

SSN-IDENTIFICATION OF FOOD DIVERSITY

By Sabri Sudirman

IDENTIFICATION OF FOOD DIVERSITY FACTORS TO OVERCOME STUNTING IN TODDLERS ON THE MUSI RIVER SUBURBS, PALEMBANG SOUTH SUMATRA, INDONESIA

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ABSTRACT

A diverse and balanced diet is one way to overcome stunting in toddlers. Without adequate food intake, toddlers will lack the nutrients to grow and develop properly. The purpose of this study was to identify the factors of various food choices in stunting toddlers on the outskirts of the Musi River, Palembang. This research is an observational study with a cross-sectional method conducted in two health centers representing the Musi River suburbs, namely Gandus Health Center and 11 Ilir Health Center. The subjects of this study were toddlers aged 6 months to 59 months, totaling 170 children under five who were calculated using the two-proportion hypothesis test formula and sampling through the purposive sampling technique. Data collection was carried out directly by interviews using a questionnaire. Chi-square test was used to analyze bivariate and multiple logistic regression test predictive model for multivariate analysis. Based on the results of the study, data obtained that there was a relationship between the mother's education ($p = 0.000$), number of family members ($p = 0.017$), food availability ($p = 0.000$), and eating patterns ($p = 0.005$) with various foods. The results of multivariate analysis showed that maternal education and food availability had a significant relationship with food diversity. Mother's education has the greatest influence or is the most dominant risk factor for food diversity to overcome stunting in toddlers on the on the Musi River suburbs, Palembang. Mothers of toddlers should increase their knowledge about food diversity and provide food at home that does not have to be expensive but remains diverse and nutritionally balanced, in order to meet nutritional needs so that toddlers avoid stunting.

Key words: diverse food, stunting, musu river

ABSTRAK

Pola makan yang beragam dan seimbang merupakan salah satu cara untuk mengatasi stunting pada balita. Tanpa asupan makanan yang cukup, balita akan kekurangan zat gizi untuk tumbuh dan berkembang dengan baik. Tujuan penelitian ini adalah untuk mengidentifikasi faktor-faktor pemilihan makanan yang beragam pada balita stunting di pinggiran Sungai Musi Palembang. Penelitian ini merupakan penelitian observasional dengan metode cross sectional yang dilakukan di dua puskesmas yang mewakili wilayah pinggiran Sungai Musi, yaitu Puskesmas Gandus dan Puskesmas 11 Ilir. Subyek penelitian ini adalah balita usia 6 bulan sampai dengan 59 bulan yang berjumlah 170 balita yang dihitung menggunakan rumus uji hipotesis dua proporsi dan pengambilan sampel melalui teknik purposive sampling. Pengambilan data dilakukan secara langsung dengan wawancara menggunakan kuesioner. Uji Chi-square digunakan untuk menganalisis bivariat dan uji regresi logistik ganda model prediktif untuk analisis multivariat. Berdasarkan hasil penelitian didapat data bahwa ada hubungan antara pendidikan ibu ($p=0,000$), jumlah anggota keluarga ($p=0,017$), ketersediaan pangan ($p=0,000$), dan pola makan ($p=0,005$) dengan makanan beragam. Hasil analisis multivariat didapat hasil bahwa pendidikan ibu dan ketersediaan pangan memiliki hubungan yang signifikan dengan keragaman pangan. Pendidikan ibu memiliki pengaruh paling besar atau merupakan faktor risiko yang paling dominan terhadap keragaman pangan untuk mengatasi stunting pada balita di pinggiran Sungai Musi Palembang.

