UNIVERSA MEDICINA

pISSN: 1907-3062 / eISSN: 2407-2230

Univ Med 2025;44:50-56

DOI: https://doi.org/10.18051/UnivMed.2025.v44.50-56

ORIGINAL ARTICLE

Effect of the family medicine approach in reducing stunting among toddlers

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Date of first submission, October 10, 2024
Date of final revised submission, February 18, 2025
Date of acceptance, March 3, 2025

Cite this article as: Werdhani RA, Koloi VS, Tantri J, Mahardika AG, Widjaja LR, Michelle, Tiffany. Effect of the family medicine approach in reducing stunting among toddlers. Univ Med 2025;44:50-56

ABSTRACT

BACKGROUND

One health indicator assessed for achieving the Sustainable Development Goals (SDGs) is the nutritional status of toddlers. Stunting, indicating chronic malnutrition in children, remains a pressing concern globally, especially in low- and middle-income countries. Stunting is still prevalent in Jakarta as the capital city of Indonesia. The study's objective was to evaluate the implementation of the family medicine approach on stunting in toddlers in Koja Sub-District, North Jakarta.

METHODS

A pre- and post-test design study was conducted involving 40 toddlers who were diagnosed with stunting. Outcome variables were body weight, height, and stunting while the independent variable was the family medicine approach (home visits, family education, and monitoring for 3 months). The Friedman test was used to determine the difference in height and weight after 3 months of the family medicine approach.

RESULTS

After 3 months of the family medicine approach, consisting of holistic history taking, performing a thorough physical examination, educating parents about toddlers' nutritional issues, and conducting routine monthly home visits, the toddlers' body weight increased by 0.68 kg and their height increased by 1.37 cm ($p < 0.001$). The total number of cases of stunting after the family medicine approach decreased by 30% (12/40) from 40 to 28.

CONCLUSION

There is a decrease in the number of stunting cases after the family medicine approach, but further research is needed. The study findings will help to improve policy measures focusing on the family medicine approach to reduce childhood stunting.

Keywords: Stunting, family medicine, home visit, monitoring

INTRODUCTION

One of the health indicators assessed for achievement in the Sustainable Development Goals (SDGs) is the nutritional status of toddlers.[1] Toddlers are a group that is vulnerable to malnutrition, which will be characterized by stunting. According to the WHO, stunting is a disorder of child growth and development due to chronic malnutrition and repeated infections, characterized by below-standard length or height.[2] Furthermore, according to the WHO, stunting is short or very short stature based on height for age, that is less than -2 standard deviations (SD) on the WHO growth curve, and occurs due to irreversible conditions as a result of inadequate nutritional intake and/or repeated/chronic infections occurring in the first 1000 days of life. [3]

Severe wasting can increase morbidity and mortality rates and the risk of stunting.[4] Malnutrition refers to deficiencies or excesses in nutrient intake, imbalance of essential nutrients, or impaired nutrient utilization. Wasting is defined as low weight-for-height, whereas stunting is defined as low height-for-age.[5] According to the policy direction of the 2020-2024 Indonesian National Medium-Term Development Plan (*Rencana Pembangunan Jangka Menengah Nasional*, RPJMN), the target for 2024 was to reduce the prevalence of wasting to 7% and stunting to 14%. Malnutrition is a nutritional status based on the weight-for-age index (W/A), equivalent to underweight and severely underweight. Toddlers are considered malnourished if their W/A is less than -3 SD.[6] Malnutrition is a state of severe energy and protein deficiency (protein-energy-malnutrition, PEM) due to a lack of nutritious food consumption and/or prolonged illness, characterized by severely thin BMI-for-age.[7]

There is a need for a family medicine approach with holistic diagnosis in toddlers with malnutrition and stunting.[8] Holistic diagnosis is an approach model that can reveal aspects of social life related to complaints and clinical diagnoses, internal and external risk factors, and also the patient's social function.[9] A comprehensive, integrated, and sustainable/ continuity approach is also needed to achieve optimal patient conditions.[10]

Koja Sub-District is a sub-district located in North Jakarta City and is the city's government center. Based on data on the nutritional status of underfives (children under five years of age) from January to May 2023 in the Koja Sub-District, 5 nutritional problems were found among underfives in Koja Sub-District, namely 1,378 cases of low fetal weight (LFW) with weight faltering, 151 LFW with underweight, 106 LFW with wasting, 35 LFW with malnutrition, and 230 LFW with stunting.[11]

Other studies similar to the present study were the one conducted by Insani et al.[12] on the holistic management of 2-year-old toddlers with nutritional problems through a family medicine approach as well as the study conducted by Hardani and Zuraida [13] on the management of malnutrition and stunting in 14-month-old toddlers with a family medicine approach. The results obtained in both studies showed an increase in knowledge and attitudes about balanced nutrition. On the other hand, in the present study the researchers conducted consecutive observations for 3 months on the weight changes and stunting of the study subjects.

