

## THE EFFECT OF PROVIDING EDUCATION ON HEALTHY MENU PREPARATION ON MOTHERS' KNOWLEDGE IMPROVEMENT AND CHILDREN'S WEIGHT GAIN CHART INCREASE

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### ABSTRAK

In 2022, it was estimated that 45 million children under the age of 5 (6.8%) suffered from wasting, with 13.6 million (2.1%) of them experiencing severe wasting. More than three-quarters of children with severe wasting live in Asia, and 22% live in Africa. The 2023 Joint Malnutrition Estimates (JME) report showed insufficient progress toward meeting the global nutrition targets set by WHO for 2025 and the Sustainable Development Goals (SDGs) for 2030. The aim of this study is to investigate the impact of providing education on healthy menu preparation on improving mothers' knowledge and children's weight gain in Tibang Village, Syiah Kuala District, Banda Aceh City.

This study is a "Quasi-experimental pre-post test" design, where an intervention or treatment is given to the study subjects, and the effects of the treatment are then measured and analyzed. The population in this study consisted of all mothers with children aged 1-5 years in Tibang Village, Syiah Kuala District, Banda Aceh City at the time of the study, with a sample size of 95 participants selected through total sampling. The study was conducted in June 2023 using observation sheets for data collection. Data analysis was performed using the Wilcoxon test. The univariate analysis results show that before receiving the education on healthy menu preparation, the majority of mothers (52.6%) had insufficient knowledge, whereas after receiving the education, most mothers (57.9%) had good knowledge. Regarding children's weight, before the education, 63.2% of children did not show weight gain, whereas after the education, 68.4% of children showed weight improvement. The bivariate analysis results indicate that there was a significant effect of providing education on healthy menu preparation on improving mothers' knowledge, with a p-value of  $0.000 < \alpha: 0.05$ , and also a significant effect on children's weight gain, with a p-value of  $0.001 < \alpha: 0.05$ . It is hoped that mothers can increase their knowledge about healthy menu preparation for children aged 1-5 years.

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### INTRODUCTION

Every child certainly needs good nutrition to grow and develop optimally. With proper nutrition, they are better prepared to live healthy lives, free from poverty, to learn and participate, and to continue developing throughout their lives, with sustainable

benefits passed down from generation to generation. The last decade has shown significant progress in improving maternal and child nutrition, including a one-third reduction in the proportion of children suffering from undernutrition. However, malnutrition threatens children's ability to survive and thrive.

Toddlers are particularly vulnerable to health issues resulting from poor nutritional status. Long-term nutritional deficiencies in toddlers can lead to growth and developmental problems, such as wasting, stunting, and mental development disorders. There are many factors that contribute to cases of undernutrition (Nugrahaeni, 2018).

Undernutrition and malnutrition are conditions in which an individual lacks sufficient nutrients or has below-average nutritional intake. Undernutrition refers to a deficiency of essential nutrients such as proteins, carbohydrates, fats, and vitamins required by the body. Malnutrition typically occurs in children under the age of five and represents the most severe form of chronic nutritional deficiency (Alamsyah et al., 2015).

A mother's knowledge about toddler nutrition significantly influences the types and quality of meals prepared and served (Setyaningsih & Agustini, 2014). During this stage, a mother plays a crucial role because if she lacks knowledge about fulfilling her toddler's nutritional needs, it can impact the child's growth and development. Knowledge is an important factor in shaping behavior, including behavior related to meeting toddlers' nutritional needs (Hovhannisyan et al., 2014).

There are three behavioral changes that occur in a person's life: knowledge, attitude, and behavior. One effective way to change individual or group behavior is through health education. Implementing health education is considered a method that can enhance knowledge, which in turn may lead to improved attitudes and positive behaviors toward health (Notoatmodjo, 2012).

In 2022, it was estimated that 45 million children under the age of 5 (6.8%) suffered from wasting, and 13.6 million (2.1%) of them experienced severe wasting. More than three-quarters of these severely wasted children live in Asia, while 22 percent are in Africa. The Joint Malnutrition Estimates (JME) released in 2023 show that progress has been insufficient to meet the global nutrition targets (WHO) by 2025 and the Sustainable Development Goals (SDGs) by 2030.