Kata Kunci : makanan beragam, stunting, Sungai Musi

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Received : July 21, 2022 Accepted : August 2, 2022 Published: September 1, 2022

Introduction

According to WHO median standard, the failure of linear growth during a critical period in children aged 0-59 months is stunting, where height for age is below minus 2 Standard Deviations (<-2SD).¹ In 2019, there were around 144 million children under five (21.3%) in the world experiencing stunting.² Data from the World Health Organization (WHO) shows that Indonesia is the third country with the highest prevalence in the South-East Asia Regional (SEAR).³ From 2005-2017 the average prevalence of stunting under five in Indonesia was 36.4%⁴ and tends to be static from year to year. Nationally, the prevalence of stunting in 2013 was 37.2 percent, an increase compared to 2010 (35.6%) and 2007 (36.8%).⁵ Based on Nutrition Status Monitoring (PSG) data for the last three years (2015 - 2017), the highest prevalence is short when compared to undernourished, underweight, and obese.⁶

Stunting is closely related to low cognitive and motor development that is not optimal.^{7,8,9} Stunting children fail to achieve linear growth potential, suffer from irreparable physical damage and stunted growth so that they are at risk of decreasing productivity and will have an impact on the quality of human resources, economic growth and poverty.^{9,10,11} Many factors cause stunting such as sub-optimal health conditions and inadequate care,^{10,12} socioeconomic conditions, maternal nutrition during pregnancy, and lack of nutritional intake in infants,⁴ dietary habit¹² and food diversity,^{13,14} Food diversity affects the nutritional quality of the food consumed,¹⁵ with a variety of foods, the nutritional status of children is getting better.¹⁶ There is a positive relationship between the characteristics of toddlers and families with food diversity, namely income,¹⁷ family, child age¹⁸ and mother's education.¹⁹ In addition, the diversity of toddler food is also influenced by food availability^{20,21} which can be obtained from the ownership of livestock and food crops in the household. Another household characteristic related to food diversity is access to mass media,^{20,22} dietary habit,^{12,21} and food decision makers.

Palembang City is one of the cities where the focus of implementing integrated stunting reduction interventions is 2020-2022. Based on the 2018 Riskesdas data in Palembang, the prevalence of very short is 10.37% and short is 15.52%.¹⁰ Gandus Public Health Center and 11 Ilir Health Center are one of the areas on the outskirts of the Musi River in Palembang City with a fairly high incidence of stunting at 6.6% and 20.2%.²³ If seen from the consumption of Diverse Foods in toddlers aged 6-23 months only reached 44.1%.¹⁰ Children under five need attention in order to prevent stunting. One of the efforts to reduce cases of malnutrition in toddlers is to pay attention to nutritious, diverse and balanced food consumption patterns.²⁴ There is no research that focuses on food diversity to reduce stunting on the banks of the Musi River. Therefore, it is necessary to conduct research on the identification of diverse food choices to reduce stunting in

toddlers on the outskirts of the Musi River, Palembang. The purpose of this study was to identify the characteristics of toddlers, families and households in choosing diverse foods for toddlers.

Method

This research is an observational study with a cross sectional method conducted in two health centers representing the Musi River suburbs, Palembang City, namely Gandus Health Center and 11 Ilir Health Center from September to October 2021. The subjects of this study were toddlers aged 6 months to 59 months totaling 170 children under five were calculated using the two-proportion hypothesis test formula and sampling through purposive sampling technique. Data collection was carried out directly by interview using a questionnaire and anthropometric measurements. The data obtained by direct interviews are the characteristics of toddlers, families, households and diverse foods. Meanwhile, nutritional status data was obtained by measuring the weight and height of children under five. All respondents were informed and signed a consent form.

