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Effectiveness of rumoh gizi gampong and positive deviance in improving the nutritional status of toddlers in Aceh

Efektivitas rumoh gizi gampong dan positive deviance terhadap peningkatan berat badan balita di Aceh

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Abstract

Stunting is a chronic nutritional problem that is a priority to address because it can affect the quality of children. Fulfilling the nutritional needs of children under five through positive family habits, including through family improvement and Rumoh Gizi Gampong (RGG), can significantly reduce stunting rates. The purpose of the study was to identify the effectiveness of Rumoh Gampong Nutrition and positive deviance in efforts to improve the nutritional status of toddlers in Aceh, with a quasi experimental design conducted in Merduati village, Kutaradja sub-district, Banda Aceh with 50 samples (25 intervention groups and 25 controls) using purposive sampling technique carried out on October 15, 2020-15 January 2021. Data collection using questionnaires with interview techniques, food record, and anthropometry. Data processing with paired T test. Theresults showed a significant difference in the intervention group on how to fulfill toddler food (p= 0,000), food intake (p= 0,000), and nutritional status (p= 0,000), there were differences in how to fulfill food in the intervention and control groups (p= 0,00), there were differences in food intake in the intervention and control groups (p= 0,001) and there were differences in body weight in the intervention and control groups (p= 0,001). It is recommended to the head of the puskesmas to support the positive deviance program and Rumoh Gampong Nutrition for all posyandu in their working area.

Keywords: Nutritional status, Rumoh Gizi Rumoh, positive deviance

Abstrak

Stunting merupakan masalah gizi yang bersifat kronis dan menjadi prioritas penangan karena dapat mempengaruhi kualitas anak. Pemenuhan kebutuhan gizi pada balita melalui kebiasaan positif keluarga, termasuk melalui Usaha Perbaikan Gizi Keluarga (UPGK) dan Rumah Gizi Gampong (RGG), secara signifikan dapat menurunkan angka stunting. Tujuan penelitian untuk *m*engidentifikasi efektivitas Rumoh Gizi Gampong dan *positive deviance* dalam upaya meningkatkan berat badan balita di Aceh, dengan rancangan *quasi experimental* dilakukan di desa Merduati Kecamatan Kutaradja Banda Aceh dengan 50 sampel (25 kelompok intervensi dan 25 kontrol) menggunakan tehnik purposif sampling dilaksankaan pada 15 Oktober 2020-15 Januari 2021. Pengumpulan data menggunakan kuisioner dengan teknik wawancara, studi dokumentasi *food record* (fasilitator mencatat jumlah dan jenis makanan anak setiap hari) dan pengukuran BB menggunakan Dacin serta TB menggunakan microtoise. Analisis data menggunakan uji T berpasangan. Hasilnya menunjukkan adanya perbedaan yang signifikan pada kelompok intervensi tentang cara pemenuhan makan Balita (p= 0,000), asupan makanan (p= 0,000), dan Berat Badan (p = 0,000), ada perbedaan cara pemenuhan makanan pada kelompok intervensi dan kontrol (p=0,00), ada perbedaan asupan makanan pada kelompok intervensi dan kontrol (p=0,001) dan ada perbedaan berat badan pada

kelompok intervensi dan kontrol (p=0,001). Disarankan kepada kepala puskesmas agar dapat mendukung program *positive deviance* dan Rumoh Gizi Gampong bagi semua posyandu yang berada di wilayah kerjanya.

Kata Kunci: Rumoh Gizi Gampong, positif devians, status gizi

Introduction

Indonesia is currently faced with a double nutritional problem: overnutrition and undernutrition. Malnutrition results in stunting, which is a condition of failure to grow in toddlers due to chronic malnutrition, such that the child's height is shorter than the child's age. The incidence of stunting only becomes apparent when a child is 2 years old and can result in various developmental disorders, physical growth disorders, and decreased cognitive and psychomotor abilities (Al Rahmad et al., 2020; Tobarasi, 2019).

