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THE RELATIONSHIP BETWEEN CARBOHYDRATE, PROTEIN, FAT AND EXCLUSIVE BREASTFEEDING INTAKE AND THE INCIDENCE OF STUNTING IN CHILDREN AGED 12-59 MONTHS IN PUBLIC HEALTH CENTERS BATU BAJANJANG KECAMATAN TIGO LURAH KABUPATEN SOLOK

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ABSTRACT

Stunting is a chronic nutritional problem that impacts physical growth, cognitive development, and future productivity. Contributing factors include suboptimal exclusive breastfeeding and low macronutrient intake. This study aimed to determine the relationship between exclusive breastfeeding, carbohydrate, protein, and fat intake, and stunting in children aged 12-59 months in the Batu Bajanjang Community Health Center, Tigo Lurah District, Solok Regency.

This cross-sectional study involved 87 mothers of toddlers selected using accidental sampling. Data were collected through interviews, questionnaires, a semi-quantitative food frequency questionnaire (SQ-FFQ), and anthropometric measurements of height/age. Univariate and bivariate analyses were performed using the chi-square test (p=0.05).

A total of 56.3% of toddlers experienced stunting, 37.9% were not exclusively breastfed, 60.9% were carbohydrate deficient, 52.9% were protein deficient, and 58.6% were fat deficient. There was no significant association between exclusive breastfeeding (p=0.592) and carbohydrate (p=0.706), protein (p=0.409), or fat (0.751) intake with stunting.

The prevalence of stunting remains high, but the research variables were not significantly related. Improved education, increased provision of balanced nutritional complementary feeding (MP-ASI), toddler nutrition monitoring, community-based prevention programs, and research with environmental, socioeconomic, and infection variables.

Keywords: Stunting, Exclusive breastfeeding, Macronutrient intake

INTRODUCTION

Stunting is a chronic malnutrition problem caused by prolonged inadequate nutrient intake resulting from a diet that does not meet nutritional needs. Stunting can begin while the fetus is still in the womb and may not become apparent until the child is two years old. (Kemenkes RI, 2022).

Stunting is not just a health issue; it also has social and economic implications. Children with stunting experience physical and mental developmental impairments, weakened immune systems, nutritional and health problems, and lower academic achievement, and it has long-term impacts on productivity and the economy. (Putri sri eka, 2023) In 2019, the global prevalence of stunting was 21.3% (144 million) of children under 5 years of age were stunted (UNICEF, 2020). In 2020, the prevalence of stunting was 22% (149.2 million) (UNICEF, 2021). In Asia, approximately 54% of children under the age of 5 suffer from stunting, and two in five—with a prevalence of 40%—live in Africa (UNICEF, 2020). The prevalence of stunting in Timor-Leste is 48.8% and in Indonesia 31.8%

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(UNICEF, 2021).

Stunting remains a critical global issue that must be addressed worldwide; as a result, it has been designated as one of the primary focuses for global nutrition improvement targets through 2025 (Asri, 2022). In 2021, the WHO reported that the global prevalence of stunting had reached 22%, or 149.2 million cases, in 2020. In that year, Indonesia had the second-highest stunting rate

in Southeast Asia after Timor-Leste, though stunting cases in Indonesia were showing a downward trend. According to data from the 2022 Indonesian Nutrition Status Study (SSGI), the prevalence of stunting in Indonesia decreased from 24.4% in 2021 to 21.6%. This indicates that the figure remains above the target set by the World Health Organization (WHO), which is 20%.

The stunting rate in Indonesia remains quite high, at 21.6%, according to the 2022 Indonesian Nutritional Status Survey (SSGI). Although this represents a decrease from the previous year's 24.4% in 2021, significant efforts are still needed to achieve the 2024 stunting reduction target of 14%.

Based on data from the Indonesian Nutritional Status Survey (SSGI), the stunting rate in West Sumatra in 2022 was 25.2%, above the national average of 21.6%. Solok Regency ranked third in West Sumatra province with 8,338 cases (31.12%). The stunting rate in Solok Regency in 2023 was 12.11%. Data from the Batu Bajanjang Tigo Lurah Community Health Center in Solok Regency indicates that the incidence of stunting among toddlers in 2023 was 11.26%.