The dependent variable in this study is food diversity and the independent variables are the characteristics of children under five and their families and household characteristics. The data on the characteristics of children under five and families are gender, age, parental education, parents' occupations, family income, and number of family members. Family income of 3,270,093 Rupiah (IDR) is the minimum wage for Palembang City per month.²⁵ The number of family members living at home is categorized as large if it is more than 4 people. Meanwhile, household characteristics such as livestock ownership, ownership of food crops, access to mass media (affordable if access to mass media such as newspapers, television, and the internet is easy to obtain), food decision making (people who are responsible for cooking at home), diet (good if score 76%), food availability, and food diversity. Food availability data were selected from the Household Food Security Questionnaire to see anxiety or perceptions that the availability of food in the household is not sufficient and the perception that the food consumed by adults and children in the household is of poor quality. The family food availability score category is guaranteed if the score 2.²⁶

To assess the diversity of food used the diversity of food consumption (DDS). The Dietary Diversity Score (DDS) can be used to measure the nutritional adequacy of children in developing countries.^{13,27} The results of the data are said to be diverse if the food groups consumed are 4 and not diverse if the food groups consumed are <4²¹. Data analysis includes univariate, bivariate and multivariate. Bivariate analysis used the Chi-square test to see the relationship between the dependent variable and the independent variable, while the multivariate analysis used a predictive multiple logistic regression test. Data is presented in tabulated and narrated form. The Research

Ethics Committee of the Faculty of Public Health, Sriwijaya University has approved this research based on the approval decree number 261/UN9.FKM/TU.KKE/2021.

Results

The Musi River divides the city of Palembang into two, namely across the ulu and across the ilir. The Gandus Health Center and the 11 Ilir Health Center are located on the opposite side of the Musi River. The area of Gandus is larger than the area of 11 Ilir but has a denser population. The Gandus area has easy access to the nearest health facility and easy access to the nearest education facility.²⁸ Region 11 Ilir has easy access to the nearest health facility and very easy to reach the nearest education facility.²⁹

Based on the frequency distribution of the characteristics of children under five and families in the Musi River suburbs, Palembang City, which became the research sample (Table 1), it was found that most of the toddlers were aged 25-59 months and had a history of non-exclusive breastfeeding. For data on family characteristics, the majority of the last education of fathers and mothers is high school level with low income levels and the number of large family members.

Table 1. Frequency Distribution of Toddler and Family Characteristics

Variable	Total (n)	Percentage (%)
Toddler age		
7 – 12 Months	1	0,6
13 – 24 Months	47	27,6
25 – 59 Months	122	71,8
Breastfeeding		
Not Exclusive Breastfeeding	77	45,3
7 Exclusive Breastfeeding	93	54,7
Father's Education		
Elementary School	37	21,8
Junior High School	41	24,1
Senior High School	83	48,8
University	9	5,3
Mother's Education		
Elementary School	31	18,2
Junior High School	36	21,2
Senior High School	89	52,4
University	14	8,2
Family's Income		
Low	111	65,3
High	59	34,7
Number of Family		
Big	99	58,2
Small	71	41,8

The following table describes the frequency distribution of household characteristics (Table 2), namely that most of the respondent's families are not guaranteed food availability and do not have livestock or food crops. Some respondents have access to mass media and the decision

making regarding food is mostly done by mothers. Most of the toddlers' eating patterns are not good, but the variety of food is good.

Table 2. Frequency Distribution of Household Characteristics

Variable	Total (n)	Percentage (%)
Food availability		
Not Guaranteed	103	60,6
Guaranteed	67	39,4
Livestock Ownership		
No	155	91,2
Yes	15	8,8
Food Crop Ownership		
No	144	84,7
Yes	26	15,3
Mass Media Access		
Unreachable	9	5,3
Reachable	161	94,7
Food Decision Making		
Father	7	4,1
Mother	140	82,4
Family	23	13,5
Dietary habit		
Not good	143	84,1
Good	27	15,9
Food Diversity		
Not Diverse	77	45,3
Diverse	93	54,7

The results of the bivariate analysis (Table 3) show that there is a relationship between mother's education and the number of family members with diverse diets for toddlers in the Musi Riverside area of Palembang City. While exclusive breastfeeding, father's education and family income are not related to food diversity.

