

Risk of Growth and Developmental Stunting in Children

Ravensky Difa Mahesy

Puskesmas Ngluyu

Email: ravenskydifamahesy@gmail.com

ABSTRACT

Childhood is a critical period that determines the quality of human resources in the future. This quality is strongly influenced by adequate nutritional intake. One of the major nutritional problems among children is stunting. According to the 2018 Basic Health Research (Riskesdas), the prevalence of obesity among children was 8%, wasting 10.2%, and stunting 30.8%. The high rate of stunting is influenced by poor caregiving practices, limited access to nutritious food, lack of clean water and sanitation, and inadequate health services, including ANC, postnatal care, and early childhood education. This literature review used databases such as Google Scholar, PubMed, and Science Direct, covering articles published between 2016 and 2021. Relevant articles were selected manually using the keywords “Stunting” and “Child Development” for both national and international studies. Based on the review of eight journals, stunting negatively impacts child growth and development, particularly gross and fine motor skills. Stunting, as a chronic malnutrition disorder, hinders optimal brain development, which in turn affects motor development. Other effects include reduced intelligence, delayed social response, impaired cognitive development, low activity levels, weakness, and poor academic performance. In conclusion, stunting indirectly affects the overall growth and development of children.

Keywords: children, development, growth, stunting

BACKGROUND

Children's age is a golden period for determining the quality of human resources which can be seen from physical growth or intelligence, this can be supported by good nutritional intake. Nutritional intake during this period can influence growth and development which has a very broad effect on the child's future. (Devotion & Indonesia, 2021) Nutritional status is one of the factors that can influence a child's development. Several other factors can influence children's development in developing countries, such as poverty, malnutrition, poor health sanitation and lack of stimulation from the environment. Children with poor nutritional status will have their development hampered. So, they cannot develop optimally and are not in accordance with their age stages. (Annisa Rahmidini, S.ST., 2020).

One of the nutritional problems in children is stunting. (Annisa Rahmidini, S.ST., 2020) stunting is a condition of chronic malnutrition that is related to the development of a child's brain. (Yulianti & R, 2020) According to (Sakti, 2020) stunting is closely related to children's growth and development. So, it has a huge impact on its growth and development.

Globally, 15-17% of child deaths are due to stunting (Indonesiabaik.id Team, 2019). According to WHO, the number of stunting globally has reached 154.8 million children under five. Based on Basic Health Research (Riskesdas 2018) on children, the obesity rate is 8%, obesity is 10.2% and stunting is 30.8%. The 2019 Nutritional Status of Toddlers in Indonesia (SSGBI) reached 27.67% of toddlers in 34 provinces in Indonesia experiencing stunting.

Children with stunting up to 5 years old will be difficult to correct and will continue until adulthood so that it can increase the risk of offspring with LBW. (Devotion & Indonesia, 2021).

Some of the factors that cause stunting are poor nutrition experienced by toddlers and pregnant women, the mother's lack of knowledge about health and nutrition before and during pregnancy until after birth, lack of sanitation, lack of nutritious food intake, having infectious diseases and so on. This has short-term and long-term impacts on children's growth and development (Elba, 2021).

METHODS

This article is sourced from a journal review using Google Scholar data based, PubMed and Science Direct with the keywords Stunting, Child Growth and Development for national articles and keywords (stunting and child development) with criteria according to Publication data > the last 5 years. The number of articles reviewed was 8 journals.

RESULTS

To find out the risk of stunting on child growth and development, the author conducted a review of articles published nationally and internationally. The results of the review of the articles are presented in table 1 below.