WHO, 2023 reports that in 2022 there will be 148,1 million children under the age of 5 who are too short compared to their age (stunting), 45,0 million children are too thin compared to their height (wasting), and 37,0 million children are too heavy compared to their height (overweight). According to the results of the Indonesian Nutritional Status Survey in 2021, the prevalence of stunting in Aceh is 33,2%, in 2022 it was 31,2% and 29,4% in 2023. Although the stunting rate in Aceh decreases every year, the rate is still high; at this time, Aceh is at number seven, the highest stunting province. When compared with ASEAN countries, stunting in Indonesia is better than Myanmar at 35%, but still higher than Vietnam (23%), Malaysia (17%), Thailand (16% and Singapore 4% (Rokom, 2021). Another nutritional problem in Indonesia is that the prevalence of wasting has increased from 7,1% to 7,7%, underweight from 17% to 17,1%, and overweight from 3,8% decreased to 3,5% (Kemenkes RI, 2022).

The high rate of stunting is still high, causing it to become a priority health problem in Aceh and could pose a threat to future generations. Poor nutritional conditions can hamper economic growth by approximately 8%. This condition is the result of decreased productivity, low quality of education, and lack of knowledge, which are long-term impacts of stunting. This requires interventions that can effectively and appropriately handle it.

Meeting the nutritional needs of toddlers can be achieved using various methods, one of which is forming positive family habits in meeting the good food needs of family members, especially children under five. This method is known as the Family Nutrition Improvement Business (FNIB). The Aceh government through Peraturan Gubernur Aceh No. 14 Tahun 2019 Tentang Pencegahan Dan Penanganan Stunting Di Aceh, has introduced one of the stunting interventions in the community, namely Rumoh Gizi Gampong (RGG). Rumoh Gizi Gampong is a place to shape behavior and provide nutritious food for pregnant women and children by involving community participation, namely posyandu cadres and also mothers of toddlers. Ahmad et al. (2023) found that the Gizi Gampong program could increase the percentage of coverage for health insurance services and the percentage of coverage for accelerated stunting reduction indicators. Similar to the research carried out by Zuhkrina (2022), the RGG Program has a very positive effect on stunting prevention, because after monitoring stunted toddlers for three months, they can see an increase in body weight and an increase in height.

Rumoh Gizi Gampong (RGG) center carries out three scopes of activities. The first is nutritional services for risk groups through the provision of local supplementary food, supplementation, and other nutritional services. Second, education and increasing the capacity of families, caregivers, and the community regarding nutrition during pregnancy for toddlers. Third, strengthening family food security, empowering families in clean and healthy living behaviors, and other activities (Dinkes Aceh, 2019). To make RGG effective in an effort to prevent and deal with stunting problems, approaches must be taken, one of which is positive deviance. In research on the effectiveness of Positive Deviance Hearth (Hearth) for Improving Malnourished Children, the results showed that there was no significant relationship between changes in children's feeding methods and the implementation of Hearth (p>0,05)(Sari et al., 2023; Handayani & Prameswari, 2012; Hayati et al., 2012) The positive deviance approach encourages behavioral change and empowers mothers of toddlers to take responsibility for rehabilitating their children's nutrition using local knowledge and resources. Having experience of learning

while working increases the self-confidence and skills of mothers of toddlers in the behavior of feeding toddlers.

Methods

Quantitative research uses a quasi-experimental design with a pre-test and a post-test with a control design approach. The research participants were selected using purposive sampling.

Treatment was only performed in the intervention group, whereas the control group did not receive the experimental treatment. The pre-test and post-test results were measured in both groups. The results of the intervention group were compared with those of the control group, and the differences that existed were influenced by the treatment. This research was conducted from 15 October 2020-15 to January 2021, in Gampong Merduati due to the launch of Rumoh Gizi Gampong so that the availability of research supporting facilities and infrastructure was considered adequate, as supported by the Banda Aceh City health office, the head of the Community Health Center, and Integrated Service Post (ISP) cadres in carrying out the research. Activities were conducted for 11 months, starting with preparation, carrying out actions, and evaluating the results.

