

Strengthening Cadre Capacities in Combating Stunting: The "ERKADUTA" Initiative

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Abstracts: Stunting represents a persistent nutritional challenge arising from prolonged insufficient dietary intake. Especially in the Indonesian context, there is a pressing demand for community empowerment to address stunting in children below the age of two, owing to the multifaceted nature of this problem. In the present research, we executed an intervention by providing support to mothers of toddlers through the establishment of the ERKADUTA center, which served as a collaborative learning space for mothers of toddlers and trained neighborhood leaders (RT activists). The preliminary phase of this research employed a quantitative analytical approach, involving a sample of 96 participants. The examined variables encompassed the Erkaduta Model, the knowledge of mothers with children under the age of two, the attitudes of these children, and the practices of mothers regarding stunting prevention. The analysis incorporated a comparative evaluation before and after the ERKADUTA mentoring intervention, employing the Mann-Whitney test. Subsequently, the influence of these factors was examined using partial least squares. The majority of mothers with toddlers exhibit favorable attitudes toward stunting prevention. The ERKADUTA model plays a significant role in enhancing the knowledge, attitudes, and practices of mothers with children under the age of two. Subsequent analysis revealed that the "practice" variable demonstrated the highest outer loading value of 0.856 and a t-statistic of 21.668, signifying that the ERKADUTA model has the most substantial impact on modifying the practices of mothers with children under the age of five. The ERKADUTA model substantially enhances stunting prevention practices, particularly among mothers with toddlers.

Keywords: Stunting, Community Empowerment, Stunting Prevention, Collaborative Learning Space, Erkaduta Model.

1. INTRODUCTION

Infant stunting, also referred to as childhood stunting, stands as a critical public health concern impacting millions of children globally.[1,2] Stunting is characterized by the compromised growth and development that children undergo due to insufficient nutrition, recurrent infections, and a lack of adequate psychosocial stimulation.[3,4] In the year 2020, a staggering 149 million children under the age of five across the world experienced stunting. This statistic implies that roughly one in every four children below the age of five was affected by stunting.[4] The prevalence of stunting exhibits notable variations across regions, with Sub-Saharan Africa and South Asia carrying the heaviest burden of stunting. In certain countries within these regions, more than one-third of children under the age of five suffer from stunting.[5]

As of 2021, Indonesia reported a stunting prevalence of approximately 27% among children under the age of five. Stunting rates tend to be higher in rural areas when compared to urban regions, and specific provinces within the country exhibit stunting rates exceeding the national average.[6] The Province of Bangka Belitung Islands comprises six regencies and one city. Among these, two districts have received national designation as priority areas for addressing stunting, specifically West Bangka and Bangka. West Bangka stands out as the district with the highest stunting prevalence within the province. In 2018, the stunting incidence in West Bangka was reported at 33.27%. This figure increased to 50.00% in 2019 and further rose to 50.75% in 2020, indicating a concerning upward trend in stunting over the past three years.

Numerous elements play a role in the elevated prevalence of infant stunting, such as insufficient nourishment, limited availability of ample and healthy food, illnesses and infections, subpar sanitation and hygiene habits, restricted entry to high-quality healthcare, and economic inequalities. [7–10] Furthermore, the absence of exclusive

breastfeeding, premature introduction of supplementary foods, and inappropriate feeding methods also contribute to the occurrence of stunting.[11][12]

Stunting is a worrisome problem as it can lead to enduring consequences for a child's physical and cognitive growth. It is imperative to tackle this issue in its early stages to avert any lasting repercussions on the child's health and overall welfare.[13,14] The timely identification of stunting plays a crucial role in executing timely interventions and mitigating its enduring influence on a child's health.[15] Preventing stunting is a complex task that necessitates a comprehensive strategy targeting the root causes of malnutrition. Tackling stunting demands a multi-dimensional approach, encompassing enhancements in maternal nutrition, advocacy for exclusive breastfeeding, increased availability of nutritious foods, and the implementation of efficient health and nutrition initiatives.[16–18] The Indonesian government has put in place a range of programs and measures aimed at addressing infant stunting. These endeavors encompass educating and advising mothers and caregivers on nutrition, promoting exclusive breastfeeding, enhancing the availability of nutritious foods, and implementing community-based interventions to bolster health and sanitation practices.[17]

