

RELATIONSHIP OF PROPORTIONS MINIMUM ACCEPTABLE DIET (MAD) WITH THE PREVALENCE OF STUNTING, WASTING, AND UNDERWEIGHT IN CHILDREN 0-23 MONTHS

Arzerin Dera Valencia^{1*}, Demsa Simbolon¹, Klarissya Shanris¹, Nyi Ajeng Suci Oktarina¹,
Radhya Siti Aulia¹, Sherly Martcela¹, Siska Dwi Handayani¹, Umi Athiyyah¹

¹Departement of Nutrition, Politeknik Kesehatan Kemenkes Bengkulu, Bengkulu, Indonesia

*Coressponding: arzerinderavalencia0104@gmail.com

ABSTRACT

Background: Stunting, wasting, and underweight in children under two years of age are serious health problems in many countries, including Indonesia. Adequate nutrition in the first two years of life is essential to prevent growth and development disorders. A minimum acceptable diet (MAD) can reduce the prevalence of nutritional problems in children, but the provision of MAD in Indonesia is often not in accordance with recommendations. This study aims to analyze the relationship between the proportion of MAD with the prevalence of stunting, wasting, and underweight in children aged 0-23 months in Indonesia. **Method:** The study used a cross-sectional design with aggregate data from 38 provinces from the 2023 Indonesian Health Survey (IHS).

Results: The independent variables analyzed included five MAD indicators, namely food diversity, meal frequency, milk provision, minimal diet accepted, and animal protein consumption. The dependent variables were the prevalence of stunting, wasting, and underweight, which were measured using anthropometric indicators (BAZ, HAZ, and WAZ).

Conclusion: The results of this study can be the basis for formulating health policies to improve child feeding patterns and reduce the prevalence of stunting, wasting, and underweight in Indonesia.

Keywords: Minimum Acceptable Diet (MAD), Nutritional Status

INTRODUCTION

Nutritional problems in Indonesia are still a major challenge, especially in terms of stunting, wasting, and underweight in toddlers. Wasting, or a condition of low body weight compared to height, is an indicator of acute malnutrition that increases the risk of child death by 11.6 times compared to children with normal nutritional status. Based on Riskesdas 2018 data, the prevalence of wasting in Indonesia reached 10.2%, although it has decreased slightly compared to previous years. Stunting, as one of the main indicators, has been identified by WHO as a significant obstacle to human development, with a global prevalence of around 162 million toddlers. This problem is not only centered on inadequate nutritional intake but is also influenced by inappropriate

feeding practices, such as low food diversity and minimal meal frequency in children aged 6-23 months (Febriati et al., 2024).

Underweight, which is low weight compared to age, shows the combined impact of wasting and stunting. In 2018, the prevalence of underweight reached 17.7% among Indonesian toddlers. These two conditions not only pose a risk to children's health and development, but also impact future productivity, worsen the cycle of poverty, and reduce the quality of human resources.

One of the causes of nutritional problems is inadequate intake of nutrients obtained from food. Feeding practices for children are very important to pay attention to. This is because feeding practices will directly affect health, development, and nutritional status and also

have an impact on the survival of children (Ministry of Health of the Republic of Indonesia, 2018; Trisnawati et al., 2016). Feeding practices for children can be seen from the quality of food provided by parents, especially mothers and/or caregivers, which are reflected in several indicators, namely minimum dietary diversity (MDD), minimum meal frequency (MMF), minimum frequency of milk feeding for children who are not breastfed or Minimum Milk Feeding Frequency for non-breastfed children (MMFF), and minimum acceptable diet (MAD) (WHO & UNICEF, 2010) (Yudianti et al., 2024) .

