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Local Food-Based Family Empowerment to Address Childhood Stunting: Evidence from a Quasi-Experimental Study

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Abstract

Empowering family to utilize locally sourced food is a strategy for reducing stunting in children. An underutilized native food in Indonesia, which is easily accessible, is the Moringa leaf. This study aimed to assess the impact of family empowerment in utilizing locally sourced moringa leaf nuggets to address the nutritional requirements of stunted children. **Methods:** This study used a quasi-experimental pretest–posttest design with a control group. Participants were 40 stunted children selected through purposive sampling. Family empowerment was implemented over three months through four stages: knowledge acquisition, self-efficacy development, training, and evaluation. The primary outcome was the adequacy of Recommended Dietary Allowances (RDA), assessed using food records and analyzed with Nutrition Survey Software. Secondary outcomes included family knowledge, attitudes, and psychomotor skills related to stunting prevention. **Data** were analyzed using dependent and independent t-tests for RDA and non-parametric tests for secondary outcomes. **Results:** The intervention group's pretest and post-test findings revealed a significant rise in the RDA value but there is no significant rise in the RDA value in control

group. After conducting a post-test comparison between the intervention and control groups, it was found that there was no significant difference in RDA. The results for secondary outcomes show an increase in knowledge and psychomotor but no improvement in the respondents' attitudes. Conclusion: The intervention group's pretest and post-test findings revealed a significant rise in the RDA value but there is no significant rise in the RDA value in control group. After conducting a post-test comparison between the intervention and control groups, it was found that there was no significant difference in RDA. The results for secondary outcomes show an increase in knowledge and psychomotor but no improvement in the respondents' attitudes

Keyword: Family strengthening, moringa leaves, Recommended Dietary Allowances (RDA), Stunting

INTRODUCTION

Stunting remains a significant global health issue affecting children under the age of five in many underdeveloped nations, including Indonesia. Stunting is characterized by a decelerated development rate in children due to prolonged inadequate nutrition, resulting in a z-score value below -2 standard deviations (SD) in the WHO growth standard table (Kementerian Kesehatan Republik Indonesia, 2018; World Health Organization, 2018). Stunting is a condition of delayed growth caused by chronic malnutrition throughout the first 1000 days of life, from birth to 23 months, resulting in reduced height in children (Kementerian Perencanaan dan Pembangunan Nasional/ Badan Perencanaan dan Pembangunan Nasional, 2018). The Indonesia Basic Health Research conducted in 2018 revealed that stunting in Indonesia is 30.8% (Kementerian Perencanaan dan Pembangunan Nasional/ Badan Perencanaan dan Pembangunan Nasional, 2018). The provinces with the highest frequency of stunting in Indonesia are West Sulawesi, with a rate of 23.1%, and East Nusa Tenggara, with a rate of 22.4%. The province of Yogyakarta has a stunting prevalence of 9.2%, with the highest rate observed in the Mountain South regency at 15.4% (Ditjen Bina Pembangunan Daerah - Kementerian Dalam Negeri, 2022). Stunting is caused by multiple factors that are interconnected with each other (Khoiriyah & Ismarwati, 2023). Children in underdeveloped nations are more likely to experience stunted growth because of low access to nutritious food and healthcare services (United Nations, 2020). Higher-income families have greater ease in accessing education, healthcare services, and adequate nutrition, resulting in improved child nutritional status and development (Huriah & Nurjannah, 2020). An important endeavor is to address the limits in accessing and obtaining essential nutrients directly at the household level, focusing on optimizing local food

