct factors on maternal or toddler. However, this study is cross sectional in the many factors of maternal and toddler aspects. Moreover, it is needed to collect a lot of number respondents. The purpose of this study is to identify risk factors related to the incidence of stunting in Central Java.

## 2. RESEARCH METHOD

This research is quantitative research with a survey design and uses a correlational research approach. This study aims to analyze the risk factors that contribute to the incidence of stunting among toddlers in Central Java Province. This research involved a population of all mothers with children under five (aged 0-59 months) in the area.

Data was collected using a Google Form-based questionnaire which was distributed over two weeks using the accidental sampling method. This method allows collecting data from respondents who happen to be available and willing to participate. Before participants fill out the questionnaire, an informed consent form is provided to explain the purpose of the research, participants' rights, as well as a guarantee that the data provided will be kept confidential. Only respondents who gave explicit consent had their data used in this study. Additionally, the

questionnaire does not ask for personal information such as name, address, or other sensitive details, thereby ensuring participants' confidentiality and anonymity.

A total of 2,671 mothers with toddlers were involved as samples in this research. However, the sampling method used, namely accidental sampling, needs to be considered because it has the potential to produce bias in the representation of the population. For this reason, it is important for researchers to explain the reasons for choosing this method and its impact on the generalization of research results. However, a large sample size can help reduce the effects of sampling bias.

This research has obtained ethical approval from the Health Research Ethics Committee of the Ministry of Health Semarang Health Polytechnic with number: 1372/EA/KEPK/2023. This shows that the research was conducted taking into account ethical standards, including protection of participant rights, data management, and implementation of appropriate procedures.

The collected data was analyzed using the Chi-Square test to evaluate the relationship between the independent variable (risk factors) and the dependent variable (stunting incidence). Apart from that, the calculation of the odds ratio (odds ratio) is used to determine how big the chance or risk of each factor is in influencing the incidence of stunting. This analysis is relevant in correlational research to provide an overview of the strength and direction of the relationship between variables.

A more detailed explanation regarding this research method helps ensure that the research process is carried out systematically and can be accounted for. However, researchers also need to discuss potential limitations of the methods used, such as bias that may arise from the sampling method, as well as the steps taken to overcome them. The addition of this information will increase the transparency and credibility of the research.

### 3. RESULTS AND DISCUSSION

The results of this study show that the stunting incidence rate in Central Java Province is 24.3% (650 from 2671). Most mothers have male toddlers (52.8%), in a healthy reproductive age at 54%, and multipara at 60.3%. Most mothers with higher education at 57.3% and are not working mothers at 53%. The majority of mothers have a normal height of 95.5% and a normal BMI of 94%. The most of them is low economic status at 79.3%. The coverage of exclusive breastfeeding is quite high, at 88.2%. Most mothers provided regular meals for toddlers by 72.7%. Most women have a normal gestational age at 79% and a normal birth weight of 88.2%.

**Table 1.** Risk Factors for Stunting in Central Java, Indonesia.

Variables		No Stunting		Stunting		Total	OR	p-value
		n	%	n	%			
Mother's age	Healthy reproductive age	1,248	54.9	195	49	1,443	1.268	0.029
	Healthy reproductive age	1,025	45.1	203	51	1,228		
Mother's Parity	Primipara	891	39.2	170	42.7	1,061	0.865	0.186
	Multipara	1,382	60.8	228	57.3	1,610		
Maternal Education	Basic	962	42.3	178	44.7	1,140	2,120	0.012
	High	1,311	57.7	220	55.3	1,537		
Mother's Work	Working	1,057	46.5	198	49.7	1,443	0.878	0.231
	Not working	1,216	53.5	200	50.3	1,228		
Mother's Height	Normal	2,182	96	368	92.5	2,550	1.955	0.002
	Abnormal	91	4	30	7.5	121		