This study aimed to investigate a family medicine approach as part of weight and height management and stunting in toddlers.

METHODS

Research design

This study was a pre-posttest study without a control group using secondary data from patient medical record files from May to July 2023. This research was conducted at the Koja Sub-District Health Center from October to November 2023.

Study subjects

The target population in this study were toddlers with stunting. The outreach population in this study were toddlers with stunting in Koja Sub-District. The study sample consisted of toddlers with stunting in the Koja Sub-District who were followed up by an intern in the Koja Sub-District Public Health Center. A total of 40 toddlers who were diagnosed with stunting in Koja Sub-District and became part of internship activities for general practioner were included in the study.

All the 40 toddlers who were diagnosed as being stunted were selected according to the data in the medical records as part of the internship coaching program, where there were 4 interns assigned to 10 patients each for 3 months. Inclusion criteria were toddlers who came to visit the Koja Sub-District Public Health Center and were diagnosed with stunting. Exclusion criteria were incomplete data in the medical records.

Family medicine approach

The four principles of family medicine are: (i) holistic history taking: an in-depth history taking was conducted to identify risk factors of stunting in toddlers. This includes the histories of diet, pregnancy and childbirth, growth and development, immunization, exclusive breastfeeding, comorbidities, and other topics;(ii) thorough physical examination: physical examination from head to toe, accompanied by measurement of height and weight; (iii) education related to attitudes and knowledge about nutritional problems of toddlers and counseling related to balanced nutrition and clean and healthy living behaviors; and (iv) routine home visits every month to monitor the weight and height of the toddlers.

Measurements

Measurements were taken every month for 3 consecutive months. The persons taking the measurements were the physician together with the nutrition officer. The anthropometry measurement tools used were of the Arnez® brand that had been purchased by the Public Health Center and were routinely calibrated every year.

Statistical analysis

Data were analyzed with the Friedman test for k-related samples. A $p<0.05$ was used to determine statistical significance.

Ethical clearance

This research was approved by the Ethics Committee of the Faculty of Medicine Universitas Indonesia – Cipto Mangunkusumo Hospital with ethical clearance number KET/749/UN2.F1/ETIK/PPM.00.02/2023.

RESULTS

Of the 39 toddlers included in this study, there was one toddler who could not complete the study due to pain and swelling in the knee, such that weight and height measurements could not be taken, and one toddler was excluded from data analysis due to weight loss. Therefore, there were 38 toddlers included in this study.

Table 1 describes the characteristics of respondents in this study. The age of 24–60 months was the most frequently found at 73.7%, and the majority of the toddlers were male at 55.3%. At base-line, body weight was 8.61 ± 2.28 kg and height was 81.11 ± 7.34 cm (Table 1).

Table 1. Characteristics distribution in stunted toddlers (n=39)

Variables	n (%)
Age (months)	
< 24	10 (26.3)
24-60	28 (73.7)
Sex	
Female	17 (44.7)
Male	21 (55.3)
Weight (kg)	8.61 ± 2.28
Height (cm)	81.11 ± 7.34

Note: Data presented as mean ± SD and n (%)

Table 2 shows that there were no significant differences in initial body weight and height by age group and sex at the beginning of the study. Table 3 below shows significant p values for the increase in weight and height over 3 consecutive months. In the three months following the family medicine approach, which included taking a holistic history, performing a thorough physical examination, educating parents about toddlers' nutritional issues, and conducting routine monthly home visits, the toddlers' body weight increased by 0.68 kg and the height increased by 1.37 cm ($p<0.001$). The total number of cases of stunting after 3 months of family medicine approach decreased by 30% (12/39) from 39 to 28 children.

