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THE EFFECT OF NUTRITIONAL INTAKE EDUCATION TO PARENTS IN IMPROVING FEEDING PATTERNS ON THE GROWTH OF STUNTED CHILDREN

Umi Kalsum*, Zepri Ananda Saputra, Nilam Noorma, Emmy Putri Wahyuni
Politeknik Kesehatan Kementerian Kesehatan Kalimantan Timur, Indonesia
Email: umi2508@gmail.com*

ABSTRACT

Stunting remains a serious health issue among toddlers in Indonesia, especially in areas with low parental education and socioeconomic status. One major cause is inadequate nutritional intake influenced by poor parental knowledge and feeding patterns. This study aims to analyze the effect of nutritional intake education on improving feeding practices and growth outcomes in stunted children aged 1–2 years in the working area of the Palaran Community Health Center. Using a quasi-experimental one-group pretest-posttest design, this research involved 11 stunted children selected through total sampling. Data collection included questionnaires, observation sheets, and child growth measurements, which were analyzed using paired t-tests and Wilcoxon tests with SPSS. Results showed significant improvements in feeding patterns and growth outcomes: height increased ($p = 0.009$) and weight improved significantly ($p = 0.007$) after educational interventions. Furthermore, parental knowledge improved from 54.5% to 100% in the 'good' category, and appropriate feeding patterns rose from 19% to 100%. These findings suggest that structured parental education can significantly enhance child nutrition and growth, supporting the implementation of targeted health programs. The study emphasizes the vital role of Posyandu in follow-up support and recommends expanding similar interventions to other under-resourced regions to reduce stunting rates nationally.

KEYWORDS *Education, Nutrition Intake, Growth, Stunting*

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INTRODUCTION

The First Thousand Days of Life period is the time when a child's growth and development process begins from the womb until the child is two years old (Agosti et al., 2017; Cunha et al., 2015; Likhar & Patil, 2022; Thompson, 2001). This stage is called the Golden Age because the brain growth process is very rapid, which can

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improve the child's quality of life in the future. The primary concern in the first 1000 days of life is meeting the child's nutritional needs (RI, 2014).

Community health and nutrition development 2020-2024 is directed at supporting the improvement of the health and nutritional status of the community through health and empowerment programs in the community (Fauziah & Novandi, 2021). One of the main targets of the 2020-2024 program is to improve the nutritional status of the community, including reducing the prevalence of stunting (Vinet & Zhedanov, 2011). Efforts to reduce the incidence of stunting (short and very short) in children under two years old are 14% (Kemenkes, 2020).

The problem of stunting is an important issue in the world of children's health and is still a big concern, especially for children in underdeveloped and developing countries (Hidaya et al., 2021). Based on a report from the World Health Organization, there were around 149 million children under five who experienced stunting worldwide in 2020, while another 45 million children were estimated to be too thin or underweight (Wahyuningsih, 2018).

In 2017, 22.2%, or around 150.8 million children under the age of five, experienced stunting globally. More than half of the world's stunted children came from Asian countries, accounting for around 55%. According to data on stunting under five years held by the World Health Organization (WHO), Indonesia has one of the three highest rates in Southeast Asia (Kementerian Kesehatan RI, 2018).

According to the 2018 Basic Health study, 18 provinces have a higher prevalence of stunting than the national level, with the highest being NTT (42.6%). The incidence of stunted children in East Kalimantan is 30%, with a prevalence of stunted children of 18% and very stunted children of 12% (Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI, 2018). Data from the East Kalimantan Health Service in 2017 stated that the number of children under five years old who experienced stunting was relatively high, namely 30.6% of the total number of children under five, in 2019 it was 28.09%, and decreased in 2021 by 22.8% (Apriyani et al., 2023)Meanwhile, in Samarinda City, it was recorded at 24.72% in 2019 itself, and in 2020, it was still 24.72% of children under five years old who experienced stunting.

In 2020, in Samarinda City, stunting cases experienced by 1,402 toddlers were experienced by toddlers, consisting of 403 toddlers in the very short category and 999 toddlers in the short category (Dinas Kesehatan Kota Samarinda, 2021). The highest number of toddlers in the very short and short categories is in Palaran District with a total of 94 children in the very short category and 279 children in the short category, next from Sei Kunjang District there are 77 children in the very short category and 254 in the short category (Dinas Kesehatan Kota Samarinda, 2021).