Table 1. Results of review of articles regarding the risk of stunting on child growth and development

No.	Author	Journal Name Vol (No), Year	Title	Methods (Design, sample, Variable, Instrument, Analysis)	Conclusion Literature review	Databases
1.	Ema Wahyu Ningrum, Tini Utami	Jurnal Keperawatan Soederman, Volume 13 Nomor 1,march 2018	Stunting status and development of children under 5 years old in padamara community health service center in Indonesia	D : Cross Sectional S : Quota Sampling V : stunting, child growth and development I : Questionnair e A : Chi- Square test	The results of the study showed that there was no relationship between stunting and gross motor development (p = 0.649), there was no correlation between stunting and fine motor development (p = 1,000), there was no correlation between stunting and personal social development (p = 1,000), there was no	Google scholar

2.	Kiki Nur Maylina	Early child development and care, mar 2020	Fine Motor, Gross Motor, and Social Independence Skill among Stunted and Non Stunted Children	D:Cross Sectional S : Purposive sampling V:stunting, gross motoric, fine motoric, social independence. I :Questionnaire A:Chi-square test	relationship between stunting and language development (p = 0.998). In conclusion, there is no relationship between stunting status and child development There are differences in fine motor skills and social independence of stunted children with non-stunted children and there is no significant relationship with gross motor skills. Children with stunting have 3.5 times higher fine motor skills disorders than non-stunted children (95% CI: 1.22-9.76). Stunting also increases the risk of delays in social independence skills 7 times higher than non-stunted children (95% CI: 2.01-25.01). There is no	Google scholar
----	------------------	--	---	---	--	----------------

					significant relationship between stunting and gross motor skills (adjusted OR = 2.43; 95% CI: 0.67-8.81)	
3.	Flora Lima, Elisabeth Tantiana Ngura, Dek Laba Laksana.	Jurnal Cipta Pendidikan, Volume 1 Nomor 1, 2021	The Relationship Between Stunting and Cognitive Development of Children Aged 4-6 Years in Ngada Regency	D : Multinomial Logistic Regression S : Purposive sampling V : stunting, children's cognitive development I: questionnaire A : Chi Square test	There is a significant relationship between the nutritional status of stunted children and the cognitive development of children aged 4-6 years in Ngada Regency, there is a significant relationship between the age of stunted children and the cognitive development of children aged 4-6 years in Ngada Regency.	Google scholar
4.	Syami Yulianti, Diah Tepi R	Jurnal of Nutrition Collage, Volume 9 Nomor 1, 2020	Stunting and toddler motor development in the working area of Kemumu Health Center, North Bengkulu Regency	D: Cross Sectional S : Purposive sampling V : stunting, toddler motoric development I : DDTS A : Chi-square test	There is a relationship between stunting and fine motor development (p=0.003) and gross motor development (p=0.004) in toddlers.	Google scholar
5.	Sri Mugianti	Jurnal Ners dan Kebidanan, Vol.5, No.3, Desember 2018	Factors Causing Stunting in Children	D : descriptive research plan	There is a relationship between low nutritional	Google scholar

			Aged 25-60 Months in Sukorejo District, Blitar City	S : Quota Sampling V : factors causing stunting I : Questionnaire A : Chi-square test	intake, infectious diseases, low protein intake, and not exclusively breastfeeding and working mothers are related to the incidence of stunting which is caused by several factors including low maternal education 48.4%, low father's education 32.3%.	
6	Hardiana probosiwi, Emy Huriyati, Djauhar Islamil	Journal of community Medicine and Public Health, Vol 33 No.11, 2017	Stunting and development in children aged 12-60 in Kalasan	D : Cross Sectional S : Proportional random sampling V : stunting, development , children aged 12-60 months. I : questionnaire A : Chi Square Test	There is a significant relationship between stunting status and child development (p<0.05) and OR value of 3.9 (95% CI; 1.7-8.9). From the results of multivariable stunting by controlling for birth length and energy intake, it has an effect of 8% on the development of children aged 12-60 months.	Google Scholar
7.	Prisca petty arfines, Fithia Dyah Puspitasari	Bulletin penelitian kesehatan, Vol.45 No.1, march 2017	The Relationship Between Stunting and	D : Cross Sectional S : Consecutive	There is a relationship between stunting and	Google Scholar

