Jurnal edu Healt
Volume 15 , Number 02, 2024, DOI 10.54209/eduhealth.v15i02
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

Literature Review: The Relationship of Protein Intake on the Incident of Stunting in Children

Asrini Safitri[1], Rahmy Djamil[2], Alisiah Rezky Ariyani Amroe[3]
[1]Bagian Ilmu Gizi Klinik Fakultas Kedokteran Universitas Muslim Indonesia, Indonesia, [2]Bagian Ilmu Obstetrik dan Ginekologi Fakultas kedokteran Indonesia, Indonesia, [3]Program Studi Pendidikan Profesi Dokter Umum Fakultas Kedokteran Universitas Muslim Indonesia, Indonesia

Article Info
Keywords:
Stunting,
Protein,
Children

ABSTRACT
Stunting is a growth and development disorder in children due to chronic malnutrition and recurrent infections, which is characterized by their length or height being below a Z-score of -2 SD. The number of children under five at risk of stunting in Indonesia is still around 4.7 million. Classification of Stunting according to the nutritional status of children, both boys and girls. The macronutrient intake that most influences the occurrence of stunting is protein intake. Protein deficiency in children can cause low growth and bone maturity, which can lead to various medical conditions, one of which is stunting. The research method for this journal was a Literature Review via Google Scholar, NCBI and sciencedirect.com using the keywords Stunting, Protein, Children, then a total of 9 articles that met the inclusion criteria were reviewed. This research concludes that there is a relationship between protein intake and the incidence of stunting. This is characterized by lower protein intake in children who are stunted compared to children who are not stunted.

Corresponding Author:
Asrini Safitri
Bagian Ilmu Gizi Klinik Fakultas Kedokteran Universitas Muslim Indonesia, Indonesia
asrini.safitri@umi.ac.id

INTRODUCTION

Stunting is a disruption in the growth and development of children due to chronic malnutrition which is characterized by their body length or height being below the standards set by the minister who administers government affairs in the health sector. (Candra, 2020) According to Minister of Health Regulation Number 2 of 2020 concerning Anthropometric Standards The meaning of short and very short children is nutritional status which is based on the body length index according to age (PB/U) or height according to age (TB/U) which is the equivalent of the term stunted (short and the z-score value is less than -3 SD) and severely stunted (very short and the z-score value is less than -2 SD). Stunted toddlers can be identified if a toddler's length or height has been measured, then compared with standards and the results are below normal (Regulation of the Minister of Health of the Republic of Indonesia, 2020)

The target of reducing stunting to 14% by 2024 has become the government's target as stated in Presidential Regulation Number 72 of 2021 concerning the Acceleration of

Jurnal edu Healt
Volume 15 , Number 02, 2024, DOI 10.54209/eduhealth.v15i02
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

Reducing Stunting. In 2022, the number of children under five at risk of stunting in Indonesia will still be around 4.7 million. (Regulation of the Minister of Health of the Republic of Health of Indonesia, 2020) East Nusa Tenggara Province is the province that has the highest stunting rate, namely 35.5%, followed by West Sulawesi, namely 35.5%. 35.0% and Papua, namely 34.6%. South Sulawesi Province ranks 10th, namely with 27.2%. The highest prevalence of stunting under five in the city in South Sulawesi is Jeneponto Regency with 39.8%, Tana Toraja Regency with 35.4%, and followed by Pangkajene Islands Regency with 34.2%. The city of Makassar itself is second last, namely with 18.4%.(Badan Kebijakan Pembangunan Kesehaan Kementerian RI, 2022)

There are several factors that cause stunting in children. Environmental cleanliness and health factors influence the incidence of stunting. Economic status with poor quality and quantity of food causes children's nutritional needs to not be met. Close birth spacing or less than 2 years is a risk factor for stunting in children 1-2 years old. Close birth spacing or less than 2 years is a risk factor for stunting in children 1-2 years old. Low birth weight indicates that the fetus is experiencing malnutrition in the womb. Stunting can occur if the child has a history of LBW. Iron deficiency in pregnant women will affect the growth and development of the fetus so that the fetus born is at risk of stunting. (Candra, 2020)