Mother' BMI	Normal	2,134	93.8	376	92.2	2,510	0.898	0.650
	Abnormal	139	6.2	22	7.8	161		
Economic Status	Moderate	679	29.9	115	28.9	794	0.954	1.048
	Low	1,594	70.1	283	71.1	1,877		
Exclusive Breastfeeding	Yes	2,024	89	332	83.4	2,356	1.616	0.001
	No	249	11	66	16.6	316		
Diet	Reguler	1,739	76.5	202	50.8	1,941	3.160	0.000
	Irregular	534	23.5	196	49.2	730		
Gestational Age	Normal	1,817	79.9	294	73.9	2,111	1.410	0.006
	Abnormal	456	20.1	104	26.1	560		
Birth Weight	Normal	2,039	89.7	334	83.9	2,373	1.670	0.001
	Abnormal	234	10.3	64	16.1	398		
Total		2,273	100	398	100	2,671		

The group of toddlers who were not stunted to a healthy reproductive age amounted to 1,248 respondents with (54.9%), which was greater than that of unhealthy reproductive age with 1,025 respondents (45.1%). Meanwhile, in the group of stunted toddlers with an unhealthy reproductive age, which was greater than that of healthy reproductive age, 203 (51%) and 195 (49%) respectively. There is a relationship between maternal age and the stunting incidence rate p value of 0.029. Unhealthy reproductive age is 1.268 times more likely to have an effect on stunting incidence rates.

Toddlers who were not stunted against multipara mothers amounted to 1,382 (60.8%), which was larger than that of primipara mothers 891 (39.2%). Meanwhile, stunted toddlers at 228 (57.3%), was greater than that of primipara mothers 170 (42.7%). There was no relationship between maternal parity and stunting incidence with a p value of 0.186. Primiparous is a protective factor against the stunting incidence rate with an OR=0.865.

Non-stunted toddlers with low level education of their mothers was 962 (42.3%) which was smaller than high level education's mothers with 1,311 (57.7%). Meanwhile, in the group of stunted toddlers with low level of education's mother were 178 (44.7%), which was smaller than mothers with higher education at 220 (55.3%). There is a relationship between maternal education and the incidence of stunting with a p value of 0.012. Mothers with low education are 2,120 times more likely contribute to stunting rates.

The group of non-stunted toddlers with non-working mothers at 1,216 (53.5%), which was greater than that of working mothers at 1,057 (46.5%). Meanwhile, in the group of stunted toddlers, 200 (50.3%) were greater than of working mothers at 198 (49.7%). There was no relationship between maternal occupation and stunting incidence rate with the Chi-square test with a result of  $0.231 > 0.05$ . Working mothers are a protective factor against the incidence of stunting with an OR value of 0.878. The group of non-stunted toddlers for mothers with normal height amounted to 2,182 (96%) greater than mothers with abnormal height at 91 (4%). However, in the group of stunted toddlers, for mothers of normal height were 368 (92.5%), which was greater than the height of abnormal mothers with a total of 30 (7.5%). There was a relationship between maternal height and stunting incidence with  $p=0.002$ . Abnormal height is 1.955 times more likely to lead on stunting.

The group of toddlers who were not stunted for normal BMI mothers amounted to 2,134 (93.8%) greater than mothers with less BMI with 139 (6.2%). In the other hand, stunted toddlers for normal BMI mothers were 376 (92.2%), which was greater than that of abnormal BMI mothers with 22 (7.8%). There was no relationship between maternal BMI and stunting incidence rate  $p=0.650$ . Mothers who have normal BMI are as a protective factor against stunting incidence (OR=0.898). Non stunted with low economic status amounted to 1594 (70.1%) is greater than the moderate economic status at 679 (29.9%). However, stunted

toddlers with low economic status at 283 (71.1%) were greater than moderate economic status at 115 (28.9%). There was no relationship between economic status and stunting incidence rate with  $p=1.048$ . Good economic status is a protective factor against stunting  $OR=0.954$ .