Table 3. Results of Bivariate Analysis of Toddler & Family Characteristics

Variable	Food Diversity		p-value	PR (95% CI)
	Not diverse n	Diverse n		
Breastfeeding				
Not Exclusive Breastfeeding	52	63	1,000	0,990 (0,519 – 1,889)
Exclusive Breastfeeding	25	30		
Father's Education				
Low	38	40	0,502	1,291 (0,704 – 2,368)
High	39	53		
Mother's Education				
Low	46	21	0,000	5,088 (2,613 – 9,904)
High	31	72		
Family's Income				
Low	54	57	0,297	1,483 (0,780 – 2,818)
High	23	36		
Number of Family				
Big	53	46	0,017	2,256 (1,201 – 4,240)
Small	24	47		

The results of the bivariate analysis (Table 4) show that there is a relationship between food availability and diet with food diversity in children under five in the Musi Riverside area of

Palembang City. While the variables that do not have a relationship with food diversity in children under five are livestock ownership, food crop ownership, access to mass media and food decision making.

Table 4. Results of Bivariate Analysis of Household Characteristics with Food Diversity

Variable	Food Diversity				p-value	PR (95% CI)
	Not Diverse		Diverse			
	n	%	n	%		
Food availability						
Not Guaranteed	60	58,3	43	41,7	0,000	4,104 (2,089 – 8,064)
Guaranteed	17	25,4	50	74,6		
Livestock Ownership						
No	72	46,5	83	53,5	0,482	1,735 (0,567 – 5,312)
Yes	5	33,3	10	66,7		
Food Crop Ownership						
No	64	44,4	80	55,6	0,757	0,800 (0,347 – 1,846)
Yes	13	50,0	13	50,0		
Mass Media Access						
Unreachable	5	55,6	4	44,4	0,771	1,545 (0,400 – 5,966)
Reachable	72	44,7	89	55,3		
Food Decision Making						
Father	3	42,9	4	57,1	1,000	0,975 (0,177 – 5,385)
Mother	64	45,7	76	54,3		
Family	10	43,5	13	56,5		
Dietary habit						
Not good	72	50,3	71	49,7	0,005	4,462 (1,601 – 12,434)
Good	5	18,5	22	81,5		

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While the results of multivariate analysis (Table 5), it is known that maternal education and food availability have a significant relationship with food diversity. Mother's education has the greatest influence or is the most dominant risk factor for food diversity in children under five in the Musi River suburbs, Palembang City.

Table 5. Multivariate Analysis Modeling of Food Diversity Selection Factors for Toddlers on the Musi Riverside, Palembang City

Variable	p-value	PR	95% CI	
			Lower	Upper
Mother's Education	0,000	5,072	2,438	10,552
Number of Family	0,087	1,901	0,910	3,971
Family's Income	0,450	0,739	0,337	1,619
Food availability	0,002	3,415	1,595	7,310
Dietary Habit	0,091	2,737	0,852	8,799

Discussion

The results of this study indicate that most toddlers have consumed a variety of foods. Food diversity is an important factor that must be considered as a determinant of the quality of the food consumed by toddlers, the more diverse the food consumption, the better the nutritional status.¹⁶ Several studies have shown that there is a significant relationship between food diversity and stunting in children under five.³⁰⁻³² The World Health Organization (WHO) uses multiple dietary indicators as a key to assessing children's eating practices.³³ Child feeding is an important contributor to child nutrition and child development globally.³⁴

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Many factors are associated with dietary diversity, such as the results in this study which stated that there was a relationship between diverse foods with maternal education and number of family members. Based on the results of multivariate analysis that mother's education has the greatest influence or is the most dominant risk factor for food diversity that can prevent stunting in toddlers. Dietary diversity was significantly higher in mothers with higher education. This is because with a sufficient level of education, mothers will understand the importance of balanced nutrition for children.³⁵ Mothers with higher education levels have a positive attitude towards family nutrition and can receive information about nutrition and child health well.³⁶ Mothers with higher education also have better knowledge and practice of nutritious food habits.³⁷ In addition, the mother's education and occupation are related to better diet and food quality and adequate nutrition.³⁸⁻⁴¹ Higher education provides job opportunities and better income, thereby increasing purchasing power and better nutrition knowledge, low household income causes low purchasing power so that it does not meet the diversity of food consumption for families.^{39,37} Meanwhile, the number of family members will reflect variations in the availability of food for family consumption⁴². Larger family size is negatively related to dietary diversity.⁴³