The low achievement rate of MAD in Indonesia is related to a number of factors including family socio-economic factors, family welfare level, number of children, mother's knowledge level, exposure to media, parent's occupation, and others. One of the factors that influences MAD in children that needs to be highlighted is the mother's nutritional factor (Putra et al., 2022) . Based on Marshall's research (2022), it is known that the amount and diversity of food consumed by mothers before and during pregnancy and breastfeeding affect the health of mothers and children. The low achievement of the MAD indicator and socio-economic factors worsen it, making it a top priority in the national health development plan. Research related to feeding patterns and the factors that influence them is needed to develop strategies to reduce nutritional problems effectively (Sirajuddin et al., 2023).

This study aimed to analyze the relationship between the proportion of MAD and the prevalence of stunting, wasting, and underweight in children aged 0-23 months.

METHOD

This study used a cross-sectional design to determine the relationship between Minimum Acceptable Diet (MAD) and the Prevalence of Stunting, Wasting, and

Underweight in Children Aged 0-23 Months using data from the 2023 Indonesian Health Survey (IHS). The unit of analysis in this study was aggregate data in 38 provinces in Indonesia with the population in this study covering all children aged 0-23 months in Indonesia recorded in the 2023 IHS. Data collection was carried out from June to August 2023. The population in this study were all children aged 0-23 months recorded at the IHS Regency Posyandu in 2023. The samples taken were children who met the inclusion and exclusion criteria of the study. (Thobias & Djokosujono, 2021)

The independent variable in this study is the Minimum Acceptable Diet (MAD). The description of the Minimum Acceptable Diet (MAD) in children aged 6-23 months is seen through five indicators, namely: minimum dietary diversity (*MDD*), minimum meal frequency (*MMF*), *Minimum Milk Feeding Frequency for Non-Breastfed Children (MMFF)*, minimum acceptable diet (*MAD*) and consumption of animal protein, namely meat/fish/eggs (*Egg And/Or Flesh Food/EFF*) (UNICEF, 2021) .

Dietary diversity is an approach to assessing the adequacy of dietary diversity in foods consumed within 24 hours before data collection. A child aged 6-23 months meets the minimum dietary diversity requirement if they consume ≥ 5 food groups (UNICEF, 2021) (WHO2023). The five food groups must come from the following 8 food groups: Breast milk (ASI), Cereal, tuber and processed product groups, Group of legumes, nuts and processed products, Group of processed animal milk products, Meat, poultry, fish, seafood and processed products groups, Egg group and processed products, Groups of vegetables (fruit, sweet potatoes which are rich in vitamin A and their processed products), and Groups of other vegetables and fruit and their processed products.

The Minimum Food Diversity (MFD) Proportion for children aged 6-23 months is

calculated by dividing the number of children aged 6-23 months who consumed 5 or more food groups from 8 food groups in the previous 24 hours by the number of children aged 6-23 months $\times 100\%$. Minimum meal frequency (MMF) in children aged 6-23 months is a description of the number of main meals and snacks given to toddlers who consume solid, semi-solid, or soft foods (including milk for children who are not breastfed) within 24 hours before data collection. The minimum meal frequency in children who are breastfed, aged 6-8 months is ≥ 2 times/day while those aged 9-23 months are ≥ 3 times/day. While the minimum meal frequency in children who are not breastfed at the age of 6-23 months is ≥ 4 times/day. The proportion of Minimum Meal Frequency (MMF) is calculated by dividing the number of children aged 6-23 months who consume food according to the frequency according to age by the number of children aged 6-23 months $\times 100\%$.

Minimum Milk Feeding Frequency for non-breastfed children (MMFF) is a description of the frequency of milk feeding in toddlers who are not breastfed within 24 hours before data collection. The minimum frequency of milk feeding in children aged 6-23 months who are not breastfed is ≥ 2 times/day. The proportion of MMFF is calculated by dividing the number of children aged 6-23 months who are not breastfed and receive milk according to recommendations (≥ 2 times) by the number of children aged 6-23 months who are not breastfed $\times 100\%$.

