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The Strengthening Local Wisdom in Stunting Prevention with Sauropus Androgynous Leaves Among Toddlers

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Abstract

Stunting during the crucial stages of early childhood represents a major public health issue worldwide. One way to prevent stunting is by using katuk (Sauropus androgynous) leaves as part of a balanced diet. Nursing practitioners are essential in preventing and managing stunting, particularly in communities affected by widespread malnutrition. This research contributed to strengthen local wisdom in stunting prevention by utilizing Sauropus androgynous leaves among toddlers. The study is pre-experimental with one group pre and post-test design. The sampling method uses total sampling of 24 toddlers (aged 12-50 months old). Respondents were given an intervention in the form of taking Sauropus androgynous leaves juice which was given once a day for 3 days alternately in a week with an amount of 250 cc juice each time. To prepare the juice, it is necessary to wash 100 grams of Sauropus androgynous leaves thoroughly. Subsequently, blend the leaves with 250 cc of water and 50 grams of pineapple. Finally, strain the mixture to achieve a smoother consistency. Data measurement was carried out by measuring height based on age using a Stature meter (growth chart) in the pretest and posttest. Data were analyzed using the Wilcoxon sign rank test with a significance level of α = 0.05. The results of the study showed that the average normal z score value before taking Sauropus androgynous leaves juice was 66.7%. After intervention with Sauropus androgynous leaves juice, there was an increase in the number of normal z scores to 83.3%. The results of the Wilcoxon signed rank test hypothesis showed the Sig value = 0.046 and there was a significant difference in Z Score values in toddlers aged 12-50 months old before and after taking Sauropus androgynous leaves juice.

Keywords: *Juice, Sauropus Androgynous Leaves, Stunting*

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1. Introduction

Stunting is a major nutritional problem faced worldwide today, especially in Indonesia (Anastasia *et al.*, 2023). Based on WHO data, the number of stunted toddlers in Indonesia is in the high incidence category of stunting, especially in the Southeast Asia region (Saif and Anwar, 2023).

Based on data from the Indonesian Toddler Nutrition Status Survey (SSGBI), the stunting rate, which was 27.67% in 2019, has increased to 24.40% in 2021 and to 21.6% in 2023 (Ministry of Health Republic Indonesia, 2023).

The incidence of stunting in toddlers in West Java was 33.68% in 2021. Meanwhile, of the five regions with the highest prevalence, Bogor Regency is listed with 24.9% stunting rate (Fitrianingsih, Yanti and Madienda, 2021).

Stunting is caused by poor nutritional status of the mother during pregnancy, inadequate nutrition while the fetus is still in the womb, inadequate provision of breast milk, delayed provision of complementary foods, and inadequate quality or quantity of complementary foods (Kalsum *et al.*, 2022). Stunting can also be influenced by infectious diseases, socio-economics, health services, parenting patterns, and parental education levels (Yanti and Fauziah, 2021).

The government through the National Medium-Term Development Plan (RJPM) targets to reduce the number of short toddlers by 40% in 2025 (Yuda *et al.*, 2023). In line with the government program, Indonesian National Nurses Association

through the OVON (One Village One Nurse) Program has implemented 12 basic health services, one of which is stunting prevention (Ministry of Health Republic Indonesia, 2022).

One way that can be done in stunting prevention is by strengthening local wisdom (Fauziah and Krianto, 2022). Some local ingredients that are widely found in Bogor Regency are Sauropus Androgynous leaves (Magdalena A. Yosali *et al.*, 2022). Sauropus Androgynous leaves can be useful for nourishing bones and teeth in children (Fakhrizal and Saputra, 2020). This is because the calcium, phosphorus, and iron content in Sauropus Androgynous leaves can help in the growth of bones and teeth in children (Sulistyaningsih and Harjunowibowo, 2023).