Non-stunted toddlers with exclusive breastfeeding at 2024 (89%) were greater than those who did not exclusive breastfeed with 249 (11%). Meanwhile, stunted toddlers with exclusive breastfeeding at 332 (83.4%) were greater than those who no exclusive breastfeed mothers at 66 (16.6%). There is a relationship between exclusive breastfeeding with the incidence of stunting  $p=0.001$ . An exclusive breastfeeding is 1.616 times more likely to improve on stunting incidence rates. Non stunted toddlers with a regular diet at 1,739 (76.5%) was greater than that of toddlers with an irregular diet at 534 (23.5%). Meanwhile, in the stunting toddler group with a regular diet at 202 (50.8%) were greater than those at 196 (49.2%). There was a relationship between the diet and the incidence of stunting with  $p=0.000$ . Toddlers with an irregular diet are 3,160 times more likely to lead on stunting.

Non stunted with normal gestational age at 1,817 (79.9%) are greater than abnormal gestational age at 456 (20.1%). Meanwhile, stunted toddlers with normal gestational age were 294 (73.9%) was greater than the abnormal gestational age at 104 (26.1%). There was a relationship between gestational age and stunting incidence with  $p=0.006$ . Abnormal gestational age is 1,410 times more risk to stunting. Non stunted with normal birth weight at 2,039 (89.7%) greater than abnormal birth weight with 234 (10.3%). On the otherhand, stunted toddlers with normal birth weight at 334 (83.9%) greater than the abnormal birth weight at 64 (16.1%). There was a relationship between birth weight and stunting  $p=0.001$ . Abnormal birth weight is 1.670 times more at risk of having of stunting. Non stunted and stunted toddlers with low level of education of the mother were at 962 (42.3%) and 178 (44.7%) respectively. There is a relationship between the level of maternal education and the incidence of stunting with  $p=0.012$ .

## DISCUSSION

The study shows that the stunting incidence rate in Central Java Province is still high at 24.3%. Stunting is a condition of a child who is shorter compared to children of the same age. This is a form of infant and child growth disorders, as well as a sign that there has been a chronic malnutrition disorder for a long time which adversely affects the growth and development of children (Sarman, & Darmin, 2021). Malnutrition in childhood is always associated with a deficiency of specific vitamins and minerals and is related to certain micronutrients and macronutrients. Several studies stated that the impact of nutritional deficiencies, starting from the increased risk of infectious diseases, non-communicable diseases and death can hinder children's growth and mental development (Anindita, 2012). Stunting causes long-term implications, reduced cognitive and physical development, lower performance tests, lower per capita household spending, living in poverty, and an increased risk of stunted labor and asphyxia during childbirth. It also increases risk of degenerative diseases such as obesity, diabetes mellitus, heart disease, stroke, hypertension, and cancer (Sutriyawan et al., 2020). Globally, 22.2% or around 150.8 million children under five in the world were stunted. More than half of them (55% or 83.6 million) lived in Asia (UNICEF / WHO / World Bank Group, 2018; Laksono et al., 2022). However, 39% stunted lived in Africa. Indonesia is included in the third country with the highest prevalence in the Southeast Asia/SouthEast Asia Regional (SEAR) (Aryastami et al., 2017; Aryastami, & Tarigan, 2017). Common causes stunted children in Indonesia related to maternal height, maternal education, premature birth, birth length, exclusive breastfeeding for 6 months, parity, household socioeconomic status, and environmental sanitation (Sutriyawan et al., 2020; Sutriyawan & Nadhira, 2020).

This study shows that maternal age has a relationship with the incidence of stunting. A healthy reproductive age is at risk 1.268 times to lead to stunted children compared to unhealthy



reproductive age mothers. The mother's age has a close relationship with birth weight, the development and physiologically of the reproductive organs. Pregnant women are at risk of experiencing pregnancy complications if they are not physically ready and psychologically mature. Mothers who give birth at the age of less than 20 years and more than 35 years is closely related to preeclampsia, poor fetal growth (Pusmaika et al., 2022). Primiparous pregnant at the age of  $\geq 25$  years have a significant protective on a newborn being stunted (Pusmaika et al. 2022).