Community-based approaches have a significant impact on preventing and identifying stunting early, but their full potential has yet to be realized within communities. Programs at posyandu (integrated service station) that have been running are not effective in serving two-year-old babies in terms of providing health promotion services. In support of the government's initiatives for prevention, a community-based intervention called "ERKADUTA" has been introduced. This intervention is targeted at training community health workers and mothers with children under two years of age to enable them to monitor growth and development, ultimately preventing stunting at the neighborhood level. This research aims to develop the "ERKADUTA" mentoring model for mothers with children under two years of age, emphasizing community empowerment through the involvement of community health workers (cadres).

2. MATERIEL AND METHODS

2.1 Design and Research Subject

The ERKADUTA mentoring model trial employed a quasi-experimental approach utilizing a pre-post test without a control group design. Figure 1 show that the study participants were purposefully selected from mothers with children under the age of two. The research was carried out over a period of three months. The subjects were chosen through purposive selection, resulting in a total of 112 respondents, with 56 respondents allocated to the intervention group and 56 to the control group. Inclusion criteria for respondents consisted of mothers with children under the age of two who had participated in the assistance program for three months and had expressed their willingness to participate. Exclusion criteria were applied to mothers residing outside the selected sample villages.

2.2 Intervention

Mothers with children under two years of age receive support from trained community health workers (cadres) over a three-month period. This assistance involves imparting information through the use of a booklet and training mothers to conduct early detection of stunting. Mothers with children under two years of age receive support from trained community health workers (cadres) over a three-month period. This assistance involves imparting information through the use of a booklet and training mothers to conduct early detection of stunting.

2.3 Data Collection and Follow-Up

Data collection was carried out through interviews, utilizing questionnaires as the assessment instruments. These questionnaires were subjected to validity and reliability testing. Data collection was divided into four stages, which were applied to both the intervention and control groups. These stages included assessments conducted before the intervention (pre-test), after the first month of intervention, after the second month of intervention, and after three months of intervention (post-test). The measurements encompassed the evaluation of knowledge, attitudes, and practical skills.

2.4 Sample Size: The sample size for each group consists of 56 pairs, totaling 112 participants in the study.

2.5 Variable

The dependent variables in this study encompass knowledge, attitudes, and practical skills related to stunting and early detection in the context of stunting prevention.

2.6 Data Processing and Analysis

The collected data underwent a thorough completeness check and were then subjected to analysis using the SPSS version 27.0. To compare the data before and after the intervention, a Mann-Whitney test was utilized. Additionally, the study examined the effects of the intervention using partial least squares analysis with software SMARTPLS 3.2.9

2.7 Ethics

All participants in this study provided informed consent. Ethical clearance was obtained by submitting the research proposal to the Health Research Ethics Committee of the Faculty of Public Health at Diponegoro University, and the study was granted Ethical Approval Number: 115/EA/KEPK-FKM/2022.

3. RESULTS AND DISCUSSIONS

3.1 Results

Table 1 indicates that the largest proportion in both the control and intervention groups falls within the early adulthood category. Furthermore, the homogeneity test results, as displayed in Table 1, reveal a significant value greater than 0.05. This suggests that respondents in both the control and intervention groups share similar characteristics concerning variables such as age, education, occupation, gender of the child, and parity.

Table 1. Individual characteristics of the respondents

No	Variable	Category	Intervention		Control		p value
			N	%	n	%	
1.	Age	Late Teens (17 – 25 years)	16	28.6	23	41.1	0,086
		Early adulthood (26- 35 years)	35	62.5	28	50.0	
		Late adulthood (36- 45 years)	5	8.9	5	8.9	
2.	Education	Elementary school	4	7.1	1	1.8	0,525
		Junior high school	10	17.9	1	1.8	
		Senior High School	15	26.8	15	26.8	
		first diploma	20	35.7	15	26.8	
		Bachelor	7	12.5	19	33.9	
3.	Occupation	Housewife	53	94.6	54	96.4	0,655
		Entrepreneur	2	3.6	1	1.8	
		Teacher	1	1.8	1	1.8	
4	Gender of the Child	Man	30	53.6	31	55.4	0,850
		Woman	26	46.4	25	44.6	
5	Parity	1	13	23.2	22	39.3	0,098
		2	19	33.9	19	33.9	
		3	18	32.1	6	10.7	
		4	5	8.9	7	12.5	
		5	1	1.8	2	3.6	