Minimum Acceptable Diet (MAD) is a minimally acceptable diet that is a description of the provision of food (amount and type) to children aged 6-23 months which is a composite index of the MDD, MMF, and MMFF indicators (in children who are not breastfed) in the amount according to recommendations. The proportion of MAD in breastfed children is calculated by dividing the number of children aged 6-23 months who achieve MDD and MMF according to

recommendations by the number of children aged 6-23 months. The proportion of MAD in children who are not breastfed is calculated by dividing the number of children aged 6-23 months who achieve MDD, MMF, and MMFF according to recommendations by the number of children aged 6-23 months $\times 100\%$.

Consumption of Animal Protein *Egg And/Or Flesh Food* (EFF) in children aged 6-23 months is a description of the consumption of eggs and/or meat food in children aged 6-23 months within 24 hours prior to data collection. The EFF proportion is calculated using the formula of dividing the number of children aged 6-23 months who consumed eggs and/or meat and/or fish in the previous 24 hours by the number of children aged 6-23 months $\times 100\%$.

The dependent variables are the prevalence of stunting, wasting, and underweight. The nutritional status of toddlers (under two years old) is measured based on age, body weight (BW), and body length (PB). The weight of toddlers is weighed using a digital scale with a precision of 0.05 kg, while body length is measured using a body length measuring instrument with a precision of 0.1 cm. The variables of BW and BW of toddlers are presented in the form of three anthropometric indices, namely WAZ, HAZ, and WHZ. To assess the nutritional status of toddlers, the weight and length figures of each toddler are converted into standardized values (*Z-score*) using the WHO 2005 toddler anthropometric standards. Furthermore, based on the *Z-score value* of each indicator, the nutritional status of toddlers is determined.

Classification of nutritional status based on WAZ index, *Severely Underweight* if *Z-score* < -3.0 , and underweight if *Z-score* ≥ -3.0 to *Z-score* < -2.0 . The total prevalence of *underweight* is the sum of the prevalence of *underweight* and *severely underweight*. The prevalence of Underweight Toddlers is the division of the Number of Severely Underweight Toddlers + underweight by the Number of Toddlers Weighed Weight $\times 100\%$.

Classification of nutritional status based on HAZ indicators, *Severely Stunting* if $Z\text{-score} < -3.0$ and stunting if $Z\text{-score} \geq -3.0$ to $Z\text{-score} < -2.0$. The total prevalence of stunting is the sum of the prevalence of stunting and *severely stunting*. The prevalence of stunting in toddlers is the division of the Number of Toddlers *Severely Stunting* + stunting by the Number of Toddlers measured by Body length x 100%. Classification of nutritional status based on WHZ indicators, *Severely Wasting* if $Z\text{-score} < -3.0$ and wasting if $Z\text{-score} \geq -3.0$ to $Z\text{-score} < -2.0$. The total prevalence of wasting is the sum of the prevalence of wasting and *severely wasting*. The prevalence of stunting in toddlers is the division of the Number of Toddlers *with severe wasting* + Wasting by the Number of Toddlers Measured by Weight and length x 100%.

Data were collected through face-to-face interview techniques using a validated structured questionnaire. This questionnaire includes information on child feeding (eating frequency and food diversity). Nutritional status data were collected by measuring body length (for children aged 0-23 months) using a legboard. Data collection was carried out by trained enumerators with the criteria of D3/Bachelor of Applied Nutrition graduates and having a competency certificate in anthropometric measurements. Enumerators were intensively trained in interview techniques, anthropometric measurements, and ethical research procedures. The supervision process was carried out by researchers to ensure that data collection went well.

The data processing process includes checking the 2023 IHS report, coding, and compiling data. Univariate analysis was conducted to describe the size of the distribution of data on the proportion of weighing and the prevalence of wasting and severe wasting (minimum, maximum, mean, and standard deviation). Bivariate analysis was conducted to identify the relationship between the proportion of weighing and the prevalence

of *severe wasting* and *wasting* in children aged 0-23 months in Indonesia, using the Pearson correlation test. The study participants were given an explanation of the purpose and procedures of the study and their right to participate voluntarily, and they gave written consent before the data were collected. The Indonesian Health Survey (IHS) has obtained an ethics clearance letter from the National Health Research and Development Ethics Commission (KEPPKN) with the number HK.01.07/MENKES/156/2023.