Other factors related to dietary diversity are dietary patterns and food availability, as the results of this study suggest. Diverse food is a proxy for the quality of diet and nutritional adequacy.²¹ Availability of food can be obtained from livestock and food plants that are raised by the family to meet the nutritional needs of the family, based on the WHO recommendation, children over 6 months of age should be given a complete diet to meet the needs of macro and micro nutrients for their growth and development.⁴⁴ However, in this study, most of the families did not have livestock and food crops and were not related to the diversity of food. The results of this study differ from research by Taruvinga that there is a significant positive relationship between households that have small livestock and ownership of gardens in their yards with food diversity. Small farm animals are easy to care for, easy to trade and contain several food groups (eggs, meat and goat's milk) that can provide micronutrient and macronutrient benefits.⁴⁵ While the home yard can provide a variety of horticultural crops that are rich in micronutrients such as vegetables, fruits and tubers. One of the efforts that can be done by families to increase the diversity of food consumption is by optimizing the yard to meet the food needs of the family.⁴⁶

Access to mass media in this study was not related to diverse foods, this could be due to mothers accessing mass media but not accessing information related to diet and food diversity that can prevent stunting. In fact, several studies state that mothers who are exposed to mass media are positively related to an increase in children's dietary diversity⁴⁷⁻⁴⁹ and it can impact to the case of stunting.^{50,51} The mass media can provide information about optimal child feeding practices through increased awareness and good nutrition practices from mothers. Through newspapers and magazines or access to radio and television, it is more likely for mothers to get education about the

practice of PMBA. The mass media provide information that can increase the knowledge and behavior of mothers regarding feeding practices and child health.⁵²⁻⁵⁴ Mothers who live in urban areas have greater access to information related to nutrition obtained through various mass media so that this information allows urban mothers to properly feed their children compared to mothers in rural areas.¹⁴ Likewise, mothers who are respondents in this study who live in urban areas, most of them have affordability to mass media, access to education and access to health services.

Conclusion

Based on the results of multivariate analysis, it was found that maternal education and food availability had a significant relationship with food diversity. Mother's education has the greatest influence or is the most dominant risk factor for food diversity in infants on the outskirts of the Musi River, Palembang. Mothers of toddlers should increase knowledge about food diversity which can be done through social media. Food provided at home does not have to be expensive, mothers can buy cheap but varied food. to meet nutritional needs so as to overcome stunting in toddlers.

Acknowledgment

Acknowledgments to the Institute for Research and Community Service (LPPM) and Universitas Sriwijaya for supporting this research.

Funding

The research/publication of this article was funded by DIPA of Public Service Agency of Universitas Sriwijaya 2021. SP DIPA-023.17.2.677515 /2021, On November 23, 2020. In accordance with the Rector's Decree Number: 0010/UN9/ SK.LP2M.PT/2021, On April 28, 2021.

Conflict of Interest

There is no conflict of interest in this study.

References

1. World Health Organization. The WHO Child Growth Standards.
2. UNICEF, WHO WB. Levels and trends in child malnutrition: key findings of the 2020 Edition of the Joint Child Malnutrition Estimates. Geneva World Heal Organ. 2020;
3. Saputri RA, Tumangger J. Hulu-hilir penanggulangan stunting di Indonesia. J Polit Issues. 2019;1(1): 1–9.
4. Pusdatin. Situasi Balita Pendek (Stunting) di Indonesia. Vol. Semester 1, Buletin Jendela Data dan informasi Kesehatan. Kementerian Kesehatan Republik Indonesia; 2018.