*significant at $p < 0.05$

Table 2 presents the impact of the ERKADUTA program on changes in knowledge (p value = 0.00) and attitude (p value = 0.00) after the three-month intervention period. These results indicate a significant association between knowledge and attitude before and after the intervention, with p-values less than 0.05. Both the intervention and control groups showed an increase in median values for knowledge and attitude after two and three months of participation in the program.

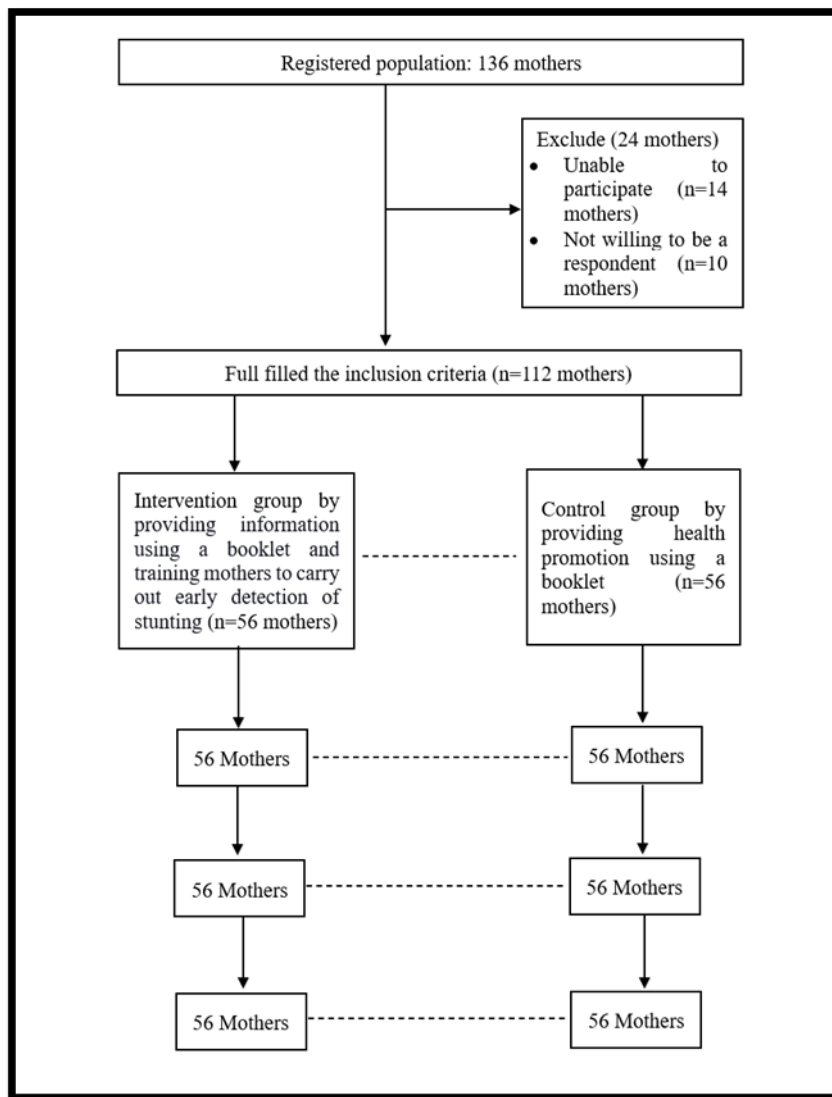


Figure 1. Consort table

Table 2. The effect of intervention on knowledge and attitude

Variable	Intervention group		Control group		P
	Median (min-max)	Mean (SD)	Median (min-max)	Mean (SD)	
Knowledge					
Pre	26.0 (22-31)	26.61 (1.970)	26.00 (22-31)	26.61 (1.970)	1.000
Post I	30.0 (26-32)	29.34 (1.392)	26.00 (22-31)	26.61 (1.970)	0.00*
Post II	31.0 (25-36)	30.73 (2.347)	26.00 (22-31)	26.61 (1.970)	0.00*
Post III	34 (29-36)	33.77 (2.347)	27.00 (22-31)	26.70 (1.953)	0.00*
Attitude					
Pre	46.00 (36-56)	46.48 (4.748)	46.00 (36-56)	46.48 (3.40)	0.993