About one-third of all countries are "on track" to halve the number of stunted children by 2030. As of now, progress assessments are not feasible for about one-quarter of the countries. Even fewer countries are expected to achieve the target prevalence of overweight children (3%) by 2030, with only 1 in 6 countries currently on track.

Assessments of progress toward the wasting target cannot be made in nearly half of the countries (UNICEF et al., 2023).

According to the Indonesian Nutrition Status Survey (SSGI), the number of stunted children in 2021 was 5,253,404, and this number dropped to 4,558,899 in 2022. This represents a 2.8% decrease in the stunting rate. In 2022, the stunting rate in Indonesia was recorded at 21.6%. In Aceh Province, the stunting rate reached 31.2% in 2022 (SSGI, 2023).

Based on the 2022 Aceh Health Profile, the prevalence of undernourished toddlers in Banda Aceh City was 4.80%. Undernutrition among toddlers is caused by chronic nutritional problems influenced by maternal conditions during pregnancy and early childhood, including illnesses experienced during the toddler years. Such nutritional issues are not solely related to health problems but are also influenced by other conditions that indirectly affect health (Aceh Health Office, 2022).

Additionally, data from the Banda Aceh City Health Office in 2021 showed the following rates of undernourished toddlers: Meuraxa 0.72%, Jaya Baru 0%, Banda Raya 0%, Baiturrahman 0.77%, Batoh 0.09%, Kuta Alam 0.17%, Lampulo 0.3%, Syiah Kuala 364 toddlers, Jeulingke 0.11%, and Ule Kareng 576 toddlers (Banda Aceh City Health Profile, 2021).

According to data from Jeulingke Public Health Center in 2024, the prevalence of toddlers with abnormal (low) body weight was 22 children. A preliminary survey previously conducted in Tibang Village, Syiah Kuala District, Banda Aceh City, found that 143 toddlers were registered at the local *posyandu* (Tibang Village Report, 2024).

To prevent undernutrition in toddlers, it is essential to provide mothers with education to enhance their knowledge of proper toddler nutrition, including how to prepare and serve nutritious meals. This can help increase toddlers' body weight and prevent undernutrition, thereby avoiding unwanted health problems in toddlers.

According to Paramitha (2021), education or health education is an effort to provide information, instruction, or to enhance the understanding of patients or the community about health. This educational effort aims to increase mothers' knowledge so that toddlers receive adequate nutrition and gain healthy body weight.

According to research by Riani (2021), there was an increase in mothers' knowledge after being given nutritional education through the lecture method, from an average score of 4.50 before education to 7.65 after. There was a significant difference in knowledge before and after the educational intervention, with a p-value of 0.004 (<0.05), indicating a statistically significant improvement in maternal knowledge levels.

## RESEARCH METHODE

This research design uses a pretest conducted before the treatment and a posttest conducted after the treatment, utilizing a Quasi-Experimental Study method with a One Group Pre-Test Post-Test design. In this study, initial knowledge and dietary intake (energy and protein intake) of the samples will be tested before the intervention (pretest) and after the intervention (posttest). The research was conducted in Tibang Village, Syiah Kuala Subdistrict, Banda Aceh City, in June 2023. The population of this study consisted of all mothers with children aged 1-5 years in Tibang Village, Syiah Kuala Subdistrict, Banda Aceh City. The sampling technique used in this study was Total Sampling, with a total of 95 respondents.

The instrument used in this study was a questionnaire. A questionnaire is a list of well-structured and pre-prepared questions in which respondents either answer in writing (self-administered) or orally (interview). The type of questionnaire used was a closed-ended questionnaire, where answer options were provided and the respondents simply selected one. The contents of the questionnaire included general and specific data. General data included name, age, gender, education, and birth history, while specific data included knowledge about nutrition, food/menu ingredients, and food preparation methods. This questionnaire was used to measure knowledge.

### Data Processing and Analysis

#### 1. Data Processing

Data processing in this study follows the theory proposed by Arikunto, who states that processing is a very important stage in research. Activities in data processing include:

- a. Editing, which is examining the collected data and performing checks and corrections.
- b. Coding, which is assigning codes to the data, done before and after data collection. In the next step of data processing, these codes are reverted to the original variables.
- c. Transferring, which involves organizing the coded data in sequence and entering it into tables.
- d. Tabulating, which is transferring the obtained data into tables such as spreadsheet tables in Excel or into the SPSS program.