5. Riskesdas. Riset Kesehatan Dasar (Riskesdas 2013). Jakarta: Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI: Kementerian Kesehatan RI; 2013.
6. PSG. The 2017 Indonesia Nutritional Status Monitoring (Pemantauan Status Gizi 2017). Directorate of Community Nutrition of The Ministry of Health of The Republic of Indonesia; 2017.
7. Sudfeld CR, Charles McCoy D, Danaei G, Fink G, Ezzati M, Andrews KG, et al. Linear growth and child development in low-and middle-income countries: a meta-analysis. *Pediatrics*. 2015;135(5): e1266–75.
8. Poh BK, Rojroonwasinkul N, Le Nyugen BK, Budiman B, Ng LO, Soonthorndhada K, et al. Relationship between anthropometric indicators and cognitive performance in Southeast Asian school-aged children. *Br J Nutr*. 2013;110(S3): S57–64.
9. Shrimpton R, Rokx C. The double burden of malnutrition: a review of global evidence. 2012;
10. RI K. Laporan Provinsi Sumatera Selatan RISKESDAS 2018. Balitbangkes Kemenkes RI. 2019;
11. De Onis M, Branca F. Childhood stunting: a global perspective. *Matern Child Nutr*. 2016;12: 12–26.
12. Smetanina N, Albaviciute E, Babinska V, Karinauskiene L, Albertsson-Wikland K, Petrauskiene A, et al. Prevalence of overweight/obesity in relation to dietary habits and lifestyle among 7-17 years old children and adolescents in Lithuania Health behavior, health promotion and society. *BMC Public Health*. 2015;15(1): 1–9.
13. Mahmudiono T, Sumarmi S, Rosenkranz RR. Household dietary diversity and child stunting in East Java, Indonesia. *Asia Pac J Clin Nutr*. 2017;26(2): 317–25.
14. Motbainor A, Worku A, Kumie A. Stunting is associated with food diversity while wasting with food insecurity among underfive children in East and West Gojjam Zones of Amhara Region, Ethiopia. *PLoS One*. 2015;10(8): e0133542.
15. Noor Prastia T, Listyandini R. Keragaman Pangan Berhubungan Dengan Stunting Pada Anak Usia 6-24 Bulan. *Hearty*. 2020;8(1): 33–41.
16. Wantina M, Rahayu LS, Yuliana I. Keragaman konsumsi pangan sebagai faktor risiko stunting pada balita usia 6-24 bulan. *ARGIPA (Arsip Gizi dan Pangan)*. 2017;2(2): 89–96.
17. Wirawan NN, Rahmawati W. Ketersediaan dan Keragaman Pangan serta Tingkat Ekonomi sebagai Prediktor Status Gizi Balita (The Availability and Diversification of Food as Well as Economic Status as the Predictor of Nutritional Status of Children Under 5 Years Old). *Indones J Hum Nutr*. 2016;3(1): 80–90.
18. Utami NH, Mubasyiroh R. Keragaman Makanan Dan Hubungannya Dengan Status Gizi Balita: Analisis Survei Konsumsi Makanan Individu (Skmi). *Gizi Indones*. 2020;43(1): 37–