Variable	Intervention group		Control group		P
	Median (min-max)	Mean (SD)	Median (min-max)	Mean (SD)	
Post I	48.00 (38-58)	48.48 (4.748)	46.00 (36-56)	46.48 (3.59)	0.032
Post II	56.00 (46-66)	56.48 (4.748)	46.00 (36-56)	46.48 (2.94)	0.00*
Post III	56.00 (60-72)	67.09 (2.083)	46.00 (36-56)	46.71 (4.737)	0.00*

*Significant at $p < 0.05$, pre=before intervention, post I= after 1 month intervention, post II=after 2 months intervention, post III=after 3 months intervention.

Table 3 highlights a notable difference in median values before and after the ERKADUTA intervention following the three-month period. Significant practical changes in the mothers were observed, with alterations beginning to manifest in the first month of the intervention and intensifying over the course of the three-month intervention. Significans of difference knowledge, attitude, and practical pre-test and post-test. Table 4 presents the results of the statistical test using Mann-Whitney, which yielded a p-value of 0.000. Since the p-value is less than 0.05, in statistical terms, there is a significant difference in the mean knowledge, attitude, and practice between the intervention and control groups.

Table 3. Difference knowledge, attitude, practice Pretest and Posttest

Variable	Intervention group		Control group		P
	Median (min-max)	Mean (SD)	Median (min-max)	Mean (SD)	
Praktik					
Pre	17.00 (15-20)	17.39 (1.139)	17.00 (15-19)	17.43 (15-19)	0.841
Post I	19.00 (17-22)	19.39 (1.139)	17.50 (15-19)	17.54 (15-19)	0.00*
Post II	23.00 (21-26)	23.39 (1.139)	19.50 (17-23)	19.50 (17-23)	0.00*
Post III	30.00 (30-30)	30.00 (0.000)	22.00 (17-28)	22.04 (17-28)	0.00*

*significant at $p < 0.05$

The analysis of the ERKADUTA model's impact on the knowledge, attitude, and practices of mothers with children under two years old, using the partial least squares algorithm, indicates that the ERKADUTA model plays a significant role in enhancing the knowledge, attitude, and practice of these mothers. Additionally, it's worth noting that the analysis suggests that practice has the highest outer loading score of 0.856 and a t-statistic of 21.668. This indicates that the ERKADUTA model, specifically the assistance provided by ERKADUTA cadres, has the most substantial influence on changing the practices of mothers with children under two years old.

Table 4. The effect of the intervention on practical

	Knowledge	Attitude	Practice
<i>Asymp. Sig. (2-tailed)^a</i>	0.000	0.000	0.000
<i>Outer Loading^b</i>	0.475	0.675	0.856
<i>t- statistic^b</i>	2.845	10.273	21.668

statistic test use *man Whitney*

statistical test using *partial least square*

3.2 Discussions

Cadres are individuals within the community who collaborate with healthcare workers to establish connections with the community, facilitating the collection of data and the implementation of interventions within the community. Their role is to act as intermediaries and support the flow of information and healthcare services between the

healthcare system and the local community.[19,20] Empowering cadres with the ERKADUTA program has a substantial and lasting impact on the knowledge of mothers. This impact is noticeable not only in the immediate aftermath of the intervention but also persists for up to three months afterward. Cadres play a crucial role in delivering interventions to mothers with children under two years old through direct, face to face interactions, including home visits and participation in posyandu activities. The application of the ERKADUTA model has positive synergy towards strengthening existing posyandu services. These face to face interventions lead to a significant improvement in maternal knowledge, particularly concerning the early detection of stunting.[21,22]

The health education provided by cadres has a meaningful impact on altering mothers' attitudes toward stunting prevention. This transformation becomes evident following the two-month intervention delivered by cadres. The changes in mothers' knowledge and attitudes are expected to influence their practices related to stunting prevention and early detection. Mothers will become more attentive to their children's development, raising hopes that the incidence of stunting will decrease as a result of these changes.

