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RESEARCH

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Development of Local Foodstuff-Based Complementary Food Porridge MP-ASI "SITOLE" Products as an Effort to Manage Stunting

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Abstract

One of the causes of stunting is poor nutritional intake in infancy and recurrent illnesses due to an unhealthy environment. Mothers of under-five children are the potential strategic target to be empowered to manage stunting. They have to be empowered to meet nutritional needs during infancy. Complementary breast milk food containing calcium, zinc, selenium, iodine, Fe, protein, and phosphorus can be developed using local foodstuffs. This study aimed to investigate the impact of community empowerment training on the knowledge improvement of mothers regarding the development of locally sourced complementary feeding products (MP-ASI) as an intervention to address stunting issues and to formulate a nutrient-rich complementary food product for infants aged 6-12 months. The research design employed was a quasi-experimental study with a pre-and post-test with a control group design. The study subjects were mothers with infants aged 6-12 months residing in Triharjo Village, Kapanewon Pandak, who met the inclusion criteria and were willing to participate. Mothers who were unable to read and write were excluded from the study. The study was conducted in Triharjo Village, Kapanewon Pandak, Bantul, from April to July 2022. A total of 54 respondents, selected through simple random sampling, were included as the study sample out of 100 families population. Knowledge data were collected using a questionnaire as the data collection instrument and analyzed using the Dependent T-Test and Independent T-Test at a 95% confidence level. The results indicated a significant difference in knowledge improvement (delta) between the treatment and control groups. A locally sourced complementary food product for infants aged 6-12 months, named "SITOLE" porridge, was developed as an outcome. The development data of the MP-ASI product (Sitole porridge) were compiled using a group discussion method.

Keywords: Empowerment, Under-Five Children, Nutritional Intake.

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1. INTRODUCTION

Stunting is a major nutritional issue in Indonesia (Torlesse et al., 2016). Of the under-five children in Indonesia, 30.8% were stunted. In the Special Region of Yogyakarta, the prevalence of stunted babies born in 2018 was 28.7% (Dinas Kesehatan DIY, 2021). Furthermore, in the work area of Pandak II Community Health Center, Bantul Regency, there were 6.19 cases of stunting in 2019 (Dinas Kesehatan Bantul, 2019). The work area of the Pandak II CHC was considered a stunting locus. A lack of nutritional intake to meet nutritional needs during infancy is one of the causes of stunting. Stunting can cause irreversible disorders in children's physical development, which further cause a decrease in cognitive and motor abilities and work performance (Astutik, 2018). Stunted children have an average Intelligence Quotient (IQ) score of 11 points lower than the average IQ score of normal children (Picauly & Toy, 2013). Therefore, stunting remains a priority in the nutrition program in the Yogyakarta Special Region (DIY), which is in line with the Action Plan of the Directorate of Community Nutrition, Directorate General of Public Health, Ministry of Health of the Republic of Indonesia, as stated in the National Medium-Term Development Plan (RPJMN) 2020-2024. The plan highlights the "improvement of the nutritional status of the population" as one of the development priorities, with the main targets being to reduce the prevalence of stunting and wasting to 14% and 7%, respectively, by 2024 (Kementerian Kesehatan Republik Indonesia, 2020).

Without early intervention, growth and developmental disorders caused by malnutrition, including stunting, will persist into adulthood (Manggala et al., 2018). Based on the results of a preliminary survey in Kapanewon Pandak, Bantul Regency, 70% of mothers with toddlers had limited knowledge about preventing stunting through the provision of complementary feeding during the first two years of life, utilizing locally available food rich in nutrients such as animal protein, calcium, iron, vitamin D, zinc, selenium, phosphorus, and iodine, which support linear growth. One of the causes of stunting is inadequate nutritional intake and recurrent illnesses due to an unhealthy environment (Rothman, 2007). Adequate nutrition during fetal development is crucial for achieving the expected body weight and length at birth (Aguayo et al., 2016). Exclusive breastfeeding and the timely introduction of complementary feeding starting at six months of age are effective strategies for attaining average body weight and length (Rochmah, 2017). Thus, it is essential to implement a stunting prevention program that addresses the nutritional needs of children under two years of age, promoting optimal growth and preventing stunting.