Table 2. Distribution of age, sex, height, and weight of respondents at base-line

Variable	Weight (kg)	p value	Height (cm)	p value*
Age (months)				
< 24	6.90 ± 1.01	0.119	72.05 ± 5.13	0.221
24 – 60	9.32 ± 2.02		84.53 ± 7.65	
Sex				
Female	7.86 ± 1.80	0.918	79.88 ± 9.92	0.266
Male	9.34 ± 2.12		82.35 ± 8.17	

*Independent t-test, data presented as mean ± S

Table 3. Body weight and height after 3 months of family medicine intervention

Variable	Month 1	Month 2	Month 3	p*
Body weight (kg)	8.74 ± 2.10	9.16 ± 2.09	9.42 ± 2.02	< 0.001
Height (cm)	81.55 ± 9.03	82.09 ± 8.64	82.92 ± 8.46	< 0.001

*Friedman test for k-related samples; data presented as mean ± SD

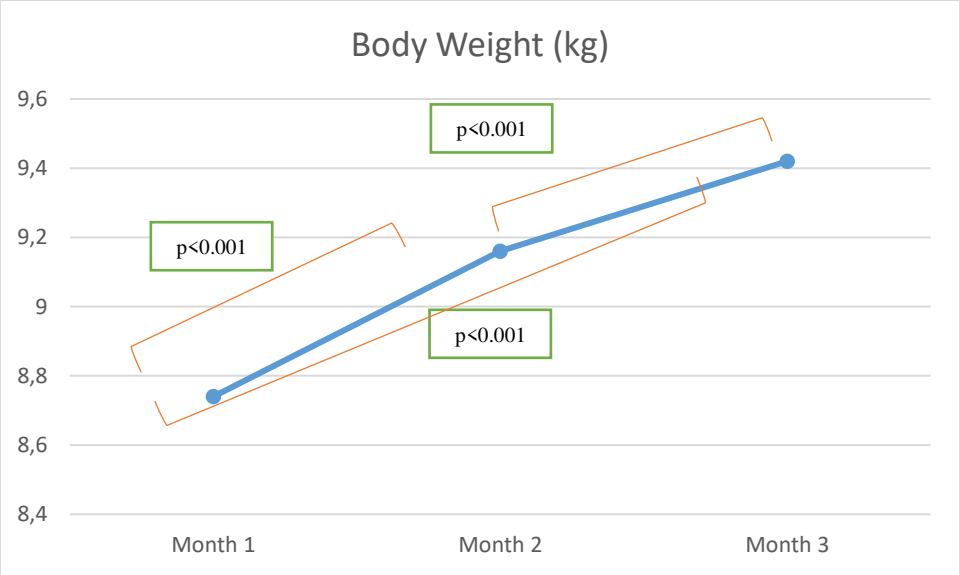

Figure 1. Graphic increases in body weight in 3 months

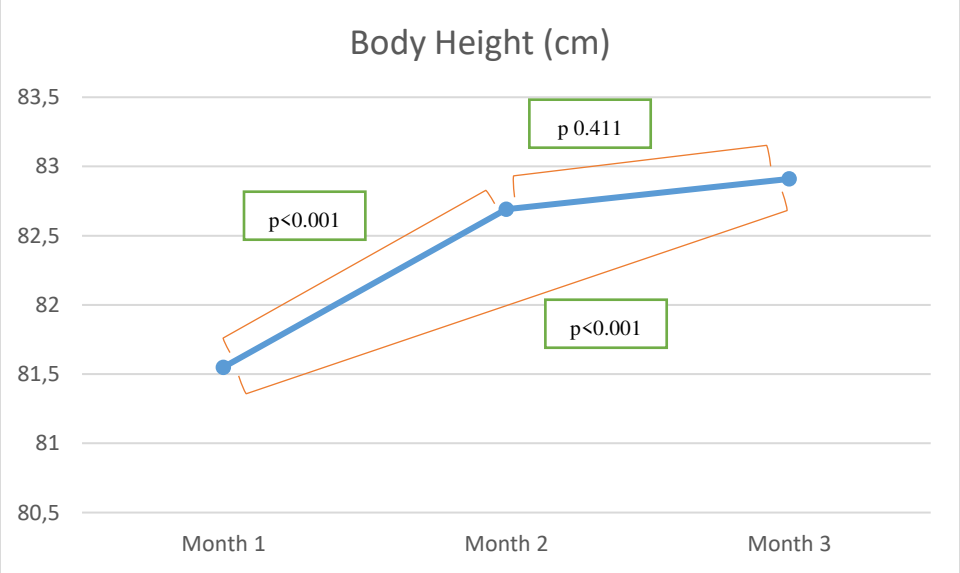

Figure 2. Graphic increases in height in 3 months

In Figure 1, there is a significant increase in body weight each month. For Figure 2, there is a significant increase in height from the first month to the second month, and a non-significant increase in height from the second month to the third month, but an overall significant increase in height.