Indeed, increasing the knowledge, attitudes, and practices of mothers can have a significant impact on reducing the risk of children experiencing stunting. Mothers play a critical role in a child's early development, including nutrition and healthcare. When mothers are well-informed about proper nutrition, hygiene, and health practices, and when they have positive attitudes towards implementing these practices, it can lead to improved child growth and development, reducing the likelihood of stunting. Therefore, empowering and educating mothers is an essential component of stunting prevention efforts.[23] Absolutely, an increase in the knowledge and positive attitudes of mothers can greatly influence the way they provide nutrition to their children. When mothers are well-informed about proper nutrition practices and have a positive attitude towards implementing them, they are more likely to make healthier food choices for their children. This includes breastfeeding, introducing nutritious complementary foods at the right time, and ensuring a balanced and diverse diet.

Additionally, mothers with good nutrition knowledge and positive attitudes are more likely to follow recommended feeding practices, such as exclusive breastfeeding for the first six months and continued breastfeeding alongside appropriate complementary feeding up to two years or beyond. This, in turn, contributes to the overall health and development of their children and reduces the risk of stunting and other nutritional deficiencies. Therefore, empowering mothers with knowledge and fostering positive attitudes toward nutrition is crucial for the well-being of their children.[15] Absolutely, mothers can play a vital role in the early detection of stunting symptoms in their children at home. Early detection is crucial because it allows for timely intervention, which can help prevent or mitigate the effects of stunting. By regularly monitoring these aspects and seeking guidance from healthcare professionals when necessary, mothers can contribute to the early detection and prevention of stunting in their children. Early intervention, including improved nutrition and healthcare, can make a significant difference in a child's growth and development. Improving the knowledge, attitudes, and practices of mothers regarding stunting prevention is highly beneficial for children under two years of age. Mothers who possess good knowledge, positive attitudes, and appropriate preventive practices related to stunting can provide optimal care for their young children, including breastfeeding.

As mentioned by Yohmi et al., the process of nurturing a newborn is essential, leading to the readiness for weaning, breastfeeding, and the provision of numerous benefits, including immunological protection, during the transition from the fetal life stage to extra-uterine life. It's important to note that newborns do not have a fully developed immune response, making them more vulnerable to infections. The adaptive immunity of infants involves B cells and T cells, with B cells primarily responsible for antibody production to identify and bind to proteins on invading cells. However, neonatal B lymphocytes are relatively naive and less effective in their immune responses. Consequently, babies have a higher susceptibility to infections due to the lower concentration of circulating immunity components, which is typically 10-80% lower than in adults. In summary, enhancing maternal knowledge, attitudes, and practices in stunting prevention, including the promotion of breastfeeding, is crucial for providing optimal care and immunological protection to children under two years of age, who are particularly vulnerable to infections due to their immature immune systems.[24,25]

CONCLUSIONS

In conclusion, Most mothers under the age of five have a good stunting prevention attitude. Most of the mothers of baduta have a high school education. Almost all mothers under two are housewives, knowledgeable in the good category. Almost all of them are on medium income. An ERKADUTA model is needed in the form of post-RT assistance with a direct practice method. The ERKADUTA model implemented will improve aspects of knowledge, attitudes, and practices of mothers under two in stunting prevention. All ERKADUTA cadres have good knowledge and practice of anthropometric measurements during the pretest and posttest. Almost all ERKADUTA cadres had a good attitude during the pretest and posttest. There was an increase in the practice value of the cadres from the pretest to the posttest after the training intervention. There are significant differences in knowledge, attitudes, and practices between the intervention and control groups. In conclusion, the ERKADUTA model, with its focus on community-based interventions and the involvement of trained cadres, is effective in enhancing the knowledge, attitudes, and practices of mothers in preventing stunting among children under two years old, making it a valuable approach for addressing this critical public health issue.

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