Diet is the most important factor in addressing stunting. The implementation of a balanced nutritional diet emphasizes food consumption patterns in terms of type, quantity, and principles of food diversity to prevent nutritional problems. Components that must be met in implementing a balanced nutritional diet include sufficient quantity and quality, containing various nutrients (energy, protein, vitamins, and minerals), and being able to store nutrients to meet the body's needs. (Suriany Simamora & Kresnawati, 2021)

Exclusive breastfeeding is the best food for the early years of life. Exclusive breastfeeding involves giving only breast milk without any additional food or drink for six months. Breast milk contains complete nutrients to meet energy and body building needs, including lactose, fat, protein, and several minerals. (Kementrian Kesehatan Republik Indonesia, 2022).

RESEARCH METHODOLOGY

This research is analytical, quantitative, and uses a cross-sectional design. It was conducted in the Batu Bajanjang Community Health Center, Tigo Lurah District, Solok Regency, from December 2024 to September 2025. The study used a sample of 87 individuals. All toddlers were included in the sample, while the mothers of the toddlers were the respondents. The sampling method used was accidental sampling.

The data analysis process was carried out in two stages: univariate data analysis and bivariate data analysis. If the p-value in the reference study is ≤ 0.005, then Ho is rejected and Ha is accepted. In other words, there is a significant relationship between the two tested variables. However, if the p-value in the study shows results > 0.005, then the null hypothesis (Ho) is accepted and the alternative hypothesis (Ha) is rejected. Thus, it can be concluded that there is no significant relationship between the two tested variables.

HASIL DAN PEMBAHASAN

Table 4. 1

Frequency Distribution of Respondents Based on Characteristics Jk Diwilayah Kerja Puskesmas Batu Bajanjang Kecematan Tigo Lurah Kabupaten Solok

Jenis kelamin	Frekuensi (f)	Persentase (%)
Laki-laki	41	47.1
Perempuan	46	52.9

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Jumlah	87	100

Bivariate analysis results Overview
Stunting

The frequency of measurements using nthropometry using the index (TB/U) in toddlers at the Batu Bajanjang Community Health Center, Tigo Lurah District, shows that stunting is as follows.

Table 4. 2
Frequency Distribution of Stunting in Toddlers

Status Gizi	Frekuensi (f)	Persentase (%)
Stunting	49	56.3
Normal	38	43.7
Jumlah	87	100

Based on table 4.1, it is known that of the 87 toddlers, 49 (56.3%) experienced stunting and 38 (43.7%) had normal nutritional status.

Table 4. 3
Distribution of Exclusive Breastfeeding for Toddlers

Pemberian ASI Eksklusif	Frekuensi (f)	Persentase (%)
ASI Eksklusif	54	62.1
Tidak ASI Eksklusif	33	37.9
Jumlah	87	100

Based on table 4.3, it can be seen that there were 33 children (37.9%) who did not receive exclusive breastfeeding and 54 children (62.1%) who received exclusive breastfeeding.

Table 4. 4
Frequency Distribution of Carbohydrate Intake

Karbohidrat	Frekuensi (f)	Persentase (%)
Cukup	34	39.1
Kurang	53	60.9
Jumlah	87	100

Based on table 4.4 above, it can be seen that the consumption of carbohydrate intake is insufficient in toddlers, namely 53 people (60.9%).

Tabel 4. 5
Frequency Distribution of Protein Intake

Asupan protein	Frekuensi (f)	Persentase (%)
Cukup	41	47.1
Kurang	46	52.9
Jumlah	87	100

Based on table 4.5 above, it can be seen that the consumption of protein intake is insufficient in toddlers, namely 46 people (52.9%).

Tabel 4. 6
Frequency Distribution of Fat Intake

Asupan lemak	Frekuensi (f)	Persentase (%)
Cukup	36	41.4
Kurang	51	58.6

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Jumlah	87	100

Based on table 4.6 above, the results show that 51 toddlers (58.6%) had insufficient fat intake.