RESULT AND DISCUSSION

Based on Table 1 shows the highest distribution of the proportion of the minimum diet (MAD) in the Java and Bali Region (47.5%) and the lowest in the Papua Region (21.5%). The highest non-conforming MAD in the Papua Region (78.4%) and the lowest in the Java and Bali Region (52.4%). The proportion of the appropriate MAD in Indonesia is between 9.4%-64.1% with an average of 34.9%. The proportion of the inappropriate MAD in Indonesia is between 35.9%-90.6% with an average of 65%.

Child nutrition problems, especially stunting, wasting, and underweight, are serious challenges faced by many countries, including Indonesia. In this study, the relationship between the proportion of MAD and the prevalence of stunting, wasting, and underweight in children aged 0-23 months in Indonesia was analyzed based on data from the 2023 Indonesian Health Survey (IHS).

Table 2 shows that the highest prevalence of Stunting is in the Papua Region (28.1%) and the lowest in the Java and Bali Region (16.3%). The highest prevalence of Wasting is in the Maluku Region (17.8%) and the lowest in the Java and Bali Region (7.9%). The highest prevalence of Underweight is in the Maluku Region (21.3%) and the lowest in the Java and Bali Region (11.3%).

Table 1. Distribution of Minimum Diet Proportion (MAD) in Indonesian Toddlers in 2023

Regional	MAD Compliant			Not compliant with MAD Standards		
	Min	Max	$\bar{X} \pm SD$	Min	Max	$\bar{X} \pm SD$
Sumatra	30.0	46.3	37.1 $\pm$ 4.8	53.7	70.0	62.8 $\pm$ 4.8
Java - Bali	39.0	64.1	47.5 $\pm$ 8.9	35.9	61.0	52.4 $\pm$ 8.9
Southeast	26.0	39.9	32.9 $\pm$ 9.8	60.1	74.0	67.0 $\pm$ 9.8
Kalimantan	30.2	40.8	37.0 $\pm$ 4.0	59.2	69.8	62.9 $\pm$ 4.0
Sulawesi	27.2	41.2	30.6 $\pm$ 5.2	58.8	72.8	69.4 $\pm$ 5.2
Maluku	26.6	29.7	28.1 $\pm$ 2.1	70.3	73.4	71.8 $\pm$ 2.1
Papua	9.4	36.1	21.5 $\pm$ 10.1	63.9	90.6	78.4 $\pm$ 10.1
Indonesia	9.4	64.1	34.9 $\pm$ 10.2	35.9	90.6	65.0 $\pm$ 10.2

The prevalence of Stunting in Indonesia is between 7.0%-36.6% with an average of 20.8%. The prevalence of Wasting in Indonesia is between 3.7%-20.4% with an average of 11.3%. The prevalence of Underweight in Indonesia is between 4.6%-24.8% with an

average of 15.5%. The results of the study found that there were variations in the prevalence of stunting, wasting, and underweight of children aged 6-23 months in various regions of Indonesia.

Table 2. Distribution of Prevalence of Stunting, Wasting, and Underweight in Indonesian Toddlers in 2023