			Elementary School Children's Learning Achievement in Slum Areas, Central Jakarta City	Sampling V : Stunting, Learning Achievement I : Questionnaire A : Chi Square Test	children's learning achievement.
8.	Eko setiawan, rizanda machmud, masrul	Jurnal kesehatan andalas, vol.7 No.2, 2018	Factors related to the incidence of stunting in children aged 24-59 months in the Andalas Health Center working area, Padang Timur District, Padang City in 2018	D : Cross sectional S: Random Sampling V: Stunting I : Questionnaire A : Chi Square test	Based on the results of the chi square test, there is a significant relationship between the level of energy intake, history of duration of infectious diseases, birth weight, maternal education level and family income level with the incidence of stunting.

DISCUSSION

Stunting is a condition of growth disorders in children whose height is shorter than the standard for their age. This is caused by long-term nutritional intake disorders. Inadequate nutritional intake causes disorders in various organs, one of which is the brain. This condition will affect the function of the brain to see, hear, think and move. Based on research (Probosiwi et al., 2017) concluded that there is a significant relationship between stunting status and child development ($p < 0.05$) and an OR value of 3.9 (95% CI; 1.7-8.9) Stunting is influenced by chronic lack of nutritional intake so that when a child's nutritional intake is not met for a long time, their growth will be disrupted, especially in children who experience stunting under the age of 2 years. At that time, children experience very rapid growth so that stunting is very influential. The growth and development that is very influential is the development of fine motor skills and gross motor skills. Fine motor skills and gross motor skills will run optimally if their nutritional needs are met. Meanwhile, children with stunting do not have optimal nutritional needs.

Based on research (Yulianti & R, 2020) which concluded that there is a relationship between stunting and fine motor skills ($p = 0.003$) and gross motor skills ($p = 0.004$) in toddlers. Based on research analysis of 58 non-stunted children and 19 stunted children, 37.5% of respondents had fine motor development in the suspect category as stunted children and this figure was greater than children who were not stunted (11.8%) and 40.6% of respondents

who had gross motor development in the suspect category were stunted children while 14.7% were non-stunted children.

Research (Yulianti & R, 2020) is in line with research (Meylia et al., 2020) which states that children with stunting have fine motor disorders 3.5 times higher than children without stunting (95% CI; 1.22-9.76). Kiki (2020) also concluded that stunting can increase the risk of delayed social independence skills 7 times higher than children without stunting. And there is no significant relationship between stunting and gross motor skills.

Based on research (Yulianti & R, 2020) and (Meylia et al., 2020) which can be concluded that there is a relationship between stunting and child development. This is in contrast to research (Ningrum & Utami, 2018) which concluded that there is no relationship between stunting and child development. Based on the results of the chi square analysis, the fisher exact test and the kolmogorov smimov of 60 toddlers selected using the quota sampling technique, it shows that there is no relationship between stunting and gross motoric ($p = 0.649$) there is no correlation between stunting and fine motor development ($p = 1,000$) there is no relationship between stunting and personal social development ($p = 1,000$) and there is no relationship between stunting and language development ($p = 0.998$).

Based on research (flora, 2021) through a partial test seen from the value of age and nutritional status in the variable sig is smaller than a (0.05) meaning that the independent variables of age and nutritional status affect the dependent variable of cognitive development. And there is no relationship between cognitive development and gender because the sig value is 0.52 so that it is $>$ a value (0.05). (Flora, 2021) poor nutritional status has the potential for development that is not in accordance with their age. Lack of nutritious food will cause children to be inactive and weak so that there is a delay in growth and development, especially cognitive development. Flora's research (2021) is supported by research (Arfinas & Puspitasari, 2017) that stunting can cause children's learning achievement to decline.