Nutrient intake can be divided into 2, namely macronutrient and micronutrient intake. The macronutrient intake that most influences the occurrence of stunting is protein intake, while the micronutrient intake that most influences the incidence of stunting is the intake of calcium, zinc and iron. (Candra, 2020) Protein is part of all living cells and is the largest part of the body after water, consists of various types of protein obtained from various food sources of protein, both animal and vegetable origin. Protein is an important macronutrient because it contains essential components that cannot be replaced by other nutrients. Animal food is a good source of protein in quantity and quality, such as eggs, milk, meat, chicken, fish, etc. Sources of vegetable protein are soybeans, tepe, tofu and nuts. (Alfioni, 2020)

Protein deficiency in children can cause low growth and bone maturity. Children who lack protein can also cause kwashiorkor and lack of protein energy (PEM). The better the quality of the protein, the lower the protein requirement, while excess protein in children will result in the body being unable to process calcium and thus experiencing malnutrition.(Alfioni, 2020)

METHODS

The type of research used includes library research or literature review (literature review, literature research) which is carried out by collecting, evaluating, reviewing and critically analyzing ideas, knowledge and findings written in academic-oriented literature. , and formulate contributions, both theoretically and methodologically, on a topic related to the relationship between protein intake and the occurrence of stunting in children. This literature research uses a systematic literature review approach *(systematic literature review).*

Jurnal edu Healt
Volume 15 , Number 02, 2024, DOI 10.54209/eduhealth.v15i02
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

RESULTS AND DISCUSSION

Proteins are organic molecules formed from a collection of amino acids. These amino acids are bound by chemical bonds and form a 3-dimensional structure, which plays an important role in body function. Protein is a key important nutrient that is useful for the formation of new cells in the body, influencing the work of enzymes, hormones and immunity. Protein is also an important nutrient for the body, especially for developing and repairing body tissue. ('Konsumsi Kalori dan Protein Penduduk Indonesia dan Provinsi', 2023)

Animal protein has aromatic amino acids including phenylalanine, tyrosine and tryptophan which have been proven to cause a higher increase in serum IGF-1 levels compared to non-aromatic amino acids in vegetable protein. Apart from animal protein, it also contains micronutrients that are related to growth, such as iron, zinc, selenium, calcium and vitamin B12, so it will have a greater influence on the incidence of stunting when compared to vegetable protein. (Sindhughosa & Sidiartha, 2023)

A study conducted in Mexico entitled Diet Patterns in Preschool Mexican Children Associated with Stunting and Overweight showed that children with a Fruits & Vegetables diet, namely those who consumed fruit, vegetables, milk and soup, had twice the risk of experiencing stunting (18.8 %) compared to children with the Western pattern, namely those who consume lots of sweet foods, meat, fish, animal protein, oil and fat, who are less likely to experience stunting (8%).(Flores et al., 2021)

Research conducted in Egypt entitled The Relationship between Food Intake and Stunting in Preschool Children in Egypt involving 497 samples showed that among children who experienced stunting, significantly more children had less protein intake (13.7%) compared to children who did not experience stunting. (6%) and children who do not experience stunting and meet the recommended protein intake have a 2.26 times greater potential for experiencing stunting (AOR = 2.26, (5% CI: 1.01, 5.05 P=0.047). (Mahfouz, Mohammed, Alkilany , & Rahman, 2022)

A study conducted in East Java found that there were seven foods high in protein that were most widely consumed. However, based on panel regression data, there is only one food ingredient that has the effect of reducing stunting rates, one of which is egg consumption. By focusing on this, it is hoped that the government can control prices and distribution. Therefore, people can consume it easily and at low prices. (Komang, Ashar, & Syafitri, 2023)