DISCUSSION

This study showed that there was a significant increase in weight and height in toddlers after 3 months of follow-up with the family medicine approach. The total number of cases of stunting decreased from 39 children to 28 children. There was a decrease in the number of stunting cases after the family medicine approach. Similar studies have been conducted, such as the study by Hardani and Zuraida[13] on the management of malnutrition and stunting in toddlers aged 14 months with intervention about balanced nutrition recommendations, the impact of malnutrition and stunting, the importance of household sanitation, and clean and healthy living behavior (PHBS) in 4 home visits. A holistic diagnosis of 5 aspects was carried out, then an approach was taken by providing home care services 4 times (assessing food recall, providing education related to nutrition, sanitation, and hand hygiene to the toddlers' parents, and evaluation). It was found that after holistic, comprehensive, patient-centered, family-focused, and community-oriented management, visible behavioral changes were obtained after interventions, and that knowledge of balanced nutrition, sanitation, and PHBS increased.[13,14] Another study by Insani et al. [12] establishing a holistic diagnosis with patient-centered approach, family focus, and community-oriented, found that there were differences in the attitude of the patient's family before and after the intervention. There was an increase in knowledge and attitudes after providing nutritional counseling in preventing malnutrition and stunting.

Efforts to improve health services for clinical assessment of malnutrition should be made to help clinicians design interventions that can prevent childhood illness.[15] It is important to assess epidemiologic evidence to reach a consensus on intervention priorities for nutritional problems. Therefore, a holistic-comprehensive approach is needed to help clinicians develop a more thorough assessment of the nutritional status of children under five.[16,17] The holistic-comprehensive approach refers to the process of using all aspects of biological factors, psychological conditions, and social characteristics (cultural and social issues) to collect information about a child's nutritional status continuously, to provide feedback to improve disease prevention as well as value added for continuity of care.[18,19]

The study conducted by Bueno et al.[20] in a hospital/specialized center showed that there was an improvement in the nutritional status of the children (with final height-for-age and weight-for-age Z-scores [HAZ and WAZ] of >-0.1, respectively) after receiving the appropriate portions of food. In Indonesia, to accelerate the reduction in stunting prevalence, Public Health Centers (*Puskesmas*) and Integrated Service Posts (*Posyandu*) monitor the growth of toddlers, such as through measuring weight and height, filling out the Towards Health Card (KMS); providing vitamin A capsules; Infant and Young Child Feeding Practices (PMBA), nutritional education for mothers of toddlers; conducting the program titled Consuming Iron Tablets Together to Overcome Anemia in Adolescent Girls (50 children); and counseling in the Pregnant Women's Class.[21] Our study was conducted on all study subjects simultaneously, who were followed up for 3 consecutive months. The study shows the stunting monitoring efforts carried out by Koja Sub-District Public Health Center as part of continuous management as well as part of the family medicine approach. The secondary data in this study has several limitations. The selection of research subjects was not randomly carried out and some supporting data were incomplete for each subject (birth weight history, immunization history, history of comorbidities, and other clinical factors).

One of the implications of this research is that it can be used as evaluation material for the Koja Sub-District Public Health Center regarding the description of the role of families in overcoming malnutrition and stunting. In addition to being the internship program's, this initiative can be replicated in other health facilities and assist the local government in combating stunting.

CONCLUSION

The family medicine approach can make changes in weight, height and reduced the prevalence of stunting among toddlers. Other risk factors, including dietary intake, disease history, immunization history, and so forth, should be examined in future studies along with the use of a control group.

Conflict of Interest

There is no conflict of interest in this article.

Acknowledgment

We thank the Head of the service unit of community health, Koja Public Health Center, Nurmala Meilasari, SKM.

Author Contributions

RAW: analyzing data, writing, reviewing, and proofreading the manuscript. VSK: analyzing data and writing the manuscript. AGM, LRW, M and T: data collection. JT: field supervisor and reviewing the manuscript. All authors have read and approved the final manuscript.

Funding

None.

Data Availability Statement

The data used to support the findings of this study is available from the corresponding author upon request.

Declaration of Use of AI in Scientific Writing

Nothing to declare

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