Based on the above research, it can be concluded that stunting can affect the growth and development of children. The influencing factors according to (Mugianti et al., 2018) include low nutritional intake, infectious diseases, low protein intake, not exclusive breastfeeding, working mothers, and parental education. (Setiawan et al., 2018) stated that stunting is influenced by the level of nutritional intake, history of duration of infectious diseases, birth weight, maternal education level, and family education level.

CONCLUSION

Stunting is a chronic condition of malnutrition caused by prolonged inadequate nutrient intake, significantly affecting children's growth and development. A review of eight journals reveals that stunting can lead to various developmental impairments, including delays in physical growth, motor skills, intelligence, social response, and cognitive function, as well as decreased activity levels and academic performance. Contributing factors include insufficient energy intake, history of infectious diseases, low birth weight, and parents' educational and family background. To address this issue, parents are encouraged to improve their children's nutritional status to support optimal growth and development. Additionally, healthcare workers and institutions should actively promote health education, enabling parents to better understand how to prevent and manage stunting, ultimately helping to reduce its prevalence.

REFERENCES

- Annisa Rahmidini, S.ST., M. K. (2020). Literatur Review : Hubungan Stunting Dengan Perkembangan Motorik Dan Kognitif Anak. *Prosiding Seminar Nasional Kesehatan "Peran Tenaga Kesehatan Dalam Menurunkan Kejadian Stunting" Tahun 2020*, 90–104. <http://www.ejurnal.stikesrespatism.ac.id/index.php/semnas/article/download/272/192>.

- Arfines, P. P., & Puspitasari, F. D. (2017). Hubungan Stunting dengan Prestasi Belajar Anak Sekolah Dasar di Daerah Kumuh, Kotamadya Jakarta Pusat. *Buletin Penelitian Kesehatan*, 45(1), 45–52. <https://doi.org/10.22435/bpk.v45i1.5798.45-52><https://www.neliti.com/publications/68027/hubungan-stunting-dengan-prestasi-belajar-anak-sekolah-dasar-di-daerah-kumuh-kota>.
- Basri, N., Sididi, M., & Sartika. (2021). Faktor yang Berhubungan dengan Kejadian Stunting pada Balita (24-36 Bulan). *Window of Public Health Journal*, 416–425. <https://doi.org/10.33096/woph.v1i5.98>.
- Di, T., & Ngada, K. (2021). *Jurnal Citra Pendidikan (JCP) HUBUNGAN STUNTING DENGAN PERKEMBANGAN KOGNITIF ANAK USIA 4-6*. 1, 36–44. <https://jurnalilmiahcitrabakti.ac.id/jil/index.php/jcp/article/view/140>.
- Elba, F. (2021). Faktor Kejadian Cacingan pada Balita Stunting di Kecamatan Pamulihan Kabupaten Sumedang. *Jurnal Sehat Masada*, XV(1), 65–73. <http://ejournal.stikesdnhb.ac.id/index.php/Jsm/article/view/164>.
- Hidayati, A. (2017). Merangsang Pertumbuhan Dan Perkembangan Anak Dengan Pembelajaran Tematik Terpadu. *Sawwa: Jurnal Studi Gender*, 12(1), 151. <https://doi.org/10.21580/sa.v12i1.1473><https://103.19.37.186/index.php/sawwa/article/view/1473>.
- Meylia, K. N., Siswati, T., Paramashanti, B. A., & Hati, F. S. (2020). Fine motor, gross motor, and social independence skills among stunted and non-stunted children. *Early Child Development and Care*, 0(0), 1–8. <https://doi.org/10.1080/03004430.2020.1739028>.
- Mugianti, S., Mulyadi, A., Anam, A. K., & Najah, Z. L. (2018). Faktor Penyebab Anak Stunting Usia 25-60 Bulan di Kecamatan Sukorejo Kota Blitar. *Jurnal Ners Dan Kebidanan (Journal of Ners and Midwifery)*, 5(3), 268–278. <https://jnk.phb.ac.id/index.php/jnk/article/view/374>.
- Nahriyah, S. (2017). Tumbuh kembang anak di era digital. *Risalah, Jurnal Pendidikan Dan Studi Islam*, 4(1), 65–74. <https://www.neliti.com/publications/339824/tumbuh-kembang-anak-di-era-digital>.
- Ningrum, E. W., & Utami, T. (2018). Stunting Status and Child Development on Children Ages 1-5 Years in The Public Health Centre of Padamara District Purbalingga. *Jurnal Keperawatan Soedirman*, 13(1), 27. <http://www.jks.fikes.unsoed.ac.id/index.php/jks/article/download/786/445>.
- Nur Chamidah, A. (2009). DETEKSI DINI GANGGUAN PERTUMBUHAN DAN PERKEMBANGAN ANAK Atien Nur Chamidah. *Jurnal Pendidikan Khusus, vol.1 no.3*, 1–8. https://www.academia.edu/download/37343287/deteksi_dini_gangguan_tumbang.pdf.
- Pengabdian, J., & Indonesia, K. (2021). *Jurnal Pengabdian Kedokteran Indonesia, Vol.2 No.1 (Maret, 2021); e-*. 2(1), 15–22.
- Probosiwi, H., Huriyati, E., & Ismail, D. (2017). Stunting dan perkembangan anak usia 12-60 bulan di Kalasan. *Berita Kedokteran Masyarakat*, 33(11), 559. https://www.researchgate.net/profile/Emy-Huriyati/publication/324049946_Stunting_dan_perkembangan_anak_usia_12-60_bulan_di_Kalasan/links/5e0d4ea6299bf10bc389af15/Stunting-dan-perkembangan-anak-usia-12-60-bulan-di-Kalasan.pdf.
- Sakti, S. A. (2020). Pengaruh Stunting pada Tumbuh Kembang Anak Periode Golden Age | Biomatika : Jurnal ilmiah fakultas keguruan dan ilmu pendidikan. *Jurnal Ilmiah Fakultas Keguruan Dan Ilmu Pendidikan*, 6(1), 169–175. <http://ejournal.unsub.ac.id/index.php/FKIP/article/view/709>.
- Samuel, S., & Riyana, A. (2020). Pertumbuhan Anak Sekolah Dasar Yang Mengalami