Mothers are a strategic target for empowerment in meeting the nutritional needs of infants aged 6-12 months through complementary feeding. An approach to accomplishing this objective involves empowering the community to facilitate the development of complementary food products utilizing local resources. These efforts aim to provide essential nutrients to prevent stunting. The community of Triharjo Kapanewon Pandak Village, Bantul Regency, DIY, primarily relies on agriculture for their livelihood, cultivating various food crops such as long beans, kale, mustard greens, tomatoes, squash, carrots, peanuts, soybeans, cowpeas, and corn. Additionally, eggs, chicken, and fish are widely available in Kalurahan Triharjo Kapanewon Pandak. This study aims to examine the impact of community empowerment training on knowledge regarding the development of locally sourced complementary food products as an intervention for managing the issue of stunting. This research on developing locally sourced complementary food products has yet to be previously conducted.

2. RESEARCH METHOD

This research follows a quasi-experimental design, employing a pre-post test with a control group. The study focused on mothers of toddlers, specifically those with children aged 6-12 months, residing permanently in Triharjo Village, Kapanewon Pandak, and willing to

participate as research subjects. Mothers who could not read and write were excluded from the study.

The research was conducted in Triharjo Village (treatment group) and Caturharjo Village (control group). The selection of study sites was based on a 2020 stunting measurement report, which indicated a 6.19% prevalence of stunting in the Bantul District, as reported by the Bantul Health Office (Dinas Kesehatan Bantul, 2020). The study population consisted of mothers from 100 families with fewer than two children, while families with two or more children were included as participants. The sample size was determined using the Vincent Gaspersz formula, resulting in 54 respondents for each group. The selection process employed a simple random sampling technique (Sugiyono, 2018). The distribution of subjects in the treatment and control groups was carried out by matching variables such as age, level of education, and employment status. The treatment variable in this study involved training and the development of recipes for locally sourced complementary food products for infants aged 6-12 months.

The implementation of the treatment/intervention in this study lasted for two months, starting with a 2-day training session on the development of local foodstuffs. Following the training, group discussions were conducted to identify local food resources. Subsequently, directed group discussions were held to identify the types of locally sourced complementary food products. The next stage involved formulating complementary food products for infants aged 6-12 months, specifically a porridge-type complementary food made from rice, eggs, and catfish, named "Sitole porridge." This research spanned two months, encompassing subject identification, training implementation, identification of local food resources, and discussions on the formulation of the complementary food product. The researchers and Nutrition Officers of Pandak II Community Health Center conducted the training for this study. Data analysis employed various tests for independent samples. T-tests (dependent and independent) were utilized as the data followed an interval scale and displayed a normal distribution, confirmed by the Smirnov-Kolmogorov test (Nursalam, 2020). The training materials focused on developing local foodstuff-based complementary food products as an intervention to manage stunting. The training sessions included lectures, question-and-answer sessions, demonstrations, discussions, and practical exercises, covering the development and preparation of complementary food using locally sourced foodstuffs rich in protein, calcium, iodine, selenium, zinc, iron, phosphorus, and vitamin D to meet the nutritional needs during infancy. The mothers' knowledge about stunting prevention was measured using a test method with a questionnaire consisting of 20 items, addressing the understanding of stunting, stunting indicators, the impact of stunting, stunting prevention measures, complementary feeding, local foodstuffs, nutrients to prevent stunting, and the role of the family in stunting prevention.

The development of locally sourced complementary food products in this study focused on porridge-type complementary food for infants aged 6-12 months. The product utilized local food resources from Triharjo Village, Kapanewon Pandak. Apart from rice, the main ingredients included eggs and catfish, resulting in the "Sitole porridge" as its name. Sitole is an acronym representing the main ingredients: rice, eggs, and catfish, with eggs and catfish serving as animal protein sources that support linear growth and prevent stunting. Farmers and livestock breeders locally produce these foodstuffs in the village. The composition of the Sitole porridge includes 20 grams of fried catfish, 50 grams of rice, 15 grams of boiled eggs, 10 grams of spinach leaves, one clove of garlic, one shallot, and a small amount of margarine. This study obtained ethical approval from the Yogyakarta Health Polytechnic through letter No. e-KEPK/POLKESYO/0386/IV/2022.

3. RESULTS AND DISCUSSION

Table 1. The frequency distribution of the characteristics of the research subjects.