This study shows that maternal parity has no relationship. Primiparous women are a protective factor against the stunting incidence rate compared to multiparous mothers. This research is in line with the research (Sarman, & Darmin, 2021) which states that the value of  $OR=2.176$  which means that women whose have  $>2$  children are 2 times more likely to suffer from stunting compared to primiparous women. Children under one year need more attention and stimulation for their brain development because of golden period. In addition, complete nutrients is an essential factor for physical growth. Growth and development disorders tend to be experienced by children born later, along with the increasing number of children they have (Sarman, & Darmin, 2021).

This study shows that maternal education has a relationship with the incidence of stunting. The level of education of the mother affects the degree of health, and plays a role in influencing a person to decide to behave health. Maternal education also affects maternal attitudes and behaviors in meeting the needs of children's nutritional intake and family diet. Educated mothers will be more likely to choose foods with good quality and nutritional content for their children, so that nutritional adequacy can be fulfilled (Ainin, Ariyanto, & Kinanthi, 2023). Result of Aulia studied in Madura, stated that there was a significant relationship between maternal education and the incidence of stunting in toddlers. Research conducted by Rahmawati, et al in Palembang also found a relationship between maternal education and stunting incidence in toddlers. Loe educated mother were 3.512 times more likely to experience stunting. Another study in South Lampung mentioned that there was a relationship between maternal education and stunting and 79.6% of stunted mother have low levels of maternal education (Ainin, Ariyanto, & Kinanthi, 2023).

This study shows that working mother has no relationship with the stunting incidence rate. Working mother is a protective factor against the incidence of stunting ( $OR=0.878$ ) compared to no working mother. Most stunted toddlers are more found in a household woman. There was no relationship between working mother and stunting incidence ( $p=0.803$ ). It is similar to previous study that there were no relationship between working mother and stunting incidence (Najah, & Darmawi 2022).

This study shows that maternal height has a relationship with stunting incidence rate. Abnormal height of mother are 1.955 times at risk to affect the incidence of stunting compared to normal height mother. The mother's height might related to diet, socioeconomic status, and hereditary factors. Moreover, pathological conditions such as imbalance of hormone level tend to short genes. Maternal height is a body size measured using a microtoise from toe to head (Baidho, Sucihati, & Pratama, 2021). Human growth is influenced by genetic, environmental, and nutritional factors. Genetic factors are factors that cannot be changed because of passed down directly from parents. Through genetic instructions contained in the fertilized egg. However, another factors that determine a person's height, such as environmental constraints, and diet are also important issues (Baidho, Sucihati, & Pratama, 2021).

This study shows that maternal BMI has no relationship with the stunting incidence rate. Normal Basal Mass Index as a protective factor against stunting incidence rates compared to obesity woman. This is similar to previous study that there was no relationship ( $p=0.218$ ) between the size of the mother's Upper Arm Circumference Measurement during pregnancy and the growth of the child (Rosmana et al., 2022). Nutritional status is the state of the body as

a result of diet and using micronutrients (Almatsier, 2010). Upper Arm Circumference measurement is aimed at finding out whether pregnant women suffer from chronic energy deficiency (less than 23.5 cm) (Rosmana et al., 2022).

This study shows that economic status has no relationship with the stunting. Moderate economic status is a protective factor against the stunting incidence rate compared to low economic status. The economic status will affect the nutritional status in the family and the amount of food supply in the household. Toddlers with low economic status will be more at risk of stunting (Agustin, & Rahmawati, 2021). Family income that is less than the regional minimum wage increases the incidence of stunting. A Previous study mentioned that stunting events influenced by family income have a 7 times greater risk (Nasikhah & Margawati, 2012). This also affects the purchasing community ability. Low family income related to low consumption of food. A lack of economic status will have an impact on the nutritional status of children, children can be thin or short (UNICEF/WHO/World Bank Group, 2021). A good family economic status will also obtain good general services such as education, health services, accessibility, which impacts to the nutritional status of children (Bishwakarma, 2011). Families with good nutritional status will also increase family access to food so that they will have better nutritional status (Agustin, & Rahmawati, 2021).