Bivariate analysis results

The Relationship Between Exclusive Breastfeeding and the Incidence of Stunting

Tabel 4. 7
The Relationship Between Exclusive Breastfeeding and the Incidence of Stunting

Pemberian ASI Eksklusif	TB_U				Jumlah		P value
	Stunting		Normal				
	F	%	f	%	N	%	
ASI Eksklusif	29	59.2	25	65.8	54	62.1	0.592
Tidak ASI Eksklusif	20	40.8	13	34.2	33	37.9	
Jumlah	49	100	38	100	87	100	

Based on the statistical test results, a P-value of 0.592 (p>0.005) was obtained, indicating no significant association between exclusive breastfeeding and stunting in toddlers.

This study aligns with the results of research conducted by Novayanti et al. (2021), which showed no significant association between exclusive breastfeeding and stunting, with a P-value of 0.536. Research in Bengkulu also showed no association between exclusive breastfeeding and stunting in children aged 24-36 months.

Although exclusive breastfeeding was not identified as a risk factor for stunting in toddlers in this study, it is still recommended that toddlers receive exclusive breastfeeding, as it is one of the best foods for babies and offers important benefits for infants and toddlers.

The Relationship Between Carbohydrates and Stunting Incidence

Tabel 4. 8
The Relationship Between Carbohydrates and the Incidence of Stunting in Toddlers at the Batu Bajanjang Community Health Center

Karbohidrat	TB_U				Jumlah		P value
	Stunting		Normal				
	F	%	F	%	N	%	
Cukup	20	40.8	14	36.8	34	39.1	0.706
Kurang	29	59.2	24	63.2	53	60.9	
Jumlah	49	100	38	100	87	100	

The statistical test results obtained a p-value of 0.706 (p>0.005), which indicates no significant relationship between carbohydrate intake and stunting in toddlers. This study aligns with research conducted by Marta Mai Resti (2020), which found a p-value of 0.660 (p>0.005), indicating no significant relationship between carbohydrate intake and stunting. Carbohydrates are the primary source of energy and serve as energy reserves for living organisms. Although carbohydrates offer many benefits, consuming too little or too much can have negative health impacts.

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The Relationship Between Protein Intake and the Incidence of Stunting

Tabel 4. 9
The Relationship Between Protein Intake and the Incidence of Stunting in Toddlers at the Batu Bajanjang Community Health Center, Tigo District, Lurah, Solok Regency

Protein	TB_U				Jumlah		P value
	Stunting		Normal				
	F	%	f	%	N	%	
Cukup	25	51.0	16	42.1	41	47.1	0.409
Kurang	24	49.0	22	57.9	46	52.9	
Jumlah	49	100	38	100	87	100	

The statistical test results yielded a p-value of 0.409 (p>0.005), concluding that there is no significant relationship between protein intake and stunting in toddlers. This study aligns with research conducted by Aini and Puspowati (2022), which found no significant relationship between protein intake and stunting in toddlers (p=0.072).

Based on previous research, children's nutritional status is a crucial factor influencing early childhood growth and development. When optimal nutritional status is achieved, young children can physically utilize their brains more effectively. Conversely, children with malnutrition experience less optimal growth and development, and their intelligence declines. Protein-rich foods tend to be less popular among toddlers due to limited processing methods, resulting in low consumption. However, nutritional intake is not the only factor influencing stunting. As stated by (Mashar, 2021), there are other factors that influence the occurrence of stunting, including parenting patterns, basic immunizations, sanitation and hygiene, diarrhea, smoking habits, and respiratory tract infections.

The Relationship Between Fat Intake and the Incidence of Stunting

Tabel 4. 10
The Relationship Between Fat Intake and the Incidence of Stunting in Toddlers at the Batu Bajanjang Community Health Center, Tigo Lurah District, Solok Regency

Lemak	TB_U				Jumlah		P value
	Stunting		Normal				
	F	%	f	%	n	%	
Cukup	21	42.9	15	39.5	36	41.4	0.751
Kurang	28	57.1	23	60.5	51	58.6	
Jumlah	49	100	38	100	87	100	

The statistical test results yielded a p-value of 0.751 (p>0.005), concluding that there is no significant relationship between fat intake and stunting in toddlers.