The samples in this study were mothers of toddlers to measure how to fulfill nutrition, and toddlers to measure food intake and body weight. The sample criteria are as follows: Toddlers with nutritional problems, low weight or the weight graph is on the yellow line in the KMS, weight has not increased for 3 consecutive months, weight has increased but not significantly for 3 consecutive months (<0,5 kg per month). Willing to be a participant, domiciled in Merduati village. Anticipating sample adequacy if someone drops out, the researcher ensures that the number of samples with fixed power is sufficient for this research and then calculates the number of samples using the sample size formula to estimate the mean of two unpaired groups (Paul & Levi, 2013).

$$n = (Z_{1-\alpha} + Z_{1-\beta}).2.\vartheta^2 / d^2$$

Information:

n = Number of sample

$Z_{1-\alpha}$ = Level of significance in α 5% and CI 95% = 1,96

$Z_{1-\beta}$ = Test strength (power) 80% = 0,84

ϑ^2 = Population parameters as a measure of variance distribution

$(Sp^2 = (n_1\text{-}1)\ S_1 + (n_2\text{-}1)\ S_2/(n_1\text{-}1) + (n_2\text{-}1)$ (2,5)

d = Difference in means of two groups(μ_1- μ_2)

Based on the formula above, the sample size in this study was increased by 15% lost to follow to 50 people in the two groups (25 in the intervention group and 25 in the control group). Purposive sampling was used. Sample selection in the control group was performed by observing the same or almost the same characteristics as the control group.

Data Collection and Instruments

The instrument for identifying toddlers' weight consisted of questions about the toddler's parents' demographic data, the toddler's age, and a list of weight measurement results. This instrument was developed by researchers to test content validity by consulting two lecturers in the Nutrition Department of the Health Polytechnic of the Ministry of Health in Aceh.

The instrument is in the form of a questionnaire about how families fulfill the nutritional needs of toddlers to identify how families meet the weight of family members. This instrument was developed by the researchers based on the concepts developed by CORE (2003). To ensure the validity of the existing instrument, a validity test was conducted on 10 mothers of toddlers in Ateuk Pahlawan village. The test results show that all existing statement items have a value greater than 0,632 so that the existing statements are considered valid. Meanwhile, for the reliability test using the Cronbach's alpha test, a value of 0,87-0,91 was obtained so that the existing statement items were also considered reliable for this research.

An instrument for food records to determine nutritional requirements for toddlers was tested for content validity by consulting two lecturers in the nutrition department of the Aceh Ministry of Health Polytechnic.

The results of the data normality test using the Kolmogorov Smirnov test, obtained Asiymp.sig (2-tailed) values for body weight according to age (0,200) and method of feeding (0,141) were greater than 0,05 indicating the data were normally distributed; therefore, the bivariate test was carried out using the dependent t-test for differences in body weight before and after intervention, as well as differences in the way children are given food by families before and after intervention. Toddler weight data were processed using manual calculations based on the Indonesian Minister of Health Regulation No. 2 of 2020 concerning

Child Anthropometric Standards. This research has passed the ethical test conducted at the Research Ethics Committee of the Faculty of Nursing, Syiah Kuala University, Banda Aceh (research code: 113260042).

Result and Discussion

The characteristics of the respondents are listed in the following table. Based on Table 1, the characteristics of girls are greater (>50%) in both the intervention and control groups. Most children were 19 months old in the intervention group and 15 months old in the control group. Regarding maternal characteristics, most of the children were 21-30 years old in the intervention group and 31-40 years old in the control group.