resources (Saleh et al., 2021). Indonesia is abundant in local food options, including the Moringa leaf. The Moringa leaf is easily found in Yogyakarta, particularly in the Gunung Kidul Regency. The Gunung Kidul Regency possesses untapped potential in the form of Moringa leaves, which have yet to be fully utilized (Budiyono et al., 2022). Moringa leaves possess substantial nutrients, making them suitable for incorporation as a supplementary ingredient in different processed foods. This addition enhances the nutritional composition, particularly for children. Moreover, Moringa leaves have effectively addressed nutritional deficiencies prevalent in African nations—the study's authors conducted by Katmawanti et al. in 2021 (Katmawanti et al., 2021). The presence of saponin in Moringa leaves contributes to their unpleasant smell and bitter taste, which affects how children perceive and accept processed food products containing Moringa leaf extract (Indriasari et al., 2019). A popular Moringa leaf dish among children is nuggets (Hiden et al., 2022; Musa et al., 2022; Nurdin et al., 2022; Vidayanana et al., 2020; Z. Suhaemi et al., 2021). The family is primarily an institution for children and is a foundation for promoting healthy behavior among its members. It plays a crucial role in shaping the quality of individuals (Arief et al., 2018; Januarti et al., 2020). Empowering families is seen as a strategy to prevent stunting and enhance their capacity to maintain the health of all family members using the available resources (Indanah et al., 2022). Various international and national policies aim to address the issue of stunting. For example, The Global Nutrition Targets in 2025 set a goal to reduce stunting cases by 40%. The second Sustainable Development Goal (SDG) aims to eliminate all malnutrition and hunger worldwide by 2030. The National Intermediate Development Plan, 2020-2024, focuses on accelerating maternal deaths and stunting decline, hoping to reduce stunting cases by 14%. These policies emphasize the urgent need for comprehensive interventions to prevent stunting and improve the overall health of future generations. The researcher is interested in understanding the extent to which adding locally sourced leaf nuggets of Moringa, a processed product, to children's diets can significantly impact their nutritional intake and help avoid stunting. Researchers aim to enhance the nutritional intake of young children by providing them with Moringa, a local leafy food, teaching them about its utilization, and implementing a supplementary feeding program.

METHODS

The research design employed in this study is quasi-experimental, with a pretest-posttest with a control group approach. The population under research consists of stunted children in Pilangrejo Village, Nglipar, Gunungkidul, from November 2023 to January 2024. The study includes 40 respondents, with 20 respondents in the intervention group and 20 in the control group with purposive sampling technique. A sample was estimated using a formula to calculate significant data. Criteria for inclusion in the research include mothers with stunted children. Additionally, mothers who have good communication skills, reading and writing abilities and are willing to participate in the study from start to finish are also eligible. Exclusion criteria for research include having a stunted child with autism, having a stunted child with a history of infection within the past three months, having a stunted child with psychiatric disturbances, being a primary carer with a severe illness, being a mother or nanny with communication and reading difficulties, and having a child who either passed away or decided to stop participating during the study. The empowerment process for families consists of four essential steps: knowledge acquisition, self-efficacy

development, training, and evaluation. Stage knowledge involves imparting facts about stunting in children through lectures and discussion. Stage self-efficacy involves discussing and implementing problem-solving methods to address the issue of stunting in children while drawing upon the resources and support of one's family. Furthermore, the stage provides participants with training on effectively detecting stunting in children and preparing moringa leaf nuggets. The final stage is an assessment that measures the nutritional status of children and evaluates the effectiveness of interventions in preventing stunting. The children were administered 60 grams of Moringa leaf nuggets, equating to 3 pieces, three times a day for one month while closely monitored (Figure 1). Moringa leaf nuggets are produced by nutritionists who have secured food distribution permission from the Food and Drug Supervisory Agency in Indonesia and are certified as halal. The primary outcome of this research is the Recommended Dietary Allowances (RDA) for stunted children. RDA measurements utilize the food record instrument developed by the World Health Organisation (WHO). The mother must complete a dietary record for three months before and after the intervention. The food record data is inputted into the Nutrition Survey Software to calculate the RDA. The secondary outcome of this research was knowledge, attitude and psychomotor of mothers related to stunting prevention. Study the instrument using the "Stunting Prevention Module" by [Ns. Imam Akbar, S. Kep,](#) and [Dr. Titih](#)

Figure 1. Research Flow

Huriah. The research instruments to measure knowledge, attitude and psychomotor used the questionnaire from Huriah (2022). The participants in this study have already received an explanation about the research and have provided informed consent. Author submitted the Ethics Research to Muhammadiyah University of Yogyakarta's Health Research Commission with reference number 310/EC-KEPK FKIK UMY/XII/2023. RESULTS

Table 1. The respondents' description is based on the mother's age, the children's age, the child's order, and the number of children (n=40). Characteristics Respondent

Group Control

(n=20)

Group Intervention

(n=20)

P*

Min-Max

Mean±SD

Min-Max

Mean±SD

Age Mother (years)

24-49

33.60 ± 7.54

23-44

30.50 ± 7.13

0.095

Age child (months)

13-58

35.95 ± 14.29

7-53

33.15 ± 13.87

0.267

Child order

1-4

2.20 ± 1.06

1-4

1.65 ± 0.87

0.04*

The number of children

0-4

1.25 ± 1.12

0-4

0.70 ± 0.92

0.049*

Note: *P<0.05 based on independent t-test, primary data (2024)

Table 2. The Characteristics of respondents in the intervention and control groups based on parental occupation, parental education, exclusive breastfeeding status, immunization history, parent employment, and children's gender (n = 40).Respondents Characteristics