Variable	Control		Treatment		p-value
	n	%	n	%	
Maternal Age					
< 20 Years	2	3,7	1	1,9	0,235
20 – 35 Years	49	90,8	51	94,4	
> 35 Years	3	5,5	2	3,7	
Educational Level					
Primary Educational Level (Elementary-JHS/MTs)	7	12,96	9	16,67	0,599
Secondary Educational Level (SHS/VHS)	41	75,93	38	70,37	
Higher Educational Level (Diploma/Bachelor/Master/Doctoral)	6	11,11	7	12,96	
Occupation					
Unemployed/Housewives	35	64,81	39	72,23	0,802
Private Sector Employee	15	27,78	13	24,07	
Civil Servant	4	7,41	2	3,7	

Table 1 presents the characteristics of the research subjects based on maternal age, educational level, and occupation. According to Table 1, 49 mothers (90.8%) aged 20-35 years were in the control group. In the treatment group, there were 51 mothers (94.4%) aged around 20-35 years old. The results of the proportion test indicated no significant difference in maternal age between the treatment and control groups. The characteristics of the research subjects based on maternal educational level revealed that 41 mothers (75.93%) had secondary education. In the treatment group, 38 mothers (70.37%) had secondary education. The proportion test results showed no significant difference in the mothers' educational level between the treatment and control groups. The characteristics of the research subjects based on employment status indicated that 35 mothers (64.81%) were unemployed/housewives in the control group. In the treatment group, 39 mothers (72.23%) were unemployed/housewives. The proportion test results showed no significant difference in the mothers' occupation type between the treatment and control groups.

Table 2. The Difference in knowledge (pre-test and post-test) of the research subjects in the treatment and control groups.

Groups	Pre-test				Post-test		
	n	Mean	Std Deviasi	p-value	Mean	Std Deviasi	p-value
Control	54	73,06	13,082	0,971	83,25	7,456	0,000
Treatment	54	72,97	11,508		90,76	4,411	

Table 2 shows the Pre-Test scores of the control group, with an average knowledge score of 72.87, while the treatment group scored 73.06. The statistical analysis using the independent sample t-test yielded a p-value of 0.971 (p-value > 0.05), indicating no significant difference in knowledge at the beginning of the intervention between the treatment and control groups. At the end of the intervention, the treatment group's knowledge score was higher than the control group's. Both the treatment and control groups experienced an improvement in knowledge. However, the increase in knowledge among the mothers in the treatment group was more significant than that in the control group (90.76 > 83.25). This difference was statistically significant based on the independent sample t-test, which yielded a p-value of 0.000 (p-value < 0.05). This indicates a significant difference in knowledge at the end of the intervention (Post-Test) between the treatment and control groups.

Table 3. The Increase in Knowledge among The Subjects Before and After the Intervention was Assessed within Each Group.

Groups	Pre-test			Post-test			p-value
	Mean	Min-Max	Deviation Std	Mean	Min-Max	Deviation Std	
Control	73,05	40-95	13,082	83,25	65-100	7,455	0,000
Treatment	72,97	50-100	11,508	90,75	85-100	4,410	0,000

Statistical analysis was performed using the Paired t-test to determine the increase in knowledge within each group. The statistical analysis results for the control group showed a p-value of 0.000 (p-value < 0.05), indicating a significant increase in knowledge before and after receiving counseling on the development of local food-based complementary food products to meet the nutritional needs of infants aged 6-12 months as an effort to combat stunting. Similarly, the statistical analysis results for the intervention group showed a p-value of 0.000 (p-value < 0.05), indicating a significant increase in knowledge among mothers before and after receiving training on utilizing local food for complementary feeding to combat stunting. Both the control and intervention groups experienced an increase in knowledge. However, the analysis showed a more significant increase in knowledge scores in the intervention group (17.78) compared to the control group, which experienced an increase of 10.25.

Table 4. The Difference between the Increase in Knowledge (Delta) regarding the efforts to address stunting problems through training on utilizing local food resources and counseling groups.