The problem of stunting in Indonesia indicates that there is a chronic nutritional problem, which can be caused by the mother-to-be or the mother's condition, the process from the fetus to the child becoming a baby/toddler, including diseases experienced during infancy/toddlerhood. Nutritional problems, in general, are not only related to health problems but are also caused by other factors that indirectly affect health. Stunting also impacts mental development and intelligence when children become adults. This impact can also be seen from inappropriate physical size and uncompetitive work quality, which results in low

economic productivity (Najihah et al., 2021). Toddlers who are malnourished will experience decreased intelligence, decreased immunity and productivity, mental and emotional health problems, and growth failure in children (Permatasari, 2020).

The growth and development aspect explains the growth process both physically and psychosocially. However, some parents do not understand several things, especially those with low educational and socio-economic levels. They understand that if a child is not sick, the child has no health problems, including growth and development. Some parents believe that growth and development have the same meaning (Wahyuni et al., 2021).

Maintaining the nutritional status, growth, and development of children requires a mother's knowledge because the mother's understanding of the nutritional intake that will be given to the child will influence the nutritional status of the toddler to be good. A mother's education can influence the mother's knowledge. The more a mother has higher education, the better her knowledge regarding nutritional intake will be. Nutrient intake is one factor related to toddlers' nutritional status. Nutrient intake can be obtained from macro and micro nutrients. Apart from that, factors that influence the nutritional status of toddlers are exclusive provision of breast milk for 6 months, parenting patterns, and parents' work (Toby et al., 2021).

The results of research conducted by Prakoso (2021) entitled "Case Control Study: Monitoring Growth, Feeding and Their Relationship with Stunting in Orphanage Children in Semarang City," this study found that there was a significant relationship between monitoring growth and feeding patterns on the occurrence of stunting (Prakoso et al., 2021). Another research conducted by Saskiyanto Manggabarani et al. (2021) entitled "Chronic Energy Deficiency, Knowledge, Food Intake with Stunting" shows that there is a significant relationship between chronic energy deficiency, knowledge, and food intake on the incidence of stunting (Anggraeni et al., 2021; Fentiana & Ginting, 2023; Manggabarani et al., 2021).

In the process, efforts to accelerate catch-up growth in stunted children or catch-up growth are carried out before the child experiences puberty. Catching up or catch-up growth will have better results before the toddler turns 2. To pursue growth, this can be done with good parenting habits in fulfilling their physical needs, including feeding patterns, patterns of fulfilling rest and sleep needs, patterns of fulfilling activities, and patterns of using posyandu in monitoring growth and development. In accelerating catch-up growth in stunted children, besides paying attention to good nutritional needs, good knowledge support is needed to serve a good and balanced menu and healthy food (Yusiana & Kurniajati, 2021).

Based on a preliminary study conducted on September 25, 2022, on employees of the Palaran Community Health Center in the field of nutrition regarding stunted children, the results showed that the incidence of malnutrition, very malnutrition, stunting, and very stunting was found. Among stunted children, there were 31 children with malnutrition, 11 children with very malnutrition, 39 children with short height, and 21 children with very short height.

Although previous studies have established the relationship between nutritional knowledge, feeding patterns, and stunting, there is still limited research that directly evaluates the effect of targeted nutritional education interventions on

feeding behavior and measurable physical growth outcomes in children under two years old. Moreover, most existing research focuses on larger urban populations, whereas stunting prevalence is often more severe in suburban or rural areas. This study addresses that gap by focusing on the Palaran Health Center area—an underrepresented region in East Kalimantan—and linking parental education directly with changes in feeding practices and stunted toddlers' growth metrics (height and weight).

The novelty of this study lies in its use of a quasi-experimental pretest-posttest design to quantitatively measure the impact of nutritional intake education given to parents on both behavioral (feeding patterns) and physiological (height and weight) changes in stunted children. Unlike many studies that only evaluate knowledge improvement or self-reported feeding habits, this research tracks real growth outcomes, offering stronger empirical evidence of the effectiveness of parental education in reversing stunting. The study also emphasizes the integration of community health structures like Posyandu in sustaining behavioral change and follow-up care.

This study aims to determine the effect of nutritional intake education provided to parents on the improvement of feeding patterns and growth outcomes in stunted children aged 1–2 years in the Palaran Community Health Center working area. Specifically, it evaluates whether a structured educational intervention can significantly enhance parental knowledge, lead to improved feeding practices, and result in measurable increases in the height and weight of stunted children within a short-term observation period.

This research provides practical insights for public health policymakers, community health workers, and nutrition educators. By demonstrating a clear link between parental education and improvements in feeding patterns and physical growth, the study supports implementing routine, community-based nutritional education programs as a low-cost and effective strategy to reduce stunting. It also highlights the importance of parental involvement and the role of local health centers in empowering families with the knowledge needed to support optimal child development.