Control Group

(n= 20)

Intervention Group

(n= 20)

P*

f

%

f

%

Mother's Job

Housewife

Self-employed

Civil servants/Private

Laborer

20

0

0

0

100

0

0

0

15

3

2

0

75

15

10

0

0.057

Father's occupation

Self-employed

Civil servants/ Private

Laborer

2

3

15

10

15

75

7

9

4

35

45

20

0.002*

Mother's Education

College

Senior High School

Junior High School

Elementary School

0

13

7

0

0

65

35

0

4

13

3

0

20

65

15

0

0.061

Father's Education

College

Senior High School

Junior High School

Elementary School

1

13

3

3

5

65

15

15

2

14

3

1

10

70

15

5

0.712

Exclusive breastfeeding

Exclusive

No

20

0

100

0

15

5

75

25

0.017*

Immunization History

Complete

No complete

17

3

85

15

16

4

80

20

0.677

Primary Caregiver

Mother

Father

Other

20

0

0

100

0

0

20

0

0

100

0

0

1,000

Child 's Gender

Boy

Girl

14

6

70

Several factors influence the nutritional needs of toddlers, including the specific qualities of the toddlers themselves and the characteristics of their families. Tables 1 and 2 present the characteristic data of the respondents. Tables 1 and 2 demonstrate distinct characteristics of respondents between the control group and the intervention group in terms of the sequence of children, number of siblings, father's occupation, and exclusive breastfeeding, with a p-value of less than 0.05. Table 3 demonstrates an increase in the Recommended Daily Allowance (RDA) value in the group that received family empowerment intervention and were provided nugget products containing Moringa leaves.

Additionally, there was a difference in the RDA value in the control group. Table 4 indicates no significant difference between the intervention and control groups in Recommended Daily Allowance (RDA) values. The results indicate that in the pretest, the majority of the intervention group had moderate levels of knowledge, attitudes, and skills. After the intervention, all participants demonstrated good knowledge, moderate attitudes, and good psychomotor skills. The difference test results showed an improvement in knowledge and psychomotor skills, but no improvement in attitudes (Table 5). Table 3. The disparities in RDA among the intervention and control (n=40)

RDA

Before Intervention

(n=20)

After Intervention

(n=20)

P*

Min-Max

Mean±SD

Min-Max

Mean±SD

RDA in Intervention Group (kcal)

478.18-1895.05

886.130 ± 336.49

581.88-1370.87

1063.99 ± 208.04

0.012

RDA in Control Group (kcal)

432.07-3519.68

1117.69±647.86

598.59-1553.27

1028.43 ± 251.53

0.289

Note: *P<0.05 based on dependent t test

Table 4. The disparities in RDA post-test scores between the group interventions and the control groups (n=40).Research variable

Intervention Post-Test (n=20)

Control Post-Test (n=20)

P*

Min-Max

Mean±SD

Min-Max

Mean±SD

RDA (kcal)

581.88-1370.87

1063.99 ± 208.04

598.59-1553.27

1028.43 ± 251.53

0.324

Note: *p<0.05 based on independent t test

Table 5. The disparities in knowledge, attitude and psychomotor between the group interventions and the control groups (n=40).Research variable

Intervention Post-Test (n=20)

Control Post-Test (n=20)

P*

f

%

f

%

Knowledge

Foor

0

0

0

0

0.014*

Pair

9

45

0

0

Good

11

55

20

100

Attitude

Foor

1

5

5

25

0.201

Pair

18

90

15

75

Good

1

5

0

0

Psychomotor

Foor

5

40

0

0

0.001*

Pair

13

65

3

15

Good

1

5

17

85

Note: *p<0.05 based on Mann Whitney test

Table 1 Characteristics of Respondents (n=51) (12pt, Time News Roman, Bold, Center, 1 space)

Object

Font

Alignment

Space

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Space below

Judul

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Authors

11pt bold

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Alamat

11pt bold

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1

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Level 1

11pt bold

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Level 2

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Level3

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According to table 1, most respondents were female, with 30 female respondents (58.8%) compared to 21 male respondents (41.2%). As many as ten respondents in the age group 17-25 years (19.6%), as many as eight respondents in the age group 26-35 years (15.7%), as many as 13 respondents in the age group 36-45 years (25.5%), as many as 15 respondents in the age group 46-55 years (29.4%), as many as four respondents in the age group 56-65 years (7.8%), and as many as one respondents in the age group over 65 years (2.0%). (12pt, Time News Roman, normal, 1 space) maximum Results 5 pages.DISCUSSION