#### 2. Data Analysis

- a. Univariate Analysis

Univariate analysis was carried out for each variable obtained in the study. This type of analysis only results in the distribution and percentage of each variable, which describes the characteristics of each variable by calculating the frequency and percentage using computer software.

The data entered into the frequency distribution table were calculated for the percentage of each variable using the following formula:

$$P = \frac{f}{n} \times 100\%$$

*Explanation:*

P = Percentage

f = Observed frequency

n = Total sample size

#### b. Bivariate Analysis

According to Sugiyono (2020), bivariate analysis is used to test the influence or differences between two variables. The choice of statistical test to be used depends on the data scale, sample size or population, and the number of variables studied.

Bivariate analysis was conducted to test the research hypothesis, namely to determine whether there is an effect of providing healthy menu preparation education on increasing mothers' knowledge and improving children's weight charts in Tibang Village, Syiah Kuala District, Banda Aceh City.

Analysis to determine the effect of education on healthy menu preparation on increasing mothers' knowledge and children's weight improvement was conducted using a paired t-test for normally distributed data, aimed at finding whether there is a mean difference between two paired or related samples. For non-normally distributed data, the Wilcoxon test was used, with the following criteria:

1. If the significance value (2-tailed)  $\leq 0.05$ , it indicates a significant effect from the given intervention on the respective variables.
2. If the significance value (2-tailed)  $> 0.05$ , it indicates no significant effect from the intervention on the respective variables.

Meanwhile, the normality test for small samples ( $>50$ ) uses the Kolmogorov-Smirnov test with the following criteria:

1. If the significance value  $> 0.05$ , the data are normally distributed.
2. If the significance value  $< 0.05$ , the data are not normally distributed.

## RESULTS AND DISSCUSION

### 1. Univariate Analysis

#### a. Mothers' Knowledge Before and After Being Given Education on Healthy Menu Preparation

**Table 1.** Mother's Knowledge Before And After Giving Healthy Menu Processing Education

No.	Mother's Knowledge	Pre Test		Post Test	
		f	%	f	%
1.	Good	17	17,9%	55	57,9%
2.	Enough	28	29,5%	22	23,2%
3.	Less	50	52,6%	18	18,9%
	Sum	95	100	95	100

From Table 1, it can be seen that the knowledge of mothers before being given education on healthy menu preparation in Tibang Village, Syiah Kuala District, Banda Aceh City in 2023 was categorized as good for 17 people, with a percentage of 17.9%, as adequate for 28 people, with a percentage of 29.5%, and as poor for 50 people, with a percentage of 52.6%. Meanwhile, the knowledge of mothers after being given education on healthy menu preparation was categorized as good for 55 people, with a percentage of 57.9%, as adequate for 22 people, with a percentage of 23.2%, and as poor for 18 people, with a percentage of 18.9%.

#### b. Children's Weight Before and After Receiving Education on Healthy Menu Preparation

**Table 2.** Frequency Distribution of Children's Weight Before and After Receiving Education on Healthy Menu Preparation

No.	Child Weight	Pre Test		Post Test	
		f	%	f	%
1.	Climb	35	36,8%	65	68,4%
2.	Not Rising	60	63,2%	30	31,6%
	Sum	95	100	95	100

From Table 2, it can be seen that the children's weight before receiving education on healthy menu preparation in Tibang Village, Syiah Kuala District, Banda Aceh City in 2023 was categorized as increased for 35 children, with a percentage of 36.8%, and as not increased for 60 children, with a percentage of 63.2%. Meanwhile, the children's weight after receiving education on healthy menu preparation was categorized as increased for 65 children, with a percentage of 68.4%, and as not increased for 30 children, with a percentage of 31.6%.

## 2. Bivariate Analysis

### a. Normality Test of Mother's Knowledge Improvement Data

**Table 3.** Results of Normality Test of Data

Group	P-Value	P	p- $\alpha$	Criterion
Increased Knowledge of the mother	Before	0.000	0.05	Abnormal Distribution
	After	0.000	0.05	Abnormal Distribution

Table 3 indicates that the data are not normally distributed, as evidenced by significance values for each variable being below 0.05. Accordingly, it can be concluded that the data deviate from normality. Therefore, for bivariate analysis involving numerical variables with non-normal distributions, a non-parametric statistical approach, specifically the wilcoxon test, was employed.