Groups	n	Mean	Deviation Std.	Difference	p-value
Treatment Group	54	18,03	8,434	7,35	0,000
Control Group	54	10,68	8,035		

Table 4 demonstrates the increase in knowledge regarding the development of locally sourced complementary feeding products as an attempt to address stunting issues. The knowledge gain in the treatment group is more significant compared to the control group. Both the treatment and control groups experienced knowledge improvement. However, the increase in knowledge among the mothers in the treatment group was more significant than that of the control group (18.03 > 10.68). The statistical analysis using an independent t-test yielded a p-value of 0.000 (p-value < 0.05), indicating a significant difference in knowledge improvement (delta) between the treatment and control groups. During the group discussion, as part of the training, local food resources were identified after equipping the mothers with knowledge and skills on developing locally sourced complementary feeding recipes to combat stunting. Locally available nutrient-rich food resources in Triharjo Village to prevent stunting include fish, liver, eggs, chicken, tofu, tempeh, pumpkin, and bananas. These local food resources were then utilized to create complementary feeding recipe products based on local ingredients. The development of complementary feeding products was targeted for infants aged 6 to 12 months, containing essential nutrients such as protein, calcium, phosphorus, zinc, iodine, iron, vitamin A, vitamin D, vitamin B12, and folic acid. The identified food resources were used to create recipes for complementary feedings, such as fish, potato patties, pumpkin porridge, and banana porridge.

The preparation method for "Sitole" locally sourced complementary feeding porridge for a single serving includes: 1) Prepare 50 g of soft rice, 20 tablespoons of fried catfish, 15 boiled

chicken eggs, 0.5 tablespoons of granulated sugar, one small piece of broccoli, and one small piece of boiled carrot. Blend all the ingredients until smooth, strain, and serve with the addition of margarine. The porridge is ready to be given to the child.

Table 5. Frequency Distribution of Characteristics of the Study Subjects.

Variable	Control		Treatment		p-value
	n	%	n	%	
Educational Level					
Primary Educational Level (Elementary-JHS/MTs)	7	12.96	9	16.67	0.599
Secondary Educational Level (SHS/VHS)	41	75.93	38	70.37	
Higher Educational Level (Diploma/Bachelor/Master/Doctoral)	6	11.11	7	12.96	
Occupation					
Unemployed/Housewives	35	64.81	39	72.23	0.802
Private Sector Employee	15	27.78	13	24.07	
Civil Servant	4	7.41	2	3.7	

Table 5 shows the characteristics of the study subjects by the level of formal education. It was known that there were 41 mothers with secondary education levels (75.93%) in control, while in the treatment group, there were 38 women (70.37%) with secondary education. The results of the proportion difference test showed no significant difference in the education level between mothers in the treatment group and the control group. Furthermore, based on employment status, 35 mothers in the control group (64.81%) were unemployed or housewives. Meanwhile, 39 women (72.23%) were unemployed or housewives in the control group. The proportion difference test results showed no significant difference in employment status between mothers in the treatment and control groups.

Table 5 shows the characteristics of the study participants based on their formal education level. Forty-one mothers with secondary education levels (75.93%) were in the control and treatment groups (70.37%). The statistical results showed no significant difference in the level of education between mothers in the treatment and control groups ($p > 0.05$). Furthermore, based on employment status, 64.81% were unemployed or housewives, whereas, in the control group, it was 72.23%. There was no difference in employment status between mothers in the treatment and control groups ($p > 0.05$).

Table 6. Differences in the data in Knowledge (Pre-Test) of the Study Subjects in the Treatment and Control Groups.

Group	n	Mean	Std. Deviation	Difference	p-value
Treatment	54	72.97	11.508	0.09	0.971
Control	54	73.06	13.082		

Table 6 revealed that the mean pre-test score for the control group was 72.87, while in the control group, it was 73.06. The statistical test results using the independent sample t-test technique showed a p-value of 0.971 ($p\text{-value} > 0.05$), meaning there was no significant difference in knowledge at the pre-test between the treatment group and the control group.

Table 7. Difference in Knowledge (Post-Test) of the Study Subjects in the Treatment and Control Groups.

Group	n	Mean	Std. Deviation	Difference	p-value
Treatment	54	90.76	4.411	7.51	0.000
Control	54	83.25	7.456		

Table 7 revealed that the mean post-test value of knowledge in the treatment group was higher than in the control group. Mothers in the treatment group and the control group similarly experienced increased knowledge. However, the increase in mothers' knowledge in the treatment group was higher than in the control group ($90.76 > 83.25$). In addition, the statistical test results using the independent sample t-test showed a p-value of 0.000 (p-value < 0.05). Such findings indicated a significant difference in knowledge after treatment (Post-Test) between the treatment and control groups.