The majority of the mothers' education was secondary education in the intervention group and higher education in the control group. Regarding work, more mothers did not work, whereas in the control group, the majority of mothers worked. The majority of the respondents' incomes were >UMP in both groups. Similarly, the number of children in both groups was 1-2 people. The majority of feeding methods for children in both groups were in the poor category (68% and 60%, respectively).

Table 1. Distribution of child characteristics

characteristics	Intervention Group		Control Group	
	n	%	n	%
Child				
Gender				
Male	8	32	10	40
Female	17	68	15	60
Age (Month)				
12-23 month	25	100	25	100
24-35 month				
36-59 month				
Order of Children in the Family				
The first child	11	44	14	56
Second child	9	36	0	20
The third child	3	12	1	4
Fourth child	2	8	3	12
>4 child	0	0	2	8
Mother Characteristics				
Age				
21 - 30 years	13	52	10	40
31 - 40 years	12	48	15	60
Education				
No school	-		-	
Basic	3	12	8	36
Intermediate	15	60	7	24
High	7	28	10	40
Work				
Working	10	40	16	64
Doesn't work	15	60	9	36
Income				
< RMW (IDR 3.165.051)	10	40	12	48
≥ RMW (IDR 3.165.051)	15	60	13	52
Number of chilren				
1- 2 people	17	68	16	64
3-4 people	8	32	9	36
> 4 people	0	0	0	0
How to feed children				
Good	8	32	10	40
Not good	17	68	15	60

RMW= Regional Minimum Wage

Effects of RGG through Positive Deviance Intervention on Body Weight.

The results of statistical tests using the dependent T test for each variable, namely toddler weight and method of feeding toddlers before and after intervention, are as follows. The research results (Table 2) show that after being given positive deviance intervention, there was an increase in the mean value in the intervention group regarding how to fulfill toddler feeding (45,3 to 72,9), food intake, namely the amount of nutritional intake consumed by children (58,9. 65,5), and Body Weight (11,01 kg to 11,93 kg).

Table 2. How to fulfill toddler food, food intake and body weight at Rumoh Gizi Gampong (RGG) (n = 50)

Variable		Intervention			control		
		Mean ±	SD	p-value	Mean	SD	p-value
How to Fulfill Food for Toddlers	Before Intervention	45,3 ±	8,5	0,000*	53,9	12,8	0,082
	After Intervention	72,9 ±	9,2		53,4	13,7	
Food Intake	Before Intervention	58,9 ±	4,5	0,000*	58,7	5,22	0,454
	After Intervention	65,5 ±	3,9		59,3	4,78	
Weight	Before Intervention	11,01±	1,52	0,000*	10,60	1,49	0,023
	After Intervention	11,93±	1,40		11,03	1,37	

The results of the statistical tests showed that there were significant differences in the intervention group regarding the fulfillment of toddler meals (p= 0,000), food intake (p= 0,000), and body weight (p = 0,000). In contrast to the control group, the results of statistical tests showed that there was no difference before and after the positive deviance intervention regarding how to fulfill toddler meals (p= 0,082), food intake (p= 0,454), for nutritional status (p= 0,023), there was a difference in the body weight of toddlers before and after positive deviance intervention.

Table 3. Average method of fulfilling toddler food, food intake, and body weight at Rumoh Gizi Gampong (n = 50)

Variable	Mean± SD	Mean Difference	95% CI		p-value
			Lower	Upper	
How to Fulfill Food for the Intervention	72,93 ± 12,8	25,33 ± 7,98	60,13	85,73	0,001*
How to Fulfill Food for the Control	53,4 ±13,70				
Foof Intake Intervention Group	65,5 ± 3,9	6,18 ± 0,7	39,7	69,454,54	0,001*
Foof Intake Control Group	59,32 ±4,78				
Weight Intervention Group	11,93 ± 1,40	0,92 ± 0,43	10,53	13,33	0,001*
Weight Control Group	11,03 ± 1,37				

*Significant p<0,05

Table 3 shows that there was a difference in how food was fulfilled in the control group and the intervention group with a value of p=0,001. There was a difference in food nutrient intake between the control and intervention groups (p=0,001 and a difference in Body Weight (BW) between the control and intervention groups (p=0,001).