Regional	Prevalence of Stunting			Prevalence of Wasting			Prevalence of Underweight		
	Min	Max	$\bar{X} \pm SD$	Min	Max	$\bar{X} \pm SD$	Min	Max	$\bar{X} \pm SD$
Sumatra	12.4	24.8	17.1 $\pm$ 3.8	6.5	14.8	9.4 $\pm$ 2.5	7.9	19.0	12.1 $\pm$ 3.4
Java - Bali	7.0	21.1	16.3 $\pm$ 4.4	3.7	12.8	7.9 $\pm$ 2.9	4.6	15.4	11.3 $\pm$ 3.6
Southeast	19.9	31.0	25.4 $\pm$ 7.8	7.4	14.8	11.1 $\pm$ 5.2	15.5	24.8	20.1 $\pm$ 6.5
Kalimantan	14.7	23.5	20.1 $\pm$ 3.2	9.6	13.9	11.7 $\pm$ 2.0	13.0	19.2	16.6 $\pm$ 2.5
Sulawesi	21.6	25.2	23.3 $\pm$ 1.4	9.4	14.2	11.9 $\pm$ 1.6	14.7	20.7	18.0 $\pm$ 2.2
Maluku	21.4	22.8	22.1 $\pm$ 0.9	17.7	17.9	17.8 $\pm$ 0.1	20.3	22.3	21.3 $\pm$ 1.4
Papua	21.8	36.6	28.1 $\pm$ 6.2	12.3	20.4	15.3 $\pm$ 2.8	9.5	24.2	19.3 $\pm$ 5.2
Indonesia	7.0	36.6	20.8 $\pm$ 5.8	3.7	20.4	11.3 $\pm$ 3.6	4.6	24.8	15.5 $\pm$ 4.9

The results of the data analysis in Table 3 show the higher the MAD correlation coefficient, the lower the prevalence of stunting, wasting, and underweight prevalence,

and vice versa, the lower the MAD coefficient, the higher the prevalence of stunting, wasting, and underweight prevalence.

Table 3. Proportion of Minimal Diet (MAD) with Prevalence of Stunting, Wasting, and Underweight in Children Aged 0-23 Months

Minimum Acceptable Diet (MAD)	Prevalence of Stunting	Prevalence of Wasting	Prevalence of Underweight
MAD Compliant			
Beta	-0.342	-0.186	-0.198
Constant	32.715	17.792	22.459
Correlation coefficient (r)	0.610	0.524	0.417
p-value	0.001	0.001	0.001

The results of this study demonstrate a significant relationship between the proportion of the Minimum Acceptable Diet (MAD) and the prevalence of stunting, wasting, and underweight among children aged 0-23 months.

The p-values obtained for the associations between MAD and these three indicators of malnutrition were all below 0.05, indicating statistical significance ($p < 0.05$). This suggests that a higher proportion of MAD compliance is

inversely related to the prevalence of stunting, wasting, and underweight. Specifically, as the proportion of children receiving an adequate diet increases, the rates of malnutrition indicators such as stunting, wasting, and underweight decrease.

The negative relationship between MAD compliance and the prevalence of these malnutrition indicators may be explained by the fact that meeting the MAD standards ensures that children receive the required nutrients to support healthy growth and development. MAD is a measure that reflects the adequacy of both the quantity and diversity of food provided to young children, as well as the frequency of feeding. As such, children who receive an adequate diet are less likely to experience growth stunting, underweight, and wasting, which are often direct consequences of inadequate nutrition during early childhood (Black et al., 2013).

In light of these findings, it is evident that improving the nutritional status of young children should be a priority for public health programs aimed at reducing malnutrition. Increased adherence to MAD standards can significantly contribute to reducing the prevalence of stunting, wasting, and underweight in Indonesia, and potentially other countries facing similar challenges. By prioritizing better nutritional practices, we can ensure that children have the opportunity to grow, develop, and thrive, ultimately fostering a healthier, more prosperous future for both individuals and the nation. (Black et al., 2013).

This study has several limitations that need to be considered. First, the use of a cross-sectional design limits the study's ability to identify a causal relationship between the MAD and the prevalence of stunting, wasting, and underweight in children. Because the data were collected at only one point in time, this study can only show an association, not a causal relationship. Second, although using data from the 2023 Indonesian Health Survey (IHS), which includes data on 38 provinces, this study

cannot fully control for variability or differences in social, economic, and health access conditions between regions, which can affect the MAD and children's nutritional status. In addition, although the use of MAD indicators, such as food diversity, meal frequency, and milk consumption provides a clear picture, the possibility of measurement bias or reporting by mothers regarding the provision of the Minimum Acceptable Diet (MAD), can also affect the results of the study.