### b. Normality Test for Children's Weight Gain Data

**Table 4.** Results of the Normality Test

Group	P-Value	p	p- $\alpha$	Criterion
Increased Knowledge of the mother	Before	0.001	0.05	Abnormal Distribution
	After	0.001	0.05	Abnormal Distribution

As shown in Table 4, the data are not normally distributed, as indicated by significance values for each variable being less than 0.05. Therefore, it can be concluded that the data do not follow a normal distribution. Consequently, for bivariate analysis involving numerical data that are not normally distributed, a non-parametric statistical method, specifically the Wilcoxon test, was used.

### c. The Effect Of Nutrition Education On Healthy Menu Preparation On Mothers' Knowledge Improvement

**Table 5.** Results of the Test on the Effect of Nutrition Education on Healthy Menu Preparation on Mothers' Knowledge Improvement

	Mean	P-Value	Results
Pre Test	6.23	0.000	H0 Rejected
Post Test	8.95	0.000	H0 Rejected

Table 5 shows that the average knowledge score of mothers before receiving education on healthy menu preparation was 6.23, while the average score after the intervention increased to 8.95. This indicates a difference between pre-test and post-test scores, with the post-test group scoring higher. The p-value obtained was 0.000, which is less than 0.05; therefore, the null hypothesis ( $H_0$ ) is rejected and the alternative hypothesis ( $H_a$ ) is accepted. It can thus be concluded that nutrition education on healthy menu preparation had a significant effect on

improving mothers' knowledge in Tibang Village, Syiah Kuala Subdistrict, Banda Aceh City.

- d. The Effect of Nutrition Education on Healthy Menu Preparation on Children's Weight Gain

**Table 6.** Results of the Test on the Effect of Nutrition Education on Healthy Menu Preparation on Children's Weight Gain

	Mean	P-Value	Results
Pre Test	21.05	0.001	H0 Rejected
Post Test	25.31	0.001	H0 Rejected

Table 6 shows that the average weight of children before receiving education on healthy menu preparation was 21.05, while the average weight after the intervention increased to 25.31. This indicates a difference between the pre-test and post-test, with the post-test group showing higher values. The p-value obtained was 0.001, which is less than 0.05; therefore, the null hypothesis (Ho) is rejected and the alternative hypothesis (Ha) is accepted. It can thus be concluded that nutrition education on healthy menu preparation had a significant effect on increasing children's weight in Tibang Village, Syiah Kuala Subdistrict, Banda Aceh City.

## Discussion

### 1. Univariate Analysis

#### a. Mothers' Knowledge Before Receiving Education on Healthy Menu Preparation

Based on the research findings, the knowledge of mothers before receiving education on healthy menu preparation in Tibang Village, Syiah Kuala Subdistrict, Banda Aceh City in 2023 was categorized as follows: 17 mothers (17.9%) had good knowledge, 50 mothers (29.5%) had moderate knowledge, and 20 mothers (52.6%) had poor knowledge.

According to Agustini (2019), knowledge is the result of human sensory perception, or a person's awareness of an object through their senses (such as eyes, nose, etc.). Most human knowledge is acquired through hearing and sight. A person's knowledge of an object varies in intensity or level.

A previous study by Sudarman (2017) on the effectiveness of healthy food education for toddlers in Jeumpa Hospital, Pontianak (a pre-experimental study) found that mothers' knowledge before receiving nutrition education was mostly in the poor category.

**b. Mothers' Knowledge After Receiving Education on Healthy Menu Preparation**

The study found that mothers' knowledge after receiving education on healthy menu preparation in Tibang Village, Syiah Kuala Subdistrict, Banda Aceh City in 2023 improved, with 55 mothers (57.9%) in the good category, 22 mothers (23.2%) in the moderate category, and 18 mothers (18.9%) in the poor category.

According to Notoatmodjo (2018), knowledge is the result of "knowing," which occurs after a person senses a specific object. This sensory process involves the five human senses: sight, hearing, smell, taste, and touch.

A previous study by Haqiqi (2020), which used a true experimental design with a pre-test and post-test control group in Lamongan, found that most mothers had good knowledge after receiving toddler nutrition education, with 35 mothers (60%) in the good category.