The research findings indicate that the average pretest results of the RDA value in the group intervention are 886.130 ± 336.49 , with a minimum score of 478.18 and a maximum score of 1895.05. The average pretest findings of RDA values in the control group is 1063.99 ± 208.04 , with a minimum score of 432.07 and a maximum score of 3519.68. The study found that parental education and employment are significant factors determining the occurrence of stunted children, which impacts their nutrition and overall fulfillment. The demographic data obtained indicates that neither the control nor the intervention group had a dominant level of parental education at the high school and middle school levels. According to Jasmawati (2020), education and maternal knowledge are strongly associated with and significantly impact children's nutritional well-being (Jasmawati, 2020). Mothers with higher education possess more information in several areas and have a heightened awareness of the need to nurture and provide proper nutrition for their children. The research conducted by Maulina et al. (2021) asserts that mothers play a crucial role in the family as they possess autonomy and are responsible for their children's health, including providing appropriate nutrition and creating a conducive environment (Maulina et al., 2021). Furthermore, the study suggests that mothers with a higher level of knowledge are more likely to take actions that promote good habits in their children. This finding is supported by the works of Ilmani & Fikawati (2023), Munawaroh et al. (2022) (Ilmani & Fikawati, 2023; Munawaroh et al., 2022). Contrary to the previous statement, other studies by Pertiwi et al. (2021); Simamora & Kresnawati (2023) suggest that educated mothers who are tall and have high-intensity work activities tend to have reduced time and attention for their children, which can lead to nutritional deficiencies (Pertiwi et al., 2021; Simamora & Kresnawati, 2023). The mother's role in the household mainly involves overseeing and managing the household affairs. In contrast, the father's role mainly focuses on working as a civil servant and professionally overseeing larger groups and interventions. Parents' occupation is directly linked to their economic position, affecting the family's ability to purchase food and complete their child's nutritional needs. The procurement of additional food is influenced by effort, fulfillment of balanced nutrition, and increased expenses. Higher-income families have a

greater likelihood of being able to provide adequate nutrition for their children (Ghosh, 2020; Khotimah et al., 2023). However, there are conflicting opinions on this matter. According to Huriah et al. (2021), Pertiwi et al. (2021), Simamora & Kresnawati (2021, 2023), working mothers often spend a significant amount of time on their jobs, which can result in insufficient time and attention being given to properly care for their children's growth and nutrition (Huriah et al., 2021; Pertiwi et al., 2021; Simamora & Kresnawati, 2021, 2023). This factor could increase the risk of stunting. The researcher's research demonstrates a considerable enhancement in the RDA value when comparing the pretest and post-test AKG values in the control group. The p-value is 0.289, indicating that the difference is insignificant ($p > 0.05$). The research findings indicate that no treatment or dietary intervention for toddlers is available. According to the study conducted by Simamora & Kresnawati, 2021, it was found that a balanced nutrition intake during pregnancy should include a variety of foods that meet the body's needs in terms of type and quantity (Simamora & Kresnawati, 2021). However, the research results indicate that many toddlers need more nutrition due to a lack of vegetable consumption. The pretest and post-test findings of RDA values in the group intervention indicate a p-value of 0.012, suggesting a statistically significant improvement in nutritional fulfillment after administering the moringa leaf product in the intervention group. This topic arises from the implementation of group intervention, where leaf nuggets made from Moringa are introduced as a dietary variation in children's daily lives. According to a study conducted by Khotimah et al. (2023), it has been found that consuming a well-balanced diet consisting of a variety of foods has a crucial role in meeting children's nutritional needs and helps reduce stunting (Khotimah et al., 2023). Diversity in cuisine is achieved by offering a variety of dietary staples, side dishes, vegetables, and fruits. Additional research suggests that meals' frequency and portion size are related to fulfilling a child's nutritional needs. Eating less can also impact the fulfillment of a child's daily nutritional requirements, which are necessary for their everyday activities. A prolonged lack of fulfillment can lead to stunting in children, hindering their growth (Hadi et al., 2022; Samosir et al., 2023). The results of the post-test comparison of RDA levels between the group intervention and control demonstrate no significant difference. The significant number of RDA indicated by the p-value of 0.314 is more significant than 0.05. Several things may influence this matter. Factors influencing a study include parental knowledge, fulfillment, nutrition, and stunting education. The researcher does not measure parental knowledge or provide instruction on nutrition fulfillment for toddlers, as their focus is solely on stunting education. According to a study by Hapsari & Ichsan, 2018, there is a direct correlation between the level of knowledge of mothers regarding nutrition and the risk of stunting (Hapsari & Ichsan, 2018). The demographic data shows that the average education level of mothers is high school and middle school, although some parents have completed college. These results suggest that the parents' knowledge level in both groups, including those with higher education, can be linked to the incidence of stunting. According to Lemaking et al. (2022), the depth of parental work studies is another factor that increases the risk of stunting (Lemaking et al., 2022). However, this aspect has yet to be well investigated; it is nevertheless associated with family wealth, but the specific relationship still needs to be understood. Demographic statistics indicate that many workers were employed in group control roles, while many civil servants worked in group intervention roles. This study shows that there is a significant improvement in mothers' knowledge about toddlers after the empowerment program, with a p-value of 0.001 in the intervention group. This result aligns with the predetermined hypothesis, indicating a difference before and after