This aligns with the findings of Suryani's 2022 study in Bengkulu City. A chi-square statistical test yielded a p-value of 1.000 (p>0.05), concluding that there is no significant relationship between fat intake and stunting. This study found no association between fat intake and stunting. This is likely due to the presence of a group of cases with adequate fat intake, with higher levels compared to the group with low fat intake. This could be the reason for the absence of a relationship between fat intake and stunting.

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CONCLUSION

Based on the results of research conducted at the Batu Bajanjang Community Health Center, Tigo Subdistrict, Solok Regency

1. The frequency of stunting among toddlers at the Batu Bajanjang Community Health Center in Tigo Lurah District, Solok Regency was 49.
2. The distribution of exclusive breastfeeding at the Batu Bajanjang Community Health Center was generally good, with only 37.9% of children lacking exclusive breastfeeding.
3. Carbohydrate intake among toddlers at the Batu Bajanjang Community Health Center in Tigo Lurah District, Solok Regency was still insufficient (60.9%).
4. Protein intake among toddlers at the Batu Bajanjang Community Health Center in Tigo Lurah District, Solok Regency was still largely insufficient (52.9%).
5. Fat intake among toddlers at the Batu Bajanjang Community Health Center in Tigo Lurah District, Solok Regency was still largely insufficient (58.6%).
6. There was no significant relationship between exclusive breastfeeding and stunting in toddlers at the Batu Bajanjang Community Health Center.
7. There was no significant relationship between carbohydrate intake and stunting in toddlers at the Batu Bajanjang Community Health Center.
8. There was no significant relationship between protein intake and stunting in toddlers at the Batu Bajanjang Community Health Center.

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REFERENSI

Afifah. (2022). Hubungan Pemberian Asi Eksklusif Dengan Kejadian *Stunting* Pada Balita Usia 2-5 Tahun Di Wilayah Kerja Puskesmas Bumi Rahayu Tahun 2023. *Aspiration Heal J*. 2023;1(3):510-524. doi:10.55681/aohj.v1i3.196

Aini, S., & Puspowati, S. D. 2022. Hubungan Tingkat Konsumsi Zat Gizi Makro Dengan Status *Stunting* Pada Balita Di Desa Ngadirojo Kidul Kecamatan Ngadirojo Kabupaten Wonogiri, Doctoral dissertation, Universitas Muhammadiyah Surakarta.

Alam, (2020). Hubungan Pengetahuan dan Sikap Ibu Tentang Pemberian ASI Eksklusif. Jurnal Ilmiah Kesehatan Sandi Husada, 201– 207. https://doi.org/10.35816/jiskh.v11i1.73 8

Anatrietal (2021). Hubungan Berat Badan Lahir, ASI Eksklusif dan Tingkat Pengetahuan Ibu dengan Kejadian *Stunting* pada Anak Usia 12-59 Bulan di Wilayah Kerja Puskesmas Tanjung Harapan Bengkulu Utara Tahun 2021. Poltekkes Kemenkes Bengkulu.

Aobama, & Purwito, D. (2020). Determinan *Stunting* Pada Balita Di Wilayah Kerja Puskesmas Klampok 2 Kabupaten Banjarnegara. Jurnal Keperawatan Muhammadiyah.

Azim et al. (2021) Faktor – Faktor Yang Mempengaruhi Pola Pemberian ASI (Air Susu Ibu) Pada Ibu Menyusui Yang Bekerja

Azmy, U., & Mundiastuti, L. (2021). Konsumsi Zat Gizi pada Balita *Stunting* dan Non*Stunting* di Kabupaten Bangkalan Nutrients Consumption of Stunted and Non-Stunted Children in Bangkalan. Amerta Nutr, 292-298.

Dinda (2023). Hubungan pengetahuan ibu balita tentang *Stunting* dengan karakteristik ibu dan sumber informasi di Desa Hegarmanah Kecamatan Jatinangor Kabupaten Sumedang. Jurnal Sistem Kesehatan, 5(2).

Dompas. Analisis Hubungan Pemberian Asi Eksklusif Dengan Kejadian *Stunting* Pada Balita. 2021;4(September):2366-2373.