This is in line with research conducted by Nilatu Izah et al in 2023 which examined the effectiveness of consuming protein (eggs and fish) as a strategy to overcome stunting where the research samples were given boiled eggs and fish for 30 days each day. The results of this study show that there is an effect of giving animal protein, namely eggs and fish, on the incidence of stunting in toddlers (p value 0.039). (Scientific & Imelda, 2023)

Based on research conducted by Virginia Madona et al., conducting a 24 day food recall study of protein intake in stunted toddlers showed that the highest frequency in the category of sufficient protein intake was 4 (9.3%) of toddlers, while the category of insufficient protein intake was 39 (90%). 7%) toddlers. Toddlers also observe that the amount of protein given is less than recommended. Some toddlers only consume ½ p

Jurnal edu Healt
Volume 15 , Number 02, 2024, DOI 10.54209/eduhealth.v15i02
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

(changer) in one meal and consume protein only 2 times a day. Apart from the insufficient number of portions, some toddlers do not eat 3 times a day. In general, this occurs because the family's lack of economy causes low food purchasing power in the household. (Matrutty et al., 2024)

This is in line with case-control based research conducted by Sandra Fikawati et al entitled Energy and Protein Intakes are Associated with Stunting Among Preschool Children in Central Jakarta Indonesia using the 24-hour food recall method concluding that the incidence of stunting is related to the protein adequacy rate (AOR =4.0; 95% CI=1.1-15.5) where children who lack protein are at 4 times greater risk than children who are not stunted.(Fikawati, Syafiq, Ririyanti, & Gemily, 2021)

This is also in line with research conducted in the city of Bengkulu, where children who did not consume enough protein had a 26.71 greater risk of stunting. And there is a relationship between consumption of macronutrients (carbohydrates, protein and fat) and the incidence of stunting. (Suryani, Kusdalinah, Krisnasary, Simbolon, & Angraini, 2022)

A study conducted by Yesi Nurmalasari et al entitled The Relationship between Protein Adequacy Levels and the Incidence of Stunting in Toddlers Aged 6-29 Months in Mataram Ilir Village, Kec. Seputih Surabaya, Central Lampung Regency in 2019 with a sample of 215 toddlers, obtained statistical test results of p value = 0.000 which is smaller than the Alpha value so that there is a significant relationship between protein adequacy and the incidence of stunting in toddlers aged 6-59 months. The OR results show that respondents with poor protein adequacy have a 15,145 times higher risk of children experiencing stunting compared to children with good protein adequacy.(Nurmalasari, Sjariani, & Intan Sanjaya, 2019)

CONCLUSION

Stunting is a condition where a child has growth and development disorders that are irreversible. Protein levels have an important role in a child's development and growth system. This is characterized by lower protein intake in children who are stunted compared to children who are not stunted. Therefore, food processing based on the type and protein content can adjust its supply to prevent stunting in children. The future stunting eradication program needs to increase education regarding the consumption of nutritious food that is easily accessible to the public. Previous research shows that eggs are an example of a high-protein food that is easily and cheaply accessible to the public.

REFERENCES

Alfioni, W. (2020). Gambaran Asupan Energi dan Protein Dengan Kejadian Stunting Pada Anak Baduta (Bawah Dua Tahun) di Wilayah Kerja Puskesmas Mandala Medan. *Jurnal Kesehatan Medan*.

Badan Kebijakan Pembangunan Kesehaan Kementerian RI. (2022). *Hasil Survei Status Gizi Indonesia (SSGI) 2022*.