family empowerment in utilizing local food, specifically Moringa leaf nuggets, among mothers. A person's level of knowledge about stunting reflects their behavior in addressing the issue. Good knowledge is expected to influence their ability to tackle stunting-related problems, such as its prevention and management. Therefore, the empowerment program on stunting aimed to improve knowledge and prevention strategies. The findings of this study are consistent with research conducted by Rohayati & Aprina (2021), which reported an increase in knowledge following teaching sessions using discussion methods (Rohayati & Aprina, 2021). However, Noviyanti (2020) found that when the teaching method was limited to lectures without discussion, there was no progress or improvement in respondents' knowledge levels (Noviyanti, 2020). Efforts to enhance the knowledge of mothers of toddlers regarding stunting prevention behavior have proven effective, with discussion-based counseling offering notable advantages. The interactive delivery of messages makes the material clearer and fosters respondents' enthusiasm for learning (Astuti et al., 2023). During the stunting prevention counseling for mothers of toddlers, the use of instructional modules supported the learning process, making it easier for respondents to understand the material on stunting and its prevention using local food, such as Moringa leaf nuggets. The module's content includes definitions of stunting, risk factors, causes, prevention strategies, and the use of local Moringa leaves to address stunting issues. This study aligns with research conducted by Prihartanti et al. (2023), which demonstrated that using modules effectively increases individuals' knowledge (Prihartanti et al., 2023). The findings of this study revealed a data analysis result of $p = 0.201$, indicating that there was no significant effect of attitude after family empowerment. This outcome is likely due to several factors, including educational background. The respondent characteristics in this study indicated that most caregiver mothers had completed their education only up to high school, with 65% in both the intervention and control groups. In contrast, a study conducted by Ekayanthi & Suryani (2019) demonstrated a change in attitude after the intervention. In that study, the majority of respondents had a lower level of education (elementary and middle school) at 57.1%, and prior to the intervention, 51.4% of respondents exhibited negative attitudes, meaning they had limited information about stunting in toddlers (Ekayanthi & Suryani, 2019). Based on the above, it can be concluded that a person's level of education significantly influences their attitude formation regarding stunting issues. The higher the level of education, the greater the impact on attitude formation, and conversely, lower education levels may result in a lesser influence on attitude development. The research findings indicate a difference in psychomotor skills between the intervention group and the control group, as shown by a statistical p -value of 0.001. The education method using demonstrations enhances skills and provides new experiences for mothers of toddlers in stunting prevention behavior (Rahmawati et al., 2021; Sarinengsih et al., 2021). In line with the research results, after treatment was given to the intervention group, the majority were able to improve their psychomotor skills in efforts to prevent stunting in mothers of toddlers.

CONCLUSIONS

Based on the study's results, family empowerment in utilizing locally sourced moringa leaf nuggets can improve the nutrition of stunted children. The secondary outcome of this study shows an improvement in the knowledge, attitudes, and psychomotor skills of mothers of toddlers regarding stunting prevention. Various factors influence the

success of this intervention; however, they have yet to be thoroughly explored by the researchers.REFERENCE

Arief, Y. S., Nursalam, N., Ugrasena, I. D. G., Devy, S. R., & Saudah, N. (2018). Family Factors that Affect Family Empowerment in Caring Children with Leukemia. *Health Notions*, 2(4), 457–459. <https://doi.org/https://doi.org/10.33846/hn.v2i4.174>

Astuti, P., Yanti, S. N., Zakiah, M., & Rahmayanti, S. (2023). Pengaruh Edukasi Kesehatan terhadap Peningkatan Pengetahuan Ibu dengan Balita terkait MP-ASI. *Pontianak Nutrition Journal (PNJ)*, 6(2). <https://ejournal.poltekkes-pontianak.ac.id/index.php/PNJ/article/view/1243>