Table 8. Increase Knowledge of the Study Subjects Before and After Treatment in Each Group.

Group	Pre-test			Post-test			p-value
	Mean	Min-Max	Std. Deviation	Mean	Min-Max	Std. Deviasi	
Control	73.05	40-95	13.082	83.25	65-100	7.455	0.000
Treatment	72.97	50-100	11.508	90.75	85-100	4.410	0.000

A statistical test using the Paired t-test was conducted to determine the increase in knowledge in each group. Statistical test in the control group obtained a p-value of 0.000 (p-value < 0.05), which indicated that there was an increase in knowledge before and after being given counseling regarding recipes for local foodstuff-based complementary food products to meet the nutritional needs of under-five children as an effort to manage the stunting issue. Furthermore, statistical tests in the treatment group obtained a p-value of 0.000 (p-value < 0.05), indicating an increase in mothers' knowledge before and after training on the use of local foodstuff-based complementary food products to manage stunting issues. Even though both groups (control and treatment) experienced an increase in knowledge, based on the results of analysis, it was found that the increase in the treatment group (mothers who were given training on the development of local foodstuff-based complementary food products) was higher (17.78) when compared to the control group which experienced an increase by 10.25.

Table 9. The Difference in the Increase in Knowledge (delta) regarding Efforts to Manage Stunting through Training on the Utilization of Local Foodstuff and Counseling Groups.

Group	n	Mean	Std. Deviasi	Difference	p-value
Treatment	54	18.03	8.434	7.35	0.000
Control	54	10.68	8.035		

Table 9 shows the increased knowledge regarding developing local foodstuff-based complementary food products to manage stunting issues. Both the treatment group and the control group experienced an increase in knowledge. However, the increase in mothers' knowledge in the treatment group was higher than in the control group ($18.03 > 10.68$). The result of the statistical test using the independent t-test showed a p-value of 0.000 (p-value < 0.05), which indicated that there was a difference in the increase in knowledge (delta) between the treatment group and the control group.

There was a group discussion as part of the training after mothers were provided with knowledge and skills regarding developing local foodstuff-based complementary food products to manage problems. Such discussion was held to identify easy-to-obtain foodstuffs in Triharjo Village that are rich in protein, vitamins, and minerals to prevent stunting, such as fish, liver, eggs, chicken, tofu, soybean cake, pumpkin, and bananas. Local foodstuffs were prepared for the complementary food recipes intended for infants between 6-12 months old, which contain many protein, nutrients, and micro minerals including calcium, phosphorus, zinc, iodine, iron,

vitamin A, vitamin D, vitamin B12, and folic acid. The foodstuffs identified were prepared for complementary food recipes such as fish, cakes, pumpkin puree, and banana puree.

Such findings indicated that the treatment of community empowerment and training on the development of local foodstuff-based complementary food was more effective than the control group, which was only given counseling treatment. Community empowerment in the form of the development of local foodstuff-based complementary food is a strategy for managing the problem of stunting. It is an effort to increase the community's knowledge, attitude, and awareness, especially among mothers of under-two children. Empowerment is a reasonable effort to increase public knowledge to prevent stunting (Olsa et al., 2018). In this study, the community, especially mothers, was empowered to be willing and able to deal with stunting independently. Mothers of under-two children were provided with knowledge about 1) nutritional adequacy in the First 1000 Days of Live, especially 0-2 years, as an effort to overcome stunting, 2) the role of mothers in the prevention of stunting, 3) Complementary food recipes to meet nutritional needs at the age of 6 to 12 month, 4) Identification of local foodstuffs that contain lots of nutrients to prevent stunting, and 5) development of recipes for local foodstuff-based complementary food products to meet the nutritional needs of infants to under-two children.