This study has significant advantages. One of them is the use of data sourced from the 2023 Indonesian Health Survey (IHS), which includes a large sample with national representation, allowing for the generalization of research results throughout Indonesia. In addition, data collection was carried out by trained enumerators who have competency certification in anthropometric measurements, thereby increasing the accuracy and reliability of the data obtained. This study also uses standardized indicators from WHO to assess the MAD, which provides a strong basis for analysis and allows comparisons between similar studies. With a comprehensive approach and systematic data processing procedures, this study can provide important insights into the relationship between MAD, and the prevalence of nutritional problems in children aged 0-23 months in Indonesia.

CONCLUSION

This study found that the proportion of the Minimum Acceptable Diet (MAD) has a significant relationship with the prevalence of stunting, wasting, and underweight in children aged 0-23 months in Indonesia. Children who receive a diet that meets MAD standards tend to have better nutritional status and a lower risk of malnutrition. However, there are still many children who do not meet MAD standards, especially in areas with limited access to nutritious food. Therefore, more targeted efforts are needed to improve the fulfillment of

children's nutrition to reduce stunting, wasting, and underweight rates in Indonesia.

The government needs to strengthen the availability and affordability of nutritious food in all regions, especially in areas with high levels of malnutrition. Increased socialization and education to parents, especially mothers, regarding the importance of a diet in accordance with the MAD to prevent stunting, wasting, and underweight. It is necessary to optimize the Supplementary Feeding (SF) program which is more targeted for children aged 0-23 months to increase access to better nutrition. Providing training for health workers, Posyandu cadres, and parents in providing nutritious food following MAD guidelines. The government needs to strengthen the monitoring and evaluation system for children's nutritional status periodically to assess the effectiveness of the interventions that have been carried out. Cross-sector collaboration is needed, including government, private sector, and community, to improve policies that support the provision of nutritious food and improve the nutritional status of early childhood. Implementation of these recommendations is expected to help reduce the prevalence of stunting, wasting, and underweight, as well as improve the nutritional quality of children aged 0-23 months in Indonesia.

CONFLICT OF INTEREST

All authors declared that there was no conflict of interest.

REFERENCES

Anjani, Ha, Nuryanto, N., Wijayanti, Hs, & Purwanti, R. (2023). Differences In Patterns Of Complementary Feeding Between Underweight And Normal Weight Children Aged 6-12 Months In The Gunung Pati Health Center Work Area, Semarang City. *Journal*

Of Nutrition College, 12 (1), 15–26.
<https://doi.org/10.14710/Jnc.V12i1.33303>

Atmaka, Dr, Wulandari, F., Dorta, Nf, Rachmah, Q., Setyaningtyas, Sw, Rifqi, Ma, Diana, R., Fitria, Al, Pratiwi, Aa, Simangunsong, Tt, Haryana, Nr, Nastiti, An, & Agustin, Am (2024). The Association Between Maternal Dietary Diversity And Minimum Acceptance Diet On Toddlers To Prevent Undernutrition In Developing Countries: A Systematic Review. *Amerta Nutrition*, 8 (1), 161–170.
<https://doi.org/10.20473/Amnt.V8i1.2024.161-170>

Aurellia, Na, Ramadhani, Aa, Pamungkas, Ka, & Kartiasih, F. (2023). Determinants Of Wasting Incidence In Toddlers. *National Seminar On Official Statistics*, 2023 (1), 167–178.
<https://doi.org/10.34123/Semnasoffstat.V2023i1.1901>

Basri, H., & Hadju, V. (2020). Breastfeeding And Complementary Food On Nutritional Status Of Infants In Indonesia. *Enfermeria Clinica*, 30, 191–195.
<https://doi.org/10.1016/J.Enfcli.2019.10.067>