Budiyono, E. F. C. S., Pradana, B. G. V., Aji, M. R. W., Putra, T. S., Mayasari, A., & Pratama, Y. M. (2022). Penyuluhan Manfaat Dan Potensi Potensi Bisnis Daun Kelor Pada Masyarakat Kelurahan Kelor, Kabupaten Gunungkidul, Yogyakarta. *Eastasouth Journal of Effective Community Services*, 1(02), 56–73. <https://doi.org/10.58812/ejecs.v1i02.48>

Ditjen Bina Pembangunan Daerah - Kementerian Dalam Negeri. (2022). Monitoring Pelaksanaa 8 Aksi Konvergensi Intervensi Penurunan Stunting Terintegrasi. Ekayanthi, N. W. D., & Suryani, P. (2019). Edukasi gizi pada ibu hamil mencegah stunting pada kelas ibu hamil. *Jurnal Kesehatan*, 10(3), 312–319. <https://doi.org/https://doi.org/10.26630/jk.v10i3.1389>

Ghosh, S. (2020). Factors responsible for childhood malnutrition: A review of the literature. *Current Research in Nutrition and Food Science Journal*, 8(2), 360–370. <https://doi.org/http://dx.doi.org/10.12944/crnfsj.8.2.01>

Hadi, A. J., Antoni, A., Dongoran, I. M., & Ahmad, H. (2022). Analysis Model of Toddlers Factor as Stunting Risk Predisposition Factor Due to Covid 19 in Stunting Locus Village Area of Indonesia. *Journal of Pharmaceutical Negative Results*, 14(1), 6–10. <https://doi.org/10.47750/pnr.2022.14.01.002>

Hapsari, W., & Ichsan, B. (2018). Hubungan Pendapatan Keluarga, Pengetahuan Ibu Tentang Gizi, Tinggi Badan Orang Tua, Dan Tingkat Pendidikan Ayah Dengan Kejadian Stunting Pada Anak Umur 12-59 Bulan. *Skripsi Thesis, Universitas Muhammadiyah Surakarta*. <https://eprints.ums.ac.id/58665/>

Hidden, H., E. Maya, D., Oktaviani, E. M., Baihaqi, Muh. H. Y., Yudistiran, Y., Putra, M. A. C. D., Johandi, N., Qarani, M. I. W. Al, Nurmaelisa, N., Lastari, L., Apriliana, E., Febriani, A., & Susilawati, S. (2022). Edukasi Pembuatan Nugget Berbahan Daun Kelor dan Ikan Tuna untuk Pencegahan Anak Stunting di Desa Anyar Lombok Utara. *Jurnal Bakti Nusa*, 3(2), 67–74. <https://doi.org/10.29303/baktinusa.v3i2.70>

Huriah, T., Handayani, P., Sudyasih, T., & Susyanto, B. E. (2021). The Determinant Factors of Stunting Among

Children in Urban Slums Area, Yogyakarta, Indonesia. *Open Access Macedonian Journal of Medical Sciences*, 9(T4), 1–5. <https://doi.org/10.3889/oamjms.2021.5593>

Huriah, T., & Nurjannah, N. (2020). Risk Factors of Stunting in Developing Countries: A Scoping Review. *Open Access Macedonian Journal of Medical Sciences*, 8(F), 155–160.
<https://doi.org/https://doi.org/10.3889/oamjms.2020.4466>

Ilmani, D. A., & Fikawati, S. (2023). Nutrition intake as a risk factor of stunting in children aged 25–30 months in Central Jakarta, Indonesia. *Jurnal Gizi Dan Pangan*, 18(2), 117–126.
<https://doi.org/https://doi.org/10.25182/jgp.2023.18.2.117-126>

Indanah, I., Wanda, D., & Nurhaeni, N. (2022). Empowerment of Parents with Stunting Children. *Jurnal Aisyah: Jurnal Ilmu Kesehatan*, 7(4), 1013–1022. <https://doi.org/https://dx.doi.org/10.30604/jika.v7i4.1183>

Indriasari, Y., Basrin, F., & Salam, M. B. Hi. B. (2019). Analisis Penerimaan Konsumen Moringa Biscuit (Biskuit Kelor) Diperkaya Tepung Daun Kelor (*Moringa oleifera*). *Agroland: Jurnal Ilmu-Ilmu Pertanian*, 26(3).
<https://doi.org/10.22487/agrolandnasional.v26i3.996>