Local foodstuff-based complementary food products contain nutrients to meet the nutritional needs of infants so as to support growth and prevent stunting. Skilled mothers will choose local foodstuffs containing protein, calcium, iodine, selenium, zinc, Fe, Phospor, vitamin D to prevent stunting (García Cruz et al., 2017). The training materials provided could improve skills in selecting local foodstuffs to develop complementary food recipes. An increase in knowledge of mothers in the treatment group is in accordance with the result of previous study (Aulia, et al., 2021), yang menyimpulkan, tingkat pengetahuan yang baik membantu pemilihan makanan dengan bijak dan tepat, serta penanganan gangguan kesehatan dengan baik. Porridge MP-ASI "Sitole" ini mengandung gizi seimbang yang diperlukan pada mas usia bayi. Nilai gizi productuck MP-Asi tersebut: energi 200,9 kkal, protein 7,6 g, calsium 39,5 mg, Fe 0,6 g, zink 0,8 g, lemak 9,9 g, karbohidrat 20,3 g, Vitamin 349,8 µg, asam folat 25,1 µg, Vitamin D 539,2 µg, phospor 120,1 mg, yodium 34,5 mg. A good level of knowledge helps mothers ti choose food wisely and appropriately, as well as supporting the good management of health problems.

Mothers are the main subject in managing stunting by developing local foodstuff-based complementary food products (Zikria, Masrul & Bustami, 2018). In empowerment to develop local foodstuff-based complementary food products, there were three main elements: input, process, and output. The input aspect concerned the subject or target, namely mothers of under-two children. The process aspect involved the process of changing the ability of subjects who were trained to develop local foodstuff-based complementary food products. Furthermore, the output aspect involved the results of training/empowerment in the form of increased knowledge and skills in choosing local foodstuffs and preparing complementary food recipes. The training was performed through lectures, questions, answers, demonstrations, discussions, and cooking practice. Complementary food should be prepared to meet the nutritional needs in the First 1000 Days of Live, especially at the age of 6 to 12 months (Salman et al., 2017)

The study findings are in line with the theory explained by Notoatmodjo (2014) regarding factors that influence the learning process, namely material, environmental, instrumental, and individual conditions of learning subjects. Material factors are things being learned. Environmental factors are grouped into two, namely, the physical and social environment. Instrumental factors refer to methods and learning media. In addition, individual condition factors involve physiological conditions and the five senses. The intervention in this study focused on instrumental factors by conducting education using audiovisual media.

The results of this study indicated that implementing nutritional fulfillment at the age of 6 to 12 months by developing local foodstuff-based complementary food recipes was an effective way to manage stunting. Training could help mothers quickly, appropriately, and efficiently improve their knowledge about preventing stunting through nutritious foods (Sinha et al., 2018). The increasing knowledge about the development of complementary food is expected to encourage mothers to practice preparing complementary food to meet nutritional needs, which can further prevent stunting. Direct application practice of health education aims to generate attention to a problem and recall the information conveyed to cause changes in knowledge and skills.

The training was performed through lectures, questions, answers, demonstrations, discussions, and practice to increase knowledge, comprehension, and application. This is in accordance with Bloom's theory cited by Notoatmodjo (2012), who explains that the level of knowledge consists of Know (interpreted as remembering a material that has been studied previously), comprehension (defined as an ability to explain correctly about objects that are previously known), and application (defined as the ability to use materials that have been studied in actual situations and conditions).

The level of knowledge which showed an increase in this study consisted of knowledge and comprehension, as well as application (Wulandari et al., 2016), regarding the management of stunting based on community empowerment, especially among mothers of under-five children.

After participating in the training, there was an increase in the knowledge and skills of mothers regarding the development of recipes for local foodstuff-based complementary food products to meet the nutritional needs of infants, especially at the age of 6 to 12 months. Training could increase the role of the family. Mothers play a role and participate in the management of stunting independently. Good participation of the mother will support efforts to manage stunting from the beginning of life (Crookston et al., 2010).

The prominent role of the family, especially mothers, is to provide food that contains lots of nutrients in the form of calcium, iodine, zinc, selenium, protein, and vitamins to support linear growth (body length) (Andari et al., 2020). The fulfillment of growth-supporting nutrients can be achieved through mothers' actions in providing food for under-five children. Nutritious dishes served by mothers are considered the main action in efforts to prevent stunting (Kartini, 2016).