Black, RE, Victora, CG, Walker, S.P., Bhutta, ZA, Christian, P., De Onis, M., Ezzati, M., Grantham-Mcgregor, S., Katz, J., Martorell, R., & Uauy, R. (2013). Maternal And Child Undernutrition And Overweight In Low-Income And Middle-Income Countries. *The Lancet*, 382 (9890), 427–451.
[https://doi.org/10.1016/S0140-6736\(13\)60937-X](https://doi.org/10.1016/S0140-6736(13)60937-X)

Campos, Ap, Vilar-Compte, M., & Hawkins, Ss (2021). Association Between Breastfeeding And Child Overweight In Mexico. *Food And Nutrition*

- Bulletin*, 42 (3), 414–426.
<https://doi.org/10.1177/03795721211014778>
- Christian, AK, Afful-Dadzie, E., & Marquis, GS (2023). Infant And Young Child Feeding Practices Are Associated With Childhood Anemia And Stunting In Sub-Saharan Africa. *Bmc Nutrition*, 9 (1), 1–13.
<https://doi.org/10.1186/S40795-022-00667-9>
- Fadlina, A., Februhartanty, J., & Bardosono, S. (2021). Maternal Attributes And Child Minimum Acceptable Diet During Covid-19 Pandemic In Indonesia. *Indonesian Journal Of Human Nutrition*, 8 (2), 108–119.
<https://doi.org/10.21776/Ub.Ijhn.2021.008.02.2>
- Febrina, C & Mariyana, R. (2020). Real In Nursing Journal (Rnj). Research Of Education And Art Links In Nursing Journal, 3 (1), 1–10. Real In Nursing Journal (Rnj)%0aresearch Of Education And Art Link In Nursing Journal H
- Febriati, LD, Muflih, M., Khasana, TM, Widaryanti, R., Lin, V., & Alya, C. (2024). Saving Children From Stunting With Comprehensive Family Empowerment. *I-Com: Indonesian Community Journal*, 4 (3), 2071–2079.
<https://doi.org/10.33379/Icom.V4i3.5101>
- Ministry Of Health Of The Republic Of Indonesia. (2024). Indonesian Health Survey (IHS) In Figures. In Ministry Of Health Of The Republic Of Indonesia.
- Kurniati, Y., Jalaluddin, S., Oktorina, S., Mukhtar, N., & Rosdiana, R. (2022). Literature Review: The Role Of Games In Nutrition Education For Children In Indonesia. *Al Gizzai: Public Health Nutrition Journal*, 2 (2), 108–120.
<https://doi.org/10.24252/Algizzai.V2i2.26003>
- who, & unicef (2023). Mentoring And Strengthening Daycare Malnutrition As An Effort To Reduce Stunting In The Working Area Of The Sekaran Health Center. *Berdikari : Indonesian Community Service Journal*, 6 (1), 16–23.
<https://doi.org/10.11594/Bjpmi.06.01.02>
- Muchlis, N., Multazam, Am, & Purnawansyah. (2022). Early Warning Stunting Equipped With Case Studies And Stunting Measurement Indicators. <http://repository.umi.ac.id/1688/>
- Nasution, Ls, & Karim, Na (2024). Correlation Between Diet History And Nutritional Status Of Children Aged 24–59 Months In Tarumajaya, Bekasi In 2019. *Jurnal Nutrisi Dan Makanan*, 19 (2), 298–303.
<https://doi.org/10.25182/Jgp.2024.19.Supp.2.298-303>
- Putra, MGS, Dewi, M., Kustiyah, L., Mahmudiono, T., Yuniar, CT, & Helmyati, S. (2022). Factors That Influence The Minimum Acceptable Diet In Children Aged 6-23 Months In Indonesia. *Action: Aceh Nutrition Journal*, 7 (2), 156.
<https://doi.org/10.30867/Action.V7i2.766>
- Sihite, N. W., & Rotua, M. (2023). Training in making local food-based supplementary feeding for mothers of wasting toddlers. *Jurnal Abdimas BSI: Jurnal Pengabdian Kepada Masyarakat*, 6(2), 149-160.
<https://doi.org/10.31294/Jabdimas.V6i2.14671>
- Sirajuddin, Ipa, A., Astuti, T., & Desmarnita, U. (2023). Diversity And Acceptance Of Children's Food Affects Stunting In Stunting Locus Village, Enrekang