Erik, R. A., Rosyana, A., Rianti, A., Muhaemi, A., Yuni, E. E., & Fauziah, F. (2020). *Stunting* pada anak usia dini (study kasus di Desa Mirat Kec Lewimunding Majalengka). Etos, 2(1), 24-36

irma yunawati . *Penilaian Status Gizi ABCD*. Vol 01.; 2023. Kemenkes, RI.

(2020). Standar antropometri anak.

Kemenkes.(2024) berbagai kandungan asi yang melindungi bayi dari penyakit .

Kundarwati RA, Dewi AP, Wati DA. Hubungan asupan protein, vitamin A, zink, dan Fe dengan kejadian *Stunting* usia 1-3 tahun. Jurnal Gizi. 2022;11(1):9-15.

Lestari, (2023). "Menurunkan *Stunting* dan Bahayanya Bagi Anak Hingga Negara Perlu Dicegah", radartegal. disway.id, 15 Juni 2023. https:// radartegal.disway.id/read/656843/ mengenal-*Stunting*-dan-bahayanyabagi-anak- hingga-negara-perlu dicegah, diakses 30 Juli 2023.

Mulyanti, S., Setiawan, A., & Zahara, F. (2021). Faktor-Faktor Yang Berhubungan Dengan Terjadinya *Stunting* Pada Balita Usia 24-59 Bulan Di Kelurahan Setiawargi Kota Tasikmalaya Tahun 2020. JIKP Jurnal Ilmiah Kesehatan PENCERAH, 10(1), 99– 109.

Nurhasanah, Afrika, E., & Rahmawati, E. (2021). Hubungan Asi Eksklusif, Status Gizi Dan Faktor Genetik Terhadap Kejadian *Stunting* Pada Anak Usia 24- 59 Bulan Di Wilayah Kerja Puskesmas Sp Padang Kabupaten Ogan Komering Ilir Tahun 2021. Jurnal Ilmiah Kesehatan Ar-Rum Salatiga, 6(2), 19– 26

Rahmandiani, 2021). Hubungan pengetahuan ibu balita tentang *Stunting* dengan karakteristik ibu dan sumber informasi di Desa Hegarmanah Kecamatan Jatinangor Kabupaten Sumedang.

Rahmietal. (2022). Faktor Yang Berhubungan Dengan Kejadian *Stunting* Pada Anak Usia 2- 5 Tahun di Puskesmas Darussalam Kabupaten Aceh Besar. Journal Of Healthcare Technology And Medicine, 8(1), 23–34.

Saadah, N., & Kp, S. (2020). Modul Deteksi Dini Pencegahan dan Penanganan *Stunting*.

How to cite:
Example: Nurul Fadhilah, Rosmaria, Seffiani Dwi A. (2024). Nutritional Interventions in Public Health: Strategies, Outcomes, and Policy Implications. *Journal Nutrizone*, 1(1), 1-10. DOI:

https://jurnal-ilcaagam.com/index.php/JN/index
Volume XX Issue XX, XXXX
e-ISSN : xxxx-xxxx
DOI : https://doi.org/10.62872/jn.

Scopindo Media Pustaka.

Sabriana, R., Riyandani, R., Wahyuni, R., & Akib, A. (2022). Hubungan Pengetahuan dan Sikap Ibu Tentang Pemberian ASI Eksklusif. Jurnal Ilmiah Kesehatan Sandi Husada, 201– 207. https://doi.org/10.35816/jiskh.v11i1.73 8

SJMJ, S. A. S., Toban, R. C., & Madi, M. A. (2020). Hubungan Pemberian ASI Eksklusif Dengan Kejadian *Stunting* Pada Balita. Jurnal Ilmiah Kesehatan Sandi Husada, 11(1), 448–455.

Suryani et,al. (2022). Hubungan Asupan Zat Gizi Makro (Karbohidrat, Protein, Lemak) Dan Zink Dengan Kejadian *Stunting* Pada Balita Di Wilayah Kerja Puskesmas Beringin Raya Kota Bengkulu Tahun 2022 (Doctoral Dissertation, Poltekkes Kemenkes Bengkulu).

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