The role and participation of community groups (mothers together with Integrated Healthcare Post and PKK cadres) in efforts to manage stunting in the village can be performed by monitoring height/length to determine the role of mothers in meeting the nutritional needs of under-five children (Kusumawati et al., 2013). Nutritional adequacy at the family level is assessed through the increase in height/length for age. Suppose it is found that the results of measurements of body length/height for age are not in accordance (stunting). In that case, counseling is immediately carried out so that families/mothers pay more attention to balanced nutritional dishes for children.

Efforts to manage stunting problems performed by community groups at Integrated Healthcare Post align with Green in Notoatmodjo (2014), which explains that community empowerment in the health sector is the primary goal of health promotion. Community empowerment in the health sector is an effort or process to raise awareness, willingness, and the ability of the community to determine, manage, maintain, protect, and improve people's welfare. A specific community is considered independent in the health sector if the people can

determine health problems and the factors that influence health problems, especially in their neighborhood (Kementerian Desa Pembangunan Daerah Tertinggal, 2017).

The community has a specific role in managing, both as an object and a subject. As the object, it can be interpreted that the community is a directed target and strives to have the strength to manage to stunt independently (Wulandari et al., 2016). On the other hand, as the subject, the community determines all actions and efforts to prevent the incidence of stunting. Officers from the sub-district level (CHC) act as facilitators, in this case, the nutrition officer at the Pandak CHC, who directs and monitors the activities of efforts to manage stunting in the community so that efforts made by the community are under predetermined objectives.

An increase in knowledge of mothers in meeting nutritional needs during infancy can foster positive behavior as an effort to prevent stunting independently at the family level. This aligns with Rogers' theory, as cited in Wawan & Dewi (2011), that before a person adopts a new behavior, a sequential knowledge process occurs, including Awareness, Interest, and Evaluation—trial and Adoption (Accept). The dimensions of remembering and understanding can be obtained by memorizing more efficiently in certain circumstances. Certain cognitive processes will be needed in community empowerment to manage stunting, namely realizing, feeling interested, considering, and making efforts to manage stunting by mothers at the household level.

The findings align with the results of a case-control study conducted by Yanti, Kartinawati, & Darwata, (2022), which concluded that exclusive breastfeeding and maternal education were risk factors for stunting. Pregnant women with low education had a risk factor for giving birth to stunted children by 8.6 times. Low education had an impact on knowledge regarding nutritional intake. In fact, training/empowerment on developing local foodstuff-based complementary food products is an effort to increase mothers' knowledge to prevent stunting.

The study findings are in line with the results of a study conducted by Dubois et al. (2012), which explained that environmental factors could strengthen the effects of genetic factors. Environmental factors, especially meeting nutritional needs early in a child's life, could maximize a child's genetic potential. Optimal intake of nutritional needs at the beginning of a child's life has a positive impact, wherein children can achieve optimal height according to their genetic potential. Height is accumulated over the years. So, childhood height can affect adulthood (Ratu et al., 2018). Local foodstuff-based complementary food products that resulted in this study were rich in protein, minerals, and vitamins as an effort to manage stunting among infants and under-two children.

The results of this study support the study conducted by Latif & Istiqomah (2017), which concluded that there was a relationship between generations to the incidence of stunting through the result of interactions between genetic factors and environmental conditions of the mother, such as nutritional intake, especially during pregnancy. To reduce the risk factors for stunting among children born to short mothers, feeding during infancy/under two years of age must be optimized by providing complementary food products that contain many proteins, micro minerals, and vitamins needed for this growth period. The limitations of this study are as follows: 1) Inability to control/ascertain the mothers' experiences in providing complementary feeding, and 2) Inability to control the role of the head of the household and other family members in providing complementary feeding to the target population.

4. CONCLUSION

Based on the analysis results, it can be concluded that there was an increase in mothers' knowledge regarding the development of local foodstuff-based complementary food products to meet the nutritional needs of infants and children under two in an attempt to reduce stunting rates. The increase in knowledge (delta) of the treatment group in Triharjo Village was higher

than that of the control group in Caturharjo Village. Porridge MP-ASI "SITOLE" recipes for local foodstuff-based complementary foods rich in proteins, minerals, and vitamins have been prepared to manage stunting. Further studies should focus on implementing recipes for local foodstuff-based complementary food to meet the nutritional needs of children aged 6 to 12 months among families with fewer than two children.

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