Januarti, L. F., Abdillah, A., & Priyanto, A. (2020). Family Empowerment Model in Stunting Prevention Based on Family Centered Nursing. *STRADA Jurnal Ilmiah Kesehatan*, 9(2), 1797–1806.
<https://doi.org/10.30994/sjik.v9i2.536>

Jasmawati, R. S. (2020). Faktor-Faktor Yang Mempengaruhi Status Gizi Balita: Systematic Review. *Mahakam Midwifery Journal*, 15(402), 87–92. <https://ejournalbidan.poltekkes-kaltim.ac.id/index.php/midwifery/article/view/156>

Katmawanti, S., Supriyadi, S., & Mariroh, F. (2021). Is instant porridge with a high calcium content based on *Moringa oleifera* as an alternative baby food to prevent stunting in Indonesia? *Journal of Public Health Research*, 10(2). <https://doi.org/10.4081/jphr.2021.2233>

Kementerian Kesehatan Republik Indonesia. (2018). Laporan Nasional Rikesdas 2018.
<https://repository.badankebijakan.kemkes.go.id/id/eprint/3514/1/Laporan%20Rikesdas%202018%20Nasional.pdf>

Kementerian Perencanaan dan Pembangunan Nasional/ Badan Perencanaan dan Pembangunan Nasional. (2018). Pedoman pelaksanaan intervensi penurunan stunting terintegrasi di kabupaten/kota. Jakarta: Bappenas. <https://tnp2k.go.id/filemanager/files/Rakornis%202018/Pedoman%20Pelaksanaan%20Intervensi%20Penurunan%20Stunting%20Terintegrasi%20Di%20Kabupaten%20Kota.pdf>

Khoiriyah, H., & Ismarwati, I. (2023). Faktor kejadian stunting pada balita: Systematic review. *Jurnal Ilmu Kesehatan Masyarakat*, 12(01), 28–40. <https://journals.stikim.ac.id/index.php/jikm/article/view/1844>

Khotimah, H., Lintang, S. S., & Azkiya, F.(2023). The Influence of Socio-economy and Local Food Diversity on Stunting in Toddlers. *Consilium Sanitatis: Journal of Health Science and Policy*, 1(3), 147–160. <https://doi.org/https://doi.org/10.56855/jhsp.v1i3.524>

Lemaking, V. B., Manimalai, M., & Djogo, H. M. A. (2022). Hubungan pekerjaan ayah, pendidikan ibu, pola asuh, dan jumlah anggota keluarga dengan kejadian stunting pada balita di Kecamatan Kupang Tengah, Kabupaten Kupang. *Ilmu Gizi Indonesia*, 5(2), 123–132. <https://doi.org/https://doi.org/10.35842/ilgi.v5i2.254>

Maulina, R., Qomaruddin, M., & Kurniawan, A. (2021). Factors that Influence Mother's Behavior in Fulfilling Toddler Nutrition at the Age of 12-36 Months. *Jurnal Penelitian Dan Pengembangan Pelayanan Kesehatan*, 31–38. <https://doi.org/10.22435/jpppk.v5i1.5461>

Munawaroh, H., Nada, N. K., Hasjiandito, A., Faisal, V. I. A., Heldanita, H., Anjarsari, I., & Fauziddin, M. (2022). Peranan Orang Tua Dalam Pemenuhan Gizi Seimbang sebagai Upaya Pencegahan Stunting pada Anak Usia 4-5 Tahun. *Sentra Cendekia*, 3(2), 47–60. <https://doi.org/https://doi.org/10.31331/sencenivet.v3i2.2149>

Musa, S. P. N., Fauzia, F. R., & Ansokowati, A. P. (2022). Pengaruh PMT Nugget Daun Kelor (*Moringa Oleifera*) terhadap Perubahan berat badan pada balita di Posyandu Dusun Trini Desa Trihanggo Kecamatan Gamping Sleman. *Diss. Universitas' Aisyiyah Yogyakarta*. <http://digilib.unisayogya.ac.id/id/eprint/6729>

Noviyanti, R. (2020). Pengaruh Metode Ceramah dan Diskusi terhadap Pengetahuan dan Sikap Ibu Hamil tentang Pencegahan Makrosomia di Puskesmas Siabu Kabupaten Mandailing Natal Tahun 2016. *Jurnal Ilmiah Kebidanan Imelda*, 6(1), 40–44. <https://doi.org/10.52943/jikebi.v6i1.383>