RESEARCH METHODS

The research method that will be carried out in this research is a quantitative method with a quasi-experimental design with a one-group pretest and posttest design. The research location was carried out in the working area of the Palaran Community Health Center in January – February 2023. The population in this study was all stunted children aged 1-2 years in the working area of the Palaran Community Health Center, with a total of 11 children. In this study, the sample size was obtained using total sampling. The data collection method was conducted by conducting observations and pretest-posttest, where researchers used questions to see the level of knowledge, child feeding questionnaires were tested for validity and reliability, and observation sheets were used. The data that has been collected is analyzed using SPSS 26 using the Paired T-test. If the Paired T-test requirements are not met, the Wilcoxon Test is carried out.

RESULT AND DISCUSSION

Univariate analysis

Table 1. Characteristics of Respondents (n=11)

Variable	Frequency (n)	Presentation (%)
Gender		
Man	8	72.7
Woman	3	27.3
Age		
0 – 6 Months	0	0
6 – 12 Months	1	9.1
12 – 24 Months	10	90.9
What order do you come in your family		
First	4	36.4
Second	4	36.4
Third	2	18.2
Fourth	1	9.1
Birth Weight		
Normal	10	90.9
LBW	1	9.1
Body Length at Birth		
Normal	9	81.8
Stunting	2	18.2
Number of children		
1 child	3	27.3
2 Children	5	45.5
>2 Children	3	27.3
Father's Age		
< 30 Years	2	18.2
30 – 40 Years	7	63.6
>40 Years	2	18.2
Mother's Age		
< 30 Years	4	36.4
30 – 40 Years	6	54.5
>40 Years	1	9.1
Father's Education		
Didn't finish elementary school	0	0
Finished elementary school	2	18.2
Finished middle school	2	18.2
Finished high school/K	3	27.3

College	4	36.4
Mother's Education		
Didn't finish elementary school	0	0
Finished elementary school	1	9.1
Finished middle school	2	18.2
Finished high school/K	5	45.5
College	3	27.3
Father's occupation		
Not working	0	0
civil servants	0	0
Farmers/Fishermen	0	0
Private	9	81.8
Self-employed	1	9.1
Laborer	1	9.1
Mother's Job		
IRT	9	81.8
civil servants	0	0
Farmers/Fishermen	0	0
Private	2	18.2
Self-employed	0	0
Laborer	0	0
Family Income		
< 500.000	1	9.1
500.000 s/d 1.000.000	2	18.2
1.000.000 s/d 3.000.000	5	45.5
3.000.000 s/d 5.000.000	2	18.2
> 5.000.000	1	9.1
Pregnancy History		
Routinely check pregnancy	11	100.0
Not having regular pregnancy checks	0	0
Childbirth History		
Enough Moon	11	100.0
Less Moon	0	0
More Months/Weeks	0	0
History of exclusive breastfeeding		
Not exclusive breastfeeding	4	36.4
< 6 Months	0	0
6 Months Full	5	45.5
6 – 24 Months	2	18.2
Pain History		
There is no history of infection	11	100.0
Having an infection	0	0
Total	11	100

Based on table 1, it was found that the characteristics of the respondents based on gender were almost all male, 72.2%, based on age, almost all were aged 12 - 24 months, 90.9%, based on the order of children, almost all of the stunting incidents occurred in the first and second children. with a total of 36.4% in the first child and 36.4% in the second child, based on birth weight almost all children had a normal birth weight of 90.9%, based on birth length almost all of the children had a normal body length of 81.9% , based on the number of children, almost half of them occur in 2 children with a total of 45.5%, based on the father's age, most of them are 30 - 40 years old, 63.6%, based on the mother's age, most of them are 30 - 40 years old, 54.5%, based on father's education, almost all of them have higher education as much as 36.4%, based on mother's education, almost all of them have high school/K graduate education, as much as 45.5%, based on father's work, almost all of them have private jobs, 81.8%, based on mother's work, almost all of them are as housewives with a total of 81.8%, based on family income, almost half of them have an income in the range of 1,000,000 to 3,000,000 as much as 45.5%, based on pregnancy history it was found that all mothers had routine pregnancy checks as much as 100.0%, based on birth history, it was found that 100.0% of all mothers gave birth at full term, 45.5% based on a history of exclusive breastfeeding, almost 45.5% of mothers gave whole exclusive breast milk for 6 months, and based on illness history it was found that all children had no history of congenital illness or infection 100.0%.