The results of research conducted by Rahmandiani (2019) in her research explained that the education level of mothers with stunting was most dominant at the junior high school education level at 66,4%, while Rahmawati's research in 2019 explained that mothers who had children with stunting were at the high school education level, namely (65%). Saragih (2014) explained that children with a high educational background and maternal knowledge of nutrition had good body weight, and education had a positive influence on children's protein, energy, and iron intake. In contrast to the results of research on the relationship between education, employment, and toddler weight, educational factors do not influence toddler weight. Maternal employment factors can influence toddlers' weight, and mothers who do not work can increase their weight (Amirah & Rifqi, 2019). Furthermore,

other researchers have explained that the risk factors for stunting in toddlers are inadequate energy and protein intake, the mother's level of knowledge about malnutrition, low maternal education level, and insufficient family income, while the factors LBW, history of breastfeeding, and mother's job are not., including risk factors for stunting (Tanzil & Hafriani, 2021).

How to Fulfill Food for Toddlers

The results of the study showed that the method of providing food for toddlers in both groups was not good. This could possibly be due to the mother's background at the secondary education level, and the fact that there are also families that have more than two toddlers in one house. This condition can lead to malnutrition in toddlers. Alflah and Alrashidi (2023) found that inappropriate feeding practices for infants and young children, such as inappropriate breastfeeding, increase vulnerability to malnutrition. Late complementary feeding, infrequent feeding, poor feeding methods, poor hygiene and care. Second, the weaning time for breastfeeding is too fast (insufficient), so the nutritional content is inadequate. Inadequate feeding, breastfeeding, and poor hygiene are the main causes of acute malnutrition. This condition results in growth disorders, diarrhea, increased infection rates, vitamin and mineral deficiencies, poor cognitive development, and increased death rates in children.

The results of the research show that there is a significant difference between the way families provide food for toddlers before and after the positive deviance approach and Rumoh Gizi Gampong is implemented. The positive deviance approach and Rumoh Gizi Gampong are activities in which cadres and mothers of toddlers who experience malnutrition practice various new behaviors in terms of cooking, feeding, cleaning, and caring for children in order to rehabilitate their nutrition CORE (2003) (Triatmaja, 2023). This provides a new experience for mothers to meet the nutritional needs of their toddlers. Another factor related to the mother's education, mostly middle school and high school, is the level of education that allows the mother to more easily understand the knowledge and skills provided. Likewise, the age of some of the respondents' mothers, which ranges from 20 to 30 years, is a young age that makes it easy for them to remember things that they have just learned. After the intervention, positive deviance behaviors in feeding, childcare, and environmental health by mothers increased.

Food Intake for Toddlers

Preparing nutritional intake so that the nutritional needs needed and consumed by toddlers are fulfilled is a component that must be paid attention to in building quality human resources because there are many nutrients needed for the growth and development of a toddler, such as carbohydrates, protein, fat, vitamins, minerals, and water. If a person's nutritional needs are not met or are lacking, it will disrupt the child's growth and development. Body weight in children is a reflection of food intake over a long period of time (Labatjo et al., 2023; Al Rahmad et al., 2023).

Therefore, the availability of nutrients in a child's body determines whether the child's nutritional condition is sufficient, insufficient, or excessive (Fuada 2022). This theory is in accordance with the research results of Hidayat and Rohani (2022) that there is a relationship between energy and protein intake and the incidence of stunting in toddlers. Proteins are building blocks for the growth and development of cells in the body. If toddlers have sufficient protein intake, especially animal protein, the child's growth will be good, and according to their age.