Nurdin, N., Sunandar, S., & Ariyana, A.(2022). Olahan Daun Kelor Untuk Perbaikan Status Gizi Balita dalam Upaya Pencegahan Stunting. *SEHATMAS: Jurnal Ilmiah Kesehatan Masyarakat*, 1(4), 453–459. <https://doi.org/10.55123/sehatmas.v1i4.714>

Pertiwi, F. D., Prastia, T. N., & Nasution, A. (2021). Hubungan Faktor Sosial Ekonomi dan Riwayat Pemberian ASI Eksklusif dengan Kejadian Stunting pada Balita. *Jurnal Ilmu Kesehatan Masyarakat*, 10(04), 208–216. <https://journals.stikim.ac.id/index.php/jikm/article/view/801>

Prihartanti, T. A., Murni, D. A., & Winda, D. (2023). Efektivitas Modul Untuk Meningkatkan Pengetahuan Sikap

Dan Praktik Ibu Dalam Pemberian Makan Anak Stunting Di Kecamatan Kalasan.JURNAL PENDIDIKAN KESEHATAN, 3(2), 70–73. <https://journal.stikespmc.ac.id/index.php/JK/article/view/25>

Rahmawati, Y., Ishariani, L., & Setyorini, D. (2021). Pendidikan Kesehatan Dengan Metode Video Dan Demonstrasi Dalam Meningkatkan Kemampuan Psikomotor Ibu Dalam Pertolongan Pertama Pada Kasus Kejang Demam Di Desa Katerban Kecamatan Baron Kabupaten Nganjuk. Prosiding Seminar Penelitian Kesehatan, 3(1).<https://prosiding.ilkeskh.org/index.php/seminar/article/view/63>

Rohayati, R., & Aprina, A. (2021). Pengaruh Penyuluhan partisipatif untuk meningkatkan pengetahuan ibu tentang penerapan gizi seimbang dalam penanggulangan stunting. Jurnal Kesehatan, 12(2), 287–293. <https://doi.org/https://doi.org/10.26630/jk.v12i2.2830>

Saleh, A., Syahrul, S., Hadju, V., Andriani, I., & Restika, I.(2021). Role of Maternal in Preventing Stunting: a Systematic Review. Gaceta Sanitaria, 35 Suppl 2, S576–S582. <https://doi.org/10.1016/j.gaceta.2021.10.087>

Samosir, O. B., Radjiman, D. S., & Aninditya, F. (2023). Food consumption diversity and nutritional status among children aged 6–23 months in Indonesia: The analysis of the results of the 2018 Basic Health Research. PLOS ONE, 18(3), e0281426-. <https://doi.org/10.1371/journal.pone.0281426>

Sarinengsih, Y., Rustikayanti, R. N., & Fransiska, D. (2021). Pengaruh Edukasi Perawatan BBLR Terhadap Psikomotor Ibu dalam Merawat BBLR di Rumah.Jurnal Ilmu Kesehatan Immanuel, 15(2), 83–87. <https://prosiding.ilkeskh.org/index.php/seminar/article/view/63>

Simamora, R. S., & Kresnawati, P. (2021). Pemenuhan pola makan gizi seimbang dalam penanganan stunting pada balita di wilayah puskesmas kecamatan rawalumbu bekasi. Jurnal Bidang Ilmu Kesehatan, 11(1), 34–45.<https://doi.org/https://doi.org/10.52643/jbik.v11i1.1345>

Simamora, R. S., & Kresnawati, P. (2023). Relationship Between Fulfilling Balance Nutrition and Stunting in Toddlers Aged 24-26 Months. Jurnal Kebidanan, 12(1), 45–54. <https://doi.org/https://doi.org/10.26714/jk.12.1.2023.45-54>

United Nations.(2020). The Sustainable Development Goals Repot 2020. <https://unstats.un.org/sdgs/report/2020/>

Vidayanana, L., Sari, F., & Damayanti, A. (2020). Pengaruh Penambahan Daun Kelor terhadap Penerimaan, Nilai Proksimat dan Kadar Zat Besi pada Nugget Lele. Jurnal Sagu, 19, 27. <https://doi.org/10.31258/sagu.v19i1.7876>

World Health Organization.(2018). Reducing stunting in children: equity considerations for achieving the global

targets 2025. <https://www.who.int/publications/i/item/9789241513647>

Z. Suhaemi, Husmaini, E. Yerizal, & N. Yessirita. (2021). Pemanfaatan Daun Kelor (*Moringa oleifera*) dalam Fortifikasi Pembuatan Nugget. *Jurnal Ilmu Produksi Dan Teknologi Hasil Peternakan*, 9(1), 49–54.
<https://doi.org/10.29244/jipthp.9.1.49-54>