This study shows that maternal age has a relationship with the incidence of stunting. Non exclusive breastfeeding mother is at risk 1.616 times to affect the incidence of stunting compared to exclusive breastfeeding mother. This research is in line with previous study which stated breast milk is enough to maintain the baby's growth until the age of 6 months. No other food is needed during this time. Breast milk is sterile, in contrast to other milk such as formula milk or other liquids prepared with water or other ingredients that can be contaminated in dirty bottles. Breastfeeding prevents children from the dangers of bacteria and other organisms that will cause diarrhea (Sarman & Darmin, 2021). Breastfeeding is the right choice when a newborn is born till up to 2 years old. The high infant mortality rate can actually be avoided by breastfeeding (Sarman & Darmin, 2021).

This study shows that the diet has a relationship with the incidence of stunting. Toddlers who have an irregular diet are 3.160 times at risk to affect the stunting compared to toddlers who have a regular diet. Parenting practice applied by parents to their children related to nutritional needs, survival, growth, and development. Parents are responsible for the situation when eating at home, the type and amount served and the beginning of the children meal. The practice of feeding children is not only to meet nutrition for survival, health recovery, growth and development, but also to educate children so that they can receive and choose good food (Kurniati et al., 2023).

The maternal gestational age has a relationship with stunting. Abnormal gestational age is 1.410 times at risk to affect the incidence of stunting compared to mothers with normal gestational age. Gestational age is the age of the fetus in the womb where it can give birth to premature and non-premature toddlers. In this study, stunted toddlers were born normally or prematurely. A previous study stated that there was no significant relationship between the incidence of stunting and gestational age. The total number of 94 children under five were born prematurely, while 51 people were born mature. The gestational age is close to Low Birth Weight, but not all toddlers whose LBW are born prematurely. Premature babies must be given special treatment in an incubator (Hamzah et al., 2021).

This study shows that the birth weight has a relationship with the incidence of stunting. Abnormal birth weight are at risk of 1.670 times to affect the stunting incidence rate compared to normal birth weight. Low birth weigh and Very Low Birth Weight are associated with fetal and neonatal mortality and morbidity, growth disorders, impaired cognitive development and chronic diseases in later life. They might have experienced intrauterin growth retardation. This tends to growth restrictions and abnormal development. Sometimes they often fails to catch up the optimum growth rate (Rosmana et al. 2022).

#### 4. CONCLUSION

It is concluded that the stunting incidence rate in Central Java Province is 24.3%. There is a relationship between maternal age, maternal education, maternal height, exclusive breastfeeding, diet, gestational age, and birth weight with the incidence of stunting toddlers. There is no relationship between parity, working mother, BMI, economic status and the incidence of stunting in toddlers. The risk factors to stunting are non-educated mother, less high mother, non-exclusive breastfeeding mother, irregular diet toddler, prematurity, and low birth weight. Protective factors of stunting consist of primiparous woman, working mother, normal BMI mother, and moderate economic status.

It is recommended for care providers to provide education to mothers regarding balanced nutrition, exclusive breastfeeding and nutritious complementary foods that need to be improved through integrated programs at posyandu and puskesmas. Routine stunting risk screening is also needed to detect cases early, including by monitoring the growth of toddlers and providing appropriate referrals or interventions. Apart from that, nutritional interventions for pregnant women through iron supplements, folic acid, and providing additional food for underprivileged families are highly recommended. Cross-sector collaboration needs to be strengthened to address underlying factors such as poverty, poor sanitation and limited access to health services. This effort needs to be supported by ongoing monitoring and evaluation to ensure program effectiveness.