- Regency: Cross-Sectional Study. *Food Nutrition Media*, 30 (2), 126–137.
<https://doi.org/10.32382/Mgp.V30i2.277>
- Symon, D., Suryani, D., Dayanti, H., Loyal, A., & Hasan, T. (2024). Infant And Young Child Feeding (Iycf) Practices In Rural And Urban Regions Of Indonesia. *Advances In Public Health*, 2024.
<https://doi.org/10.1155/2024/6658959>
- Soedarsono, Am, & Sumarmi, S. (2021). Factors Influencing The Incidence Of Wasting In Toddlers In The Work Area Of The Simomulyo Health Center, Surabaya. *Media Nutrisi Kesmas*, 10 (2), 237.
<https://doi.org/10.20473/Mgk.V10i2.2021.237-245>
- Tello, B., Rivadeneira, Mf, Moncayo, Al, Buitrón, J., Astudillo, F., Estrella, A., & Torres, Al (2022). Breastfeeding, Feeding Practices And Stunting In Indigenous Ecuadorians Under 2 Years Of Age. *International Breastfeeding Journal*, 17 (1), 1–15.
<https://doi.org/10.1186/S13006-022-00461-0>
- Thobias, IA, & Djokosujono, K. (2021). Minimum Dietary Diversity As A Dominant Factor Of Stunting In Children Aged 6-23 Months In Kupang Regency. *Journal Of Public Health And Nutrition (Jkg)*, 3 (2), 136–143.
<https://doi.org/10.35451/Jkg.V3i2.592>
- Togatorop, Ve, Rahayuwati, L., Susanti, Rd, & Tan, Jy (2024). Stunting Predictors Among Children Aged 0-24 Months In Southeast Asia: A Scoping Review. *Revista Brasileira De Enfermagem*, 77 (2), 1–13.
<https://doi.org/10.1590/0034-7167-2022-0625>
- Unicef. (2016). From The First Making The Case For From The First.
- UNICEF. (2021). Indicators For Assessing Infant And Young Child Feeding Practices. In *World Health Organization: Vol. WHA55 A55/*.
- WHO & UNICEF. (2023). Levels And Trends In Child Malnutrition: Key Findings Of The 2023 Edition.
- Yeni Setiani, Nabila Rachmah, & Indra Purnama. (2023). Visualization Of Child Malnutrition Data In Asia Using Looker Studio And Data Analysis With Anova Method. *Scientific Journal Of Information Systems And Computer Science*, 3(3), 188–212.
<https://doi.org/10.55606/Juisik.V3i3.701>
- Yolanda, Sg, & Ismarwati, I. (2024). The Influence Of Feeding Practice On The Risk Of Stunting In Toddler: A Scoping Review. *Jurnal Ilmu Kesehatan Masyarakat*, 15 (2), 149–166.
<https://doi.org/10.26553/Jikm.2024.15.2.149-166>
- Yudianti, Hapzah, Nurliah, & Nirbaya. (2024). Strengthening The Practice Of Feeding Infants And Children (PMBA) Through Simulation And Demonstration Of Providing MP-ASI. *Abdimas Universal*, 6 (1), 27–32. <http://abdimasuniversal.uniba-bpn.ac.id/index.php/abdimasuniversal>
<https://doi.org/10.36277/Abdimasuniversal.V6i1.372>
- Zebadia, E., Sajida, Jh, & Mahmudiono, T. (2024). Relationship Between Wealth Index And Minimum Acceptable Diet (Mad) In Children Aged 6-11 Months Based On Indonesian Demographic And Health Survey Data In 2017. *Tambusai Health Journal*, 5(2), 5464-5473.