In line with the results of Ilmaladuni (2015), there was a difference in energy intake in the positive deviance group in the normal intake category (99,4% RDA) and the energy intake in the PMTP group in the poor intake category (71,35% RDA). Statistically, there was no difference in body weight between the positive deviance and complementary feeding programs, but the positive deviance program increased energy intake compared to the Providing Additional Food (PAF) program.

Weight Toddlers

In this case, the toddler's weight is related to weight according to age, based on the Kementerian Kesehatan RI (2020). All toddlers who are respondents have a low BW in the category of malnutrition (Kanan & Elkhalifa, 2020) explain that the factors that cause malnutrition in children under five are more due to lack of family food security, maternal and childcare, inadequate availability of health

services, poor environmental conditions, and poor socio-economic factors. BAZ is largely determined by the amount of intake and types of nutrients consumed by toddlers.

The results of the research showed that after the positive deviance intervention, Rumoh Gizi Gampong showed an increase in the BAZ of toddlers by an average of 0,6 - 1 kg and there was a significant difference between the BAZ before and after the intervention. Positive deviance is an approach that is based on strengths and capital, on the basis that society or individuals have special behavior that allows them to find better ways to overcome nutritional problems. Meanwhile, Rumoh Gizi Gampong is an activity where cadres and mothers of toddlers who experience malnutrition practice various new behaviors in terms of cooking, feeding, cleaning, and caring for children to rehabilitate children's nutrition (The Core Group, 2003).

Study Chek et al. (2022) and Al Rahmad et al. (2023), also got the same results that the Positive Deviance approach can introduce the practice of providing common foods or local wisdom to low-income urban communities. Through this approach, mothers can learn to introduce new foods to their children to increase their children's weight. Another study conducted a Positive Deviance trial on 150 toddlers in Cianjur district, West Java, who were malnourished. The results obtained within six months of implementing the activity showed that from 30% of children with under-five status, malnutrition was successfully reduced to 10,9%, and it was obtained namely 20,9% of children experienced an increase in body weight. This illustrates that there was positive behavior from the mothers. Based on the results of these trials, it can be explained that the Positive Deviance approach is very good for improving toddler nutrition (Sari et al., 2023)

Other studies conducted by Suharyati also showed that the positive deviance method took 54 days and the complementary feeding method took 102 days. In a period of three months, using the positive deviance approach, there was an increase in body weight of 920 g, which was higher than that obtained using the complementary feeding method, which was only 650 g. Likewise, the results of monthly weight gain using the positive deviance method, namely in months I, II, and III (470, 220, and 230 g) were higher than those of the PAF method (300, 170, and 180 g). It was concluded that the PD method was more effective than the PAF method (Suharyati, 2007)

Positive deviance is an approach based on strengths and capital, on the basis that society or individuals have special behaviors that enable them to find better ways to overcome nutritional problems. Positive deviance is appropriate for increasing the weight of toddlers because it maximizes the resources, skills, and strategies available to the community through broad participation as well as learning and working together. Some of the behaviors of families with toddlers that can be improved through this approach are active feeding habits, providing food during illness and recovery, and handling children who have low appetite. Additionally, the positive deviance approach provides a quick solution for overcoming nutritional problems in toddlers (Chek et al., 2017; Chek et al., 2022).

This research has limitations because it was carried out in only 30 days, so the possibility of sustainability is low. However, the sustainability of this program at Posyandu can increase the sustainability of the program.

Conclusion

There are differences in the way mothers provide food for toddlers before and after using positive deviance and Rumoh Gizi Gampong, there are differences in nutritional intake for toddlers before and after using the positive deviance approach - Rumoh Gizi Gampong and there are differences in body weight among toddlers after using the positive deviance and Rumoh Gizi Gampong approach.

It is hoped that the Health Service, Community Empowerment Department, Community Health Centers, and leaders at the village level, as well as Posyandu cadres, can use positive deviance as a method for handling nutritional problems among toddlers in villages by making this activity an annual program or activity utilizing resources. who is in the village.

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