Several studies have shown that Sauropus Androgynous leaves can be used to prevent stunting by eating it raw/fresh, drinking boiled water and processing them into dishes (Yesika *et al.*, 2023). Previous studies have shown that the use of Sauropus Androgynous leaves as a local ingredient in making complementary food also counted as stunting prevention approach (St. Nurbaya, Hamdiyah Hamdiyah, Nur Laela, Rosmawaty, 2022).

This research contributed to strengthen local wisdom in stunting prevention by utilizing Sauropus androgynous leaves among toddlers.

2. Method

Figure 1 show that the study was conducted in the Sindang Barang Health Center work area, Bogor City in September 2024. The research design used a pre-experimental one group pretest-posttest design. The population in this study was mothers with toddlers aged 12 to 50 months old. This research instrument is using a Stature Meter (Growth Chart) before and after the intervention was given (day 14) and Z score table. The validity of instrument is based on research conducted by Azli Baharudin et al which shows that a distribution of differences between measurements in the inter-examiner, intra-examiner and inter-instrument aspects that were close to zero within the narrow range of ±1.96SD. The technical error of measurement (TEM), coefficient of reliability (R) and coefficient of variation (CV) for the inter-examiner, intra-examiner and inter-instrument aspects were within the acceptable limits. This study suggests that the portable stature meter is reliable and valid for use in community surveys (Baharudin *et al.*, 2017).

This sampling method used total sampling. The inclusion criteria in this study are: toddlers, male/female, aged 12-50 months old, healthy, and mothers willing to be respondents. While the exclusion criteria were toddlers aged less than 12 months or more than 50 months old, sick and mothers unwilling to be respondents.

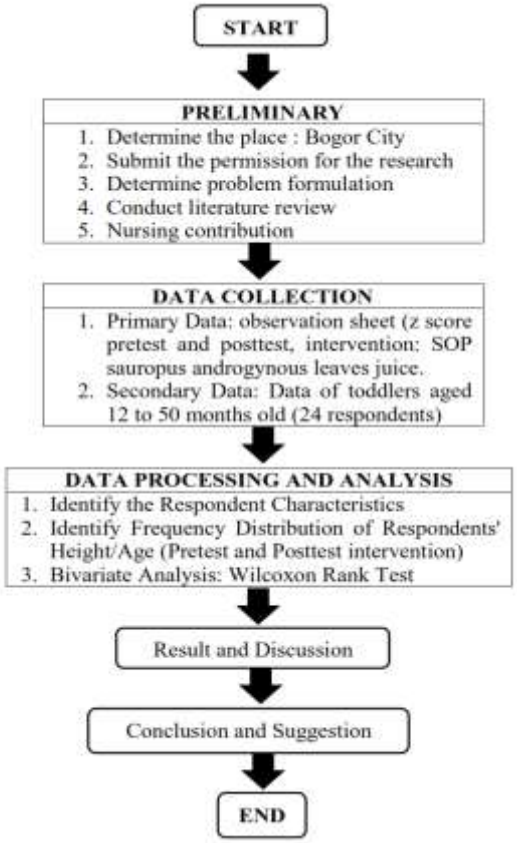

Figure 1. Flow Chart of Research

Respondents consist of 24 toddlers. Respondents were given an intervention in the form of giving Sauropus androgynous leaves juice once a day for 3 days in a week alternately with an amount of 250 cc each time. Preparation of juice from Sauropus androgynous leaves in accordance with the established standard operating procedure for juicing was performed by washing 100 grams of Sauropus androgynous leaves thoroughly, blending the leaves with 250 cc of water and 50 grams of pineapple, followed by straining the mixture to achieve a smoother consistency. Data measurement was carried out by measuring height based on the age of toddler using a Stature Meter (Growth Chart) before and after the intervention was given (day 14). The z scores category includes: Very short, Z score < -3SD; Short/stunting, Z score -3SD to -2SD; Normal, Z score -2SD to +3SD.

Data analysis used univariate tests, while prerequisite tests performed with normality tests and hypothesis testing used the Wilcoxon signed rank test with a confidence level of 95%.