Table 2. Knowledge of Mothers with Stunting Toddlers Before and After Providing Nutritional Assumptions Education to Parents in the Palaran Community Health Center Working Area (n=11)

Variable	Frequency (n)		Pre Test (%)	Post Test (%)
	Pre Test	Post Test		
Good	6	11	54,5	100,0
Enough	2	0	18,2	0
Not enough	3	0	27,3	0
Total	**11**	**11**	**100,0**	**100,0**

Table 2 shows that the post-test scores regarding nutritional intake have all increased by 100.0% in the good category. Before being given education, the majority were in the good category at 54.5%, a small portion were in the adequate category at 18.2%, and almost all categories were less than 27.3%.

Table 3. Application of Food Intake Given by Mothers After Providing Education on Nutritional Intake to Parents in the Palaran Community Health Center Working Area (n=11)

Feeding Patterns	Frequency (n)		Presentation (%)	
	Pre	Post	Pre	Post
Appropriate	2	11	19,0%	100,0
Not exactly	9	0	81,0%	0
Total	**11**	**11**	**100,0**	**100,0**

Based on table 3, it was found that the category of feeding patterns for children with stunting in the work area of the Palaran Community Health Center before treatment of children's nutritional intake was in the appropriate category at 19.0% and inappropriate at 81.0% with an average of 52.2% and after Treatment carried out in the form of education on nutritional intake to parents all had the correct category of 100.0% with an average percentage value of 75.6%.

Bivariate Analysis

Table 4. Analysis of Growth Rates of Stunting Children in the Palaran Community Health Center Working Area Before and After Providing Education on Nutritional Intake (n=11)

Child Growth	Mean	*P*
Height Before Treatment	74.009	0,009
Height After Treatment	76.500	*(Paired T Test)*
Body Weight Before Treatment	14.7545	0,007
Body Weight After Treatment	23.1273	*(Wilcoxon Test)*

Based on Table 6, the results of the Paired T-Test showed that the average height before treatment was 74,009, and after being given educational treatment on nutritional intake, it was 76,500, with a P value = 0.009. Meanwhile, the results of the Wilcoxon Test showed that body weight before treatment was an average of 14.7545, and after treatment, it was 23.1273, with a P value = 0.007.

Discussions

Growth Rate of Stunting Children in the Palaran Community Health Center Working Area Before and After Providing Education on Nutritional Intake

The results of the paired t-test analysis, shown in Table 4.4, showed that the average height before treatment was 74,009, and after being given educational treatment, nutritional intake was 76,500, with a P value of 0.009 ($P < 0.05$), so it can be interpreted that there is a height difference. Significant body weight change between before and after nutritional intake education. Meanwhile, the results of the Wilcoxon test, body weight before treatment had an average of 14.7545, and after treatment it was 23.1273 with a P value of 0.007 ($P < 0.05$), so it can be interpreted that there is a significant difference in body weight between before and after the intake education was carried out nutrition.

Growth is related to changes in the size, magnitude, number, or dimensions of cells, organs, and individuals. The parameter commonly used to measure growth is body weight. One way to follow a child's growth regularly is to measure the child's weight according to height Fitri, D. I., Chundrayetti, E., & Semiarty, 2014 in (Nursalam, 2014). The quantity and quality of food and drinks consumed will influence nutritional intake and thus affect the health of individuals and society. Optimal nutrition is very important for normal growth and physical and intellectual development of babies, children, and all age groups (Raharni et al., 2020).

This research is in line with research by Rahman (2018) which states that implementing good feeding patterns for children under five will reduce stunting rates by increasing good growth (Rahman, 2018). Other research conducted by Mayar (2021) states that nutrition plays a very important role in the process of children's growth and development. Nutrition is a component that must be present and is needed by the body, especially in physical growth and development, the nervous system, brain, and the intellectual level of human intelligence (Mayar & Astuti, 2021).

Researchers assume that increased growth is influenced by the nutritional intake provided by parents and the monitoring and support provided by Posyandu cadres for mothers who are stunted. Apart from that, parents who have stunted children receive assistance from the sub-district and police in stunting activities. The growth of stunted children before being given education was delayed; within a month after being given education, monitoring increased.

CONCLUSION

The results of the paired t-test analysis of body height resulted in a P value = 0.009 (P < 0.05) and the results of the Wilcoxon test analysis of body weight resulted in a P value = 0.007 (P < 0.05), so statistically it was concluded that there was an influence of educational intake. nutrition for parents in improving feeding patterns for stunted children's growth in the Palaran Community Health Center working area. Posyandu cadres can always provide support to parents and always invite parents to monitor growth and development at Posyandu regularly. Future researchers can develop this research by making additional food products that mothers can process and monitoring whether there is a significant increase in growth in children.

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