#### REFERENCES

- Almatsier, A. (2010). *Prinsip Dasar Ilmu Gizi*. Jakarta: PT Gramedia Pustaka Utama.
- Agustin, L. & Rahmawati, D. (2021). Hubungan Pendapatan Keluarga dengan Kejadian Stunting. *Indonesian Journal of Midwifery (IJM)*, 4(1), 30-34. <https://doi.org/10.35473/ijm.v4i1.715>
- Ainin, Q., Ariyanto, Y. & Kinanthi, C. A. (2023). Hubungan Pendidikan Ibu, Praktik Pengasuhan Dan Sanitasi Lingkungan Dengan Kejadian Stunting Pada Balita Di Desa Lokus Stunting Wilayah Kerja Puskesmas Paron Kabupaten Ngawi. Qurotul Ainin, Yunus Ariyanto, Citra Anggun Kinanthi. *Jurnal Kesehatan Masyarakat*, 11(1), 89-95. <https://doi.org/10.14710/jkm.v11i1.35848>
- Anindita, P. (2012). Hubungan Tingkat Pendidikan Ibu, Pendapatan Keluarga, Kecukupan Protein & Zinc dengan Stunting (Pendek) pada Balita Usia 6-35 Bulan di Kecamatan Tembalang Kota Semarang. *Jurnal Kesehatan Masyarakat Universitas Diponegoro*, 1(2), 617 - 626.
- Aryastami, N. K., Shankar, A., Kusumawardani, N., Besral, B., Jahari, A. B., & Achadi, E. (2017). Low birth weight was the most dominant predictor associated with stunting among children aged 12-23 months in Indonesia. *BMC nutrition*, 3, 16. <https://doi.org/10.1186/s40795-017-0130-x>
- Aryastami, N. K., & Tarigan, I. (2017). Kajian kebijakan dan penanggulangan masalah gizi stunting di Indonesia. *Buletin Penelitian Kesehatan*, 45(4), 233-240.
- Baidho, F., -, W., Suchati, F. & Pratama, Y. Y. (2021). Hubungan Tinggi Badan Ibu Dengan Kejadian Stunting Pada Balita Usia 0-59 Bulan Di Desa Argodadi Sedayu Bantul. *Jurnal Kesehatan Komunitas Indonesia*, 17(1), 275-283. <https://doi.org/10.37058/jkki.v17i1.2227>
- Bishwakarma, R. (2011). Spatial Inequality in Children Nutrition in Nepal: Implications of Regional Context and Individual/Household Composition. *Disertasi*, University of Maryland, College Park, United States. Retrieved from: <http://hdl.handle.net/1903/11683>