Jurnal edu Healt
Volume 15 , Number 02, 2024, DOI 10.54209/eduhealth.v15i02
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

Candra, A. (2020). Epidemiologi Stunting. *Fakultas Kedokteran Universitas Diponegoro Semarang*. Retrieved from http://eprints.undip.ac.id/80670/1/Buku_EPIDEMIOLOGI_STUNTING_KOMPLIT.pdf

Fikawati, S., Syafiq, A., Ririyanti, R. K., & Gemily, S. C. (2021). Energy and protein intakes are associated with stunting among preschool children in Central Jakarta, Indonesia: a case-control study. *Malaysian Journal of Nutrition*, 27(1), 81–91. Retrieved from https://doi.org/10.31246/MJN-2020-0074

Flores, M. E., Rivera-Pasquel, M., Macías, N., Sánchez-Zamorano, L. M., Rodríguez-Ramírez, S., Contreras-Manzano, A., & Denova-Gutiérrez, E. (2021). Dietary patterns in Mexican preschool children are associated with stunting and overweight. *Revista de Saude Publica*, 55, 1–13. Retrieved from https://doi.org/10.11606/s1518-8787.2021055002350

Ilmiah, J., & Imelda, K. (2023). *Efektivitas Konsumsi Protein Hewani (Telur dan Ikan) Sebagai Strategi Penuntasan Stunting* (Vol. 9). Retrieved from Online: http://jurnal.uimedan.ac.id/index.php/JURNALKEBIDANANρ66Journalhomepage:http://jurnal.uimedan.ac.id/index.php/JURNALKEBIDANAN

Komang, I. Y., Ashar, K., & Syafitri, W. (2023). The Effect of Food Ingredients Containing Protein on Stunting Cases in East Java. *Journal of International Conference Proceedings*, 6(1), 368–375. Retrieved from https://doi.org/10.32535/jicp.v6i1.2312

Konsumsi Kalori dan Protein Penduduk Indonesia dan Provinsi. (2023). *Badan Pusat Statistik*, 2023. Retrieved from https://www.bps.go.id/id/publication/2022/10/20/9a4243c9524741fa6993d507/konsumsi-kalori-dan-protein-penduduk-indonesia-dan-provinsi--maret-2022.html

Mahfouz, E. M., Mohammed, E. S., Alkilany, S. F., & Rahman, T. A. A. (2022). The relationship between dietary intake and stunting among pre-school children in Upper Egypt. *Public Health Nutrition*, 25(8), 2179–2187. Retrieved from https://doi.org/10.1017/S136898002100389X

Matrutty, V. M., KHOERIYAH, S. M., Rosyad, Y. S., Monika, R., KORA, F. T., & Ratri, T. H. (2024). Analisa Pemberian Asupan Protein Dan Asupan Zinc Pada Balita Stunting. *Informasi Dan Promosi Kesehatan*, 2(2), 180–186. Retrieved from https://doi.org/10.58439/ipk.v2i2.167

Nurmalasari, Y., Sjariani, T., & Intan Sanjaya, P. (2019). Hubungan Tingkat Kecukupan Protein Dengan Kejadian Stunting Pada Balita Usia 6-59 Bulan di Desa Mataram Ilir Kec. Seputih Surabaya Kabupaten Lampung Tengah Tahun 2019. *Jurnal Ilmu Kedokteran Dan Kesehatan*, 5. Retrieved from https://doi.org/https://doi.org/10.33024/jikk.v6i2.2120

Peraturan Menteri Kesehatan Republik Kesehatan Indonesia. (2020).

Sindhughosa, W. U., & Sidiartha, I. G. L. (2023). Asupan protein hewani berhubungan dengan stunting pada anak usia 1-5 tahun di lingkungan kerja Puskesmas Nagi Kota Larantuka, Kabupaten Flores Timur. *Intisari Sains Medis*, 14(1), 387–393. Retrieved from https://doi.org/10.15562/ism.v14i1.1708

Jurnal edu Healt
Volume 15 , Number 02, 2024, DOI 10.54209/eduhealth.v15i02
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

Suryani, D., Kusdalinah, K., Krisnasary, A., Simbolon, D., & Angraini, W. (2022). Determinants of Feeding Patterns with Stunting in Children in the Coastal Area of Bengkulu City. *Open Access Macedonian Journal of Medical Sciences*, 10(E), 1520–1526. Retrieved from https://doi.org/10.3889/oamjms.2022.9705