Ethical clearance was obtained from Research Ethics Committee of Wijaya Husada Institute Number 256/STIKes-WH/VI/2024, dated

10th June 2024. Written informed consent was obtained from each key informant and verbal consent from each respondent. Confidentiality of the study participants were maintained in each level of the response.

Result and Discussion

Table 1 showed that most respondents were aged between 36-50 months old (45.84%). Based on gender, most respondents were female (62.50%). All respondents (100%) had history of breastfeeding.

Table 1. Frequency Distribution of Respondent Characteristics Based On Age, Gender and History of Breastfeeding Among Toddlers

Respondent Characteristics	Frequency	Percentage (%)
Age (n=24)		
12 – 24 months old	5	20.83
>24-36 months old	8	33.33
>36-50 months old	11	45.84
Gender (n=24)		
Male	9	37.5
Female	15	62.5
History of Breastfeeding (n=24)		
Yes	24	100
No	0	0

Research conducted by Devi Aprilia (2022) shows that there is a relationship between the age of toddlers and the incidence of stunting with p-value 0.000 and there is a relationship between gender and the incidence of stunting with p-value 0.003. The younger the age, the higher the incidence of stunting and the older you get, the lower the incidence of stunting (Aprilia, 2022).

Research conducted by Abdul Hamid and Hamdin (2023) shows that there is a relationship between exclusive breastfeeding and the incidence of stunting in toddlers 2-5 years old. From the results of the analysis, an OR value = 0.102 was obtained, meaning that the incidence of stunting was 0.102 times higher for children under five who were not given exclusive breastfeeding than for children under five who were given exclusive breastfeeding (Hamid and Hamdin, 2023).

Factors that cause stunting in toddlers are found to be low birth weight (LBW), age, gender, mother's education level, economic status and health services for toddlers are risk factors that cause stunting in toddlers. (Tebi *et al.*, 2022).

Based on Table 2, the frequency distribution of Z Score (Height/Age) of pretest respondents showed that most respondents were in the normal category (z score -2SD to +3SD, with as many as 16 respondents (66.7%), while after the intervention (posttest), most respondents were in the normal category, with a total of 20 respondents (83.3%). Thus, there was an increase of 16.6% in the frequency distribution of Z score. The p value is 0.046, which means that there is a significant difference in Z score values in toddlers aged 12-50 months old before and after given Sauropus androgynous leaves juice.

Table 2. Frequency Distribution of Respondents' Height/Age (Pretest and Posttest intervention)

Categories	**Pretest**	**Posttest**
Short (Z score -3SD to -2SD)	8 (33.3 %)	4 (16.7 %)
Normal (Z score -2SD to +3SD)	16 (66.7 %)	20 (83.3 %)
Total	24 (100.0%)	24 (100.0%)
Test Wilcoxon Signed Rank Test	Results	
	P value = 0.046	

The results of the study are in line with the research conducted by Lutfi Pramukyana (2024) entitled "Sempol Tahu Daun Sauropus Androgynous as an Innovation of Healthy Anti-Stunting Food in Mumbulsari Village", which stated that Sauropus androgynous leaves provides an alternative healthy food that can help prevent stunting in toddlers (Pramukyana and Hariyanto, 2024). This local food has good nutrition (Nguyen, Ta and Dong, 2023). With good nutritional content and fine processing, it is something that has positive value for nutritional assumptions in the process of improving nutritional status (Husnah, Sakdiah, Aziz Khairul Anam, Asmaul Husna, Ghina Mardhatillah, 2022). In addition the relatively cheap price and easy to obtain are one of the plus points in the wise use of local food without preservatives which are very safe for toddlers (Prastia *et al.*, 2023).

From the results of research conducted by Siti Halimatussa'diyah (2023) entitled "The Effect of Sauropus Androgynous Leaf Effectiveness on Breast Milk Adequacy in Breastfeeding Mothers in Pagintungan Village", it described that there was an effective effect of boiled Sauropus androgynous leaves on breast milk adequacy in breastfeeding mothers in Pagintungan "Village (Halimatussa, 2023). Assessment of breast milk adequacy is performed by looking at the baby's weight gain for a week with an increasing indicator (Darmawati *et al.*, 2023) and providing local food using sauropus androgynous leaves greatly affects the baby's weight gain (Khotimah *et al.*, 2023).