- Eliafiana, R., & Fadilah, T. F. (2022). Relationship between Mothers Birth Spacing and Incidence of Stunting in Children 24-59 months. *Jurnal Biomedika Dan Kesehatan*, 5(1), 42-49.
- Fauziah, J., Trisnawati, K. D., Rini, K. P. S., & Putri, S. U. (2024). Stunting: Penyebab, Gejala, dan Pencegahan. *Jurnal Parenting dan Anak*, 1(2), 1-11. <https://doi.org/10.47134/jpa.v1i2.220>
- Hamzah, W., Haniarti, H. & Anggraeny, R. (2021). Faktor Risiko Stunting Pada Balita. *Jurnal Surya Muda*, 3(1), 33–45. <https://doi.org/10.38102/jsm.v3i1.77>
- Kementerian Kesehatan Republik Indonesia. (2021). *Buku Saku Hasil Studi Status Gizi Indonesia (SSGI) Tahun 2021*. Jakarta: Kementerian Kesehatan Republik Indonesia.
- Kurniati, A., Lebuan, S., Syafar, M. & Hartati, N. (2023). Hubungan Pola Pemberian Makan Pada Balita Stunting di Puskesmas di Flores Timur. *Inhealth: Indonesian Health Journal*, 2(2), 93–110. <https://doi.org/10.56314/inhealth.v2i2>
- Laksono, A. D., Wulandari, R. D., Amaliah, N., & Wisnuwardani, R. W. (2022). Stunting among children under two years in Indonesia: Does maternal education matter?. *PloS one*, 17(7), e0271509. <https://doi.org/10.1371/journal.pone.0271509>
- Lating, Z., Dolang, M. W., Dusra, E., Hamka, H., & Saendrayani, W. O. S. (2023). Analisis manajemen kejadian stunting pada balita di Desa Waesamu tahun 2023. *Jurnal Medika Husada*, 3(2), 21-30. <http://dx.doi.org/10.59744/jumeha.v3i2.44>
- Maryati, I., Annisa, N., & Amira, I. (2023). Faktor Dominan terhadap Kejadian Stunting Balita. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 7(3), 2695-2707. <https://doi.org/10.31004/obsesi.v7i3.4419>
- Najah, S. & Darmawi, D. (2022). Hubungan Faktor Ibu Dengan Kejadian Stunting Di Desa Arongan Kecamatan Kuala Pesisir Kabupaten Nagan Raya. *Jurnal Biology Education*, 10(2), 45–55. <https://doi.org/10.32672/jbe.v10i1.4234>
- Nasikhah, R., & Margawati, A. (2012). Faktor Risiko Kejadian Stunting Pada Balita Usia 24 – 36 Bulan Di Kecamatan Semarang Timur. *Journal of Nutrition College*, 1(1), 176-184. <https://doi.org/10.14710/jnc.v1i1.738>
- Pusmaika, R., Novfrida, Y., Simatupang, E. J., Djami, M. E. . & Sumiyati, I. (2022). Relationship of Mother's Age During Pregnancy with Stunting Incident on Balita in Tangerang. *Indonesian Health Issue*, 1(1), 49–56.
- Rosmana, D., Yuliani, R., Mulyo, G. P., Fauziyah, R. N., & Hapsari, A. I. (2022). Status Gizi Ibu Saat Hamil, Berat Badan Bayi Lahir Dan Pemberian Asi Eksklusif Terhadap Kejadian Stunting. *Jurnal Gizi Dan Dietetik*, 1(1), 11-20. <https://doi.org/10.34011/jgd.v1i1.956>
- Sarman, S. (2021). Hubungan ASI eksklusif dan paritas dengan kejadian stunting pada anak usia 6-12 bulan di Kota kotamobagu: Studi Retrospektif. *Gema Wiralodra*, 12(2), 206-216.
- Susanti, S. (2021). Description of Mothers with Stunting Toddlers in Cikunir Village Singaparna Health Center, Tasikmalaya Regency In 2020. *Jurnal Kebidanan*, 11(2), 156-160. <https://doi.org/10.31983/jkb.v11i2.7641>
- Sutriyawan, A., Dian Kurniawati, R. A. T. N. A., Rahayu, S. R. I., & Habibi, J. (2020). Hubungan status imunisasi dan riwayat penyakit infeksi dengan kejadian stunting pada balita: studi retrospektif. *Journal of Midwifery*, 8 (2), 1-9.
- Sutriyawan, A., & Nadhira, C. C. (2020). Kejadian Stunting pada Balita di UPT Puskesmas Citarip Kota Bandung. *Jurnal Kesmas (Kesehatan Masyarakat) Khatulistiwa*, 7(2), 79-88. Retrieved from: [http://openjournal.unmuhpnk.ac.id/index.p article/view/137](http://openjournal.unmuhpnk.ac.id/index.p%20article/view/137)
- UNICEF / WHO / World Bank Group. (2018). *Levels and Trends in Child Malnutrition*. UNICEF / WHO / World Bank Group.
- UNICEF / WHO / World Bank Group. (2021). *Levels and Trends in Child Malnutrition*. UNICEF/WHO/World Bank Group.