- Stunting Umur 0-23 Bulan. *Media Informasi*, 15(2), 106–109. <https://doi.org/10.37160/bmi.v15i2.374>.
- Setiawan, E., Machmud, R., & Masrul, M. (2018). Faktor-Faktor yang Berhubungan dengan Kejadian Stunting pada Anak Usia 24-59 Bulan di Wilayah Kerja Puskesmas Andalas Kecamatan Padang Timur Kota Padang Tahun 2018. *Jurnal Kesehatan Andalas*, 7(2), 275. <http://jurnal.fk.unand.ac.id/index.php/jka/article/view/813>.
- Tim Indonesiabaik.id. (2019). Bersama Perangi Stunting. In *Direktorat Jenderal Informasi dan Komunikasi Publik*. <http://indonesiabaik.id/public/uploads/post/3444/Booklet-Stunting-09092019.pdf>.
- Yadika, A. D. N., Berawi, K. N., & Nasution, S. H. (2019). Pengaruh Stunting terhadap Perkembangan Kognitif dan Prestasi Belajar. *Jurnal Majority*, 8(2), 273–282. <http://juke.kedokteran.unila.ac.id/index.php/majority/article/view/2483>.
- Yulianti, S., & R, D. T. (2020). Stunting Dan Perkembangan Motorik Balita Di Wilayah Kerja Puskesmas Kemumu Kabupaten Bengkulu Utara. *Journal of Nutrition College*, 9(1), 1–5. <http://www.ejurnal.stikesrespatism.ac.id/index.php/semnas/article/download/272/192>.