Supplementary food given to toddlers is very important to help meet their nutritional needs so that it can support the growth and development

process of toddlers (Hadju *et al.*, 2023). Additional food for toddlers with poor nutritional status can also be obtained from local ingredients (Untari *et al.*, 2023), such as Sauropus androgynous leaves (Mudzalifah, Pasiriani and Hariyani, 2023).

Sauropus androgynous leaves are chosen as healthy food to prevent stunting because it is rich in nutrients and easy to obtain (Erlanda *et al.*, 2021). Sauropus androgynous leaves have a number of benefits in preventing stunting and supporting optimal growth in children (Juliastuti, 2019). Sauropus androgynous leaves can be used in preventing stunecause it is high iron, calcium, vitamin A, folic acid, vitamin C, fiber, and antioxidants (Carolin *et al.*, 2022). In 100 grams of fresh Sauropus androgynous leaves contain various nutrients, including Protein: 6.4 grams, Fat: 1 gram, Carbohydrate: 9.9 grams, Fiber: 1.5 grams, Calcium: 233 mg, Phosphorus: 9.8 mg, Iron: 3.5 mg, Sodium: 21 mg, Potassium: 477.8 grams, Copper: 0.30 mg, Zinc: 1.3 mg. Beta Carotene: 9.152 mcg, Total Carotene: 10.020 mcg, Riboflavin (vitamin B2): 0.31 mg, Niacin (vitamin B3): 2.3 mg, Vitamin C:

The use of Sauropus androgynous leaves provides positive results for both breastfeeding mothers in increasing breast milk production and providing adequate nutrition in children (Nurliani and Rachmawati, 2023). This confirms the effectiveness of giving sauropus androgynous leaf juice as a non-pharmacological alternative to prevent stunting in toddlers (Lestari and Prasetyorini, 2020).

Juices are typically derived from fruits that possess high levels of sugar and calories, which may contribute to weight gain in individuals (Nguyen *et al*., 2024). This study utilized juice extracted from Sauropus androgynous leaves, which is rich in calcium, phosphorus, and iron, thereby supporting the development of bones and teeth in children. It is important to note that Sauropus androgynous leaves juice should not be administered to infants under six months of age or those who are exclusively breastfed, as well as to toddlers with a history of diarrhea or diabetes mellitus. Research conducted by Dewi Nurviana Suharto and Rantesigi indicated that the consumption of juice over a three-month period can help prevent stunting in young children (Suharto and Rantesigi, 2023). In this study, Sauropus androgynous leaves juice was provided alternately each afternoon for two weeks, resulting in an increase in the z-score among toddlers. Stunting can be mitigated by offering supplementary foods that are nutritionally balanced, particularly those rich in calcium, such as fish, spinach, and moringa leaves (Lestari and Hanif, 2021).

The practical implications include the preparation of activity programs to provide socialization and education that can help increase the knowledge of toddler-aged parents so that they are able to provide Sauropus Androgynous leaf juice to prevent stunting (Musyafak, Fathculloh and Fitriani, 2021). Based on the scientific support (evidence based practice) of this study, the use of various herbal plants such as Sauropus androgynous is encougared since it can be used to help prevent stunting in toddlers and improve health in the general community (Rahmah and Nur Hasanah, 2023).

3. Conclusions and Suggestions

It can be concluded that enhancing local wisdom in the prevention of stunting through the use of Sauropus androgynous leaves holds significant importance. For future studies, it would be beneficial to compare Sauropus androgynus with other green leafy vegetables or protein-rich foods that are frequently utilized in interventions for stunting. This would allow us to assess the nutrient density of Sauropus androgynus and evaluate its cost-effectiveness as a dietary intervention in comparison to other foods or supplements.

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