- 48.
19. Darapheak C, Takano T, Kizuki M, Nakamura K, Seino K. Consumption of animal source foods and dietary diversity reduce stunting in children in Cambodia. *Int Arch Med*. 2013;6(1): 1–11.
 20. Zeleke BM, Rahman A. Prevalence and determinants of chronic malnutrition among under-5 children in Ethiopia. *Int J Child Heal Nutr*. 2013;2(3): 230–6.
 21. Kennedy G, Ballard T, Dop MC. Guidelines for measuring household and individual diet diversity. Food Agric Organ United Nations <http://www.fao.org/3/a-i1983e.pdf>. 2013;
 22. Firdausi A, Khomsan A, Rahman PH. Hubungan Penggunaan Instagram dengan Pengetahuan Gizi, Perilaku Makan, Aktivitas Fisik, dan Status Gizi Mahasiswa IPB. *J Ilmu Gizi dan Diet*. 2022;1(1): 16–24.
 23. Dinas Kesehatan Kota Palembang. Buku Profil Kesehatan Kota Palembang Tahun 2019. 2020;
 24. Ronoh AK, Were GM, Waku-Wamunga F, Wamunga JB. Food consumption patterns among pre-school children 3-5 years old in Mateka, Western Kenya. *Food Nutr Sci*. 2017;8(08): 801.
 25. UMK Palembang. Keputusan Gubernur Sumatera Selatan No. 700/KPTS/DISNAKERTRANS/2020 Tentang Upah Minimum Kota Palembang Tahun 2021. 2020;
 26. Aryati NB, Hanim D, Sulaeman ES. hubungan ketersediaan pangan keluarga miskin, asupan protein, dan zink dengan pertumbuhan anak umur 12-24 bulan pada siklus 1000 hari pertama kehidupan. *Media Gizi Mikro Indones*. 2018;9(2): 99–112.
 27. TY H, M K. Dietary Diversity Score: A Measure of Nutritional Adequacy or an Indicator of Healthy Diet? *J Nutr Heal Sci*. 2016;3(3): 15–7.
 28. BPS. Kecamatan Gandus Dalam Angka. Kota Palembang. 2021;(Katalog : 1102001.1671011).
 29. BPS. Kecamatan Ilir Timur Tiga Dalam Angka. Kota Palembang. 2021;(Katalog: 1102001.1671062).
 30. Modjadji P, Molokwane D, Ukegbu PO. Dietary diversity and nutritional status of preschool children in North West Province, South Africa: A cross sectional study. *Children*. 2020;7(10): 174.
 31. Corsi DJ, Mejía-Guevara I, Subramanian S V. Risk factors for chronic undernutrition among children in India: Estimating relative importance, population attributable risk and fractions. *Soc Sci Med*. 2016;157: 165–85.
 32. Gassara G, Chen J. Household Food Insecurity, Dietary Diversity, and Stunting in Sub-Saharan Africa: A Systematic Review. *Nutrients*. 2021;13(12): 4401.

33. Amugsi DA, Mittelmark MB, Oduro A. Association between maternal and child dietary diversity: an analysis of the Ghana demographic and health survey. *PLoS One*. 2015;10(8): e0136748.
34. Menon P, Nguyen PH, Saha KK, Khaled A, Sanghvi T, Baker J, et al. Combining intensive counseling by frontline workers with a nationwide mass media campaign has large differential impacts on complementary feeding practices but not on child growth: results of a cluster-randomized program evaluation in Bangladesh. *J Nutr*. 2016;146(10): 2075–84.
35. Bhardwaj S, Misra A, Gulati S, Anoop S, Kamal VK, Pandey RM. A randomized controlled trial to evaluate the effects of high Protein Complete (IActo) VEgetaRian (PACER) diet in non-diabetic obese Asian Indians in North India. *Heliyon*. 2017;3(12): e00472.
36. Lestari W, Margawati A, Rahfiludin Z. Faktor risiko stunting pada anak umur 6-24 bulan di kecamatan Penanggalan kota Subulussalam provinsi Aceh. *J Gizi Indones (The Indones J Nutr)*. 2014;3(1): 37–45.
37. Paramashanti BA, Paratmanitya Y, Marsiswati M. Individual dietary diversity is strongly associated with stunting in infants and young children. *J Gizi Klin Indones*. 2017;14(1): 19–26.
38. Agrawal S, Kim R, Gausman J, Sharma S, Sankar R, Joe W, et al. Socio-economic patterning of food consumption and dietary diversity among Indian children: evidence from NFHS-4. *Eur J Clin Nutr*. 2019;73(10): 1361–72.
39. Codjoe SNA, Okutu D, Abu M. Urban Household Characteristics and Dietary Diversity: An Analysis of Food Security in Accra, Ghana. *Food Nutr Bull*. 2016;37(2): 202–18.
40. Harris-Fry H, Azad K, Kuddus A, Shaha S, Nahar B, Hossen M, et al. Socio-economic determinants of household food security and women's dietary diversity in rural Bangladesh: a cross-sectional study. *J Health Popul Nutr*. 2015;33: 2.
41. Mayén A-L, Marques-Vidal P, Paccaud F, Bovet P, Stringhini S. Socioeconomic determinants of dietary patterns in low- and middle-income countries: a systematic review. *Am J Clin Nutr*. 2014;100(6): 1520–31.
42. Prasetyaningtyas D, Nindya TS. Hubungan antara ketersediaan pangan dengan keragaman pangan rumah tangga buruh tani. *Media Gizi Indones*. 2017;12(2): 149–55.
43. Diana R, Khomsan A, Anwar F, Christianti DF, Kusuma R, Rachmayanti RD. Dietary quantity and diversity among anemic pregnant women in Madura Island, Indonesia. *J Nutr Metab*. 2019;2019.
44. Agize A, Jara D, Dejenu G. Level of knowledge and practice of mothers on minimum dietary diversity practices and associated factors for 6–23-month-old children in Adea Woreda, Oromia, Ethiopia. *Biomed Res Int*. 2017;2017.
45. Taruvinga A, Muchenje V, Mushunje A. Determinants of rural household dietary diversity:

- The case of Amatole and Nyandeni districts, South Africa. *Int J Dev Sustain.* 2013;2(4): 2233–47.
46. Azra ALZ, Arifin HS, Astawan M, Arifin NHS. Analisis karakteristik pekarangan dalam mendukung penganekaragaman pangan keluarga di Kabupaten Bogor. *J Lanskap Indones.* 2014;6(2): 1–12.
 47. Blackstone S, Sanghvi T. A comparison of minimum dietary diversity in Bangladesh in 2011 and 2014. *Matern Child Nutr.* 2018;14(4): e12609.
 48. Beyene M, Worku AG, Wassie MM. Dietary diversity, meal frequency and associated factors among infant and young children in Northwest Ethiopia: a cross-sectional study. *BMC Public Health.* 2015;15(1): 1–9.
 49. Eshete T, Kumera G, Bazezew Y, Mihretie A, Marie T. Determinants of inadequate minimum dietary diversity among children aged 6–23 months in Ethiopia: secondary data analysis from Ethiopian Demographic and Health Survey 2016. *Agric Food Secur.* 2018;7(1): 1–8.
 50. Klinglmair M, Thomsen M. Using food waste in organic fertilizer: Modelling biogenic carbon sequestration with associated nutrient and micropollutant loads. *Sustain.* 2020;12(18).
 51. Astuti NI, Martanti LE, Ariyanti I. The Maternal Nutrition and Knowledge Level in Stunting Children. *J Midwifery Sci Basic Appl Res.* 2020;2(2): 33–7.
 52. Piwoz EG, Huffman SL. The impact of marketing of breast-milk substitutes on WHO-recommended breastfeeding practices. *Food Nutr Bull.* 2015;36(4): 373–86.
 53. Mashreky SR, Rahman F, Rahman A, Talab A, Rahman Z. Role of mass media in increasing knowledge and practices of mothers on IYCF: findings from a community trial in rural Bangladesh. *South East Asia J Public Heal.* 2015;5(1): 18–24.
 54. Nguyen PH, Kim SS, Nguyen TT, Hajeebhoy N, Tran LM, Alayon S, et al. Exposure to mass media and interpersonal counseling has additive effects on exclusive breastfeeding and its psychosocial determinants among Vietnamese mothers. *Matern Child Nutr.* 2016;12(4): 713–25.

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