**c. Children's Weight Before Receiving Toddler Nutrition Education**

The study found that before receiving education on healthy menu preparation in Tibang Village, Syiah Kuala Subdistrict, Banda Aceh City in 2023, 35 children (36.8%) experienced weight gain, while 60 children (63.2%) did not.

According to Supariasa (2022), body weight is one of the parameters that reflect body mass. Body mass is highly sensitive to sudden changes, such as illness, reduced appetite, or decreased food intake. Under normal conditions—when health is stable and nutritional needs are met—body weight increases with age.

A previous study by Sulistianingsih (2020) on the effectiveness of toddler nutrition education in Pringadi Hospital, Medan (a pre-experimental study), showed that children's weight before receiving nutrition education was mostly in the "no weight gain" category.

**d. Children's Weight After Receiving Education on Healthy Menu Preparation**

The study found that after receiving education on healthy menu preparation in Tibang Village, Syiah Kuala Subdistrict, Banda Aceh City in 2023, 65 children (68.4%) experienced weight gain, while 30 children (31.6%) did not.

According to Sukmawati (2023), body weight represents the total mass of proteins, fats, water, and minerals in the body. It is a composite measurement of total body size. Body weight is often used as an anthropometric parameter because it can reflect short-term changes and current nutritional status.

A previous study by Tri Utami (2020) on the effectiveness of toddler nutrition education in Mojokerto Hospital (a pre-experimental study) showed that children's weight after receiving nutrition education was mostly in the "weight gain" category.

## 2. Bivariate Analysis

### a. The Effect of Nutrition Education on Healthy Menu Preparation on Improving Mothers' Knowledge

The results of the study indicate that nutrition education on healthy menu preparation has a significant effect on improving mothers' knowledge, with a p-value of 0.000, which is less than 0.05. This suggests that providing nutrition education on healthy menu preparation has a positive impact on increasing mothers' knowledge.

According to Setyaningsih & Agustini (2019), a mother's knowledge about toddler nutrition influences the meals and the quality of food that she prepares and serves. At this stage, the role of a mother is crucial. If a mother's knowledge of fulfilling the nutritional needs of toddlers is insufficient, it will affect the growth and development of the child, as this knowledge is essential for shaping a person's behavior, including how they meet the nutritional needs of toddlers.

This aligns with the theory of Notoatmodjo (2018), which states that there are three behavioral changes in a person's life: knowledge, attitude, and behavior. One way to change behavior in individuals or groups is through health education. Health education implementation is an effective method as it is believed to enhance knowledge, which, in turn, can improve or change attitudes and behaviors toward health positively.

These findings are consistent with a previous study conducted by Sriwahyuni (2019) at Rumah Sehat Kasih Bunda, Medan Selayang, which examined the effect of nutrition education on healthy menu preparation on increasing children's weight. The study found a significant impact with a p-value of 0.000.

According to the researcher's assumption, health education is an effort to provide information, instructions, or increase public/patient understanding about health. This education aims to enhance mothers' knowledge to ensure that toddlers receive proper nutrition, leading to weight gain.

**b. The Effect of Nutrition Education on Healthy Menu Preparation on Improving Children's Weight Gain Chart**

The research findings indicate that there is a significant effect of nutrition education on healthy menu preparation on improving children's weight gain chart, with a p-value of 0.001, which is less than 0.05. This suggests that providing nutrition education on healthy menu preparation has a positive impact on improving the children's weight gain chart.

According to Muaris (2016), toddlers are children over the age of 1 year and under 5 years. This age period is crucial for a child's physical development. At this stage, a child's growth is rapid and requires appropriate nutritional intake. This nutritional sufficiency greatly influences the child's health and will have a continuous impact on their future health.

This is consistent with a previous study by Sukmawati & Sirajuddin (2023), which concluded that child feeding assistance and healthcare were found to positively affect weight gain. The treatment group showed a higher average weight gain of 0.44 kg (440 g), while the control group had a smaller weight gain of 0.1 kg (100 g). The average weight gain in the treatment group surpassed the minimum weight gain (MWG) threshold.

Based on the assumption, toddlers are highly vulnerable to health problems due to poor nutritional status. Prolonged malnutrition in toddlers can lead to growth and development issues, such as wasting, stunting, and mental developmental delays. Several factors contribute to malnutrition, including maternal knowledge and the lack of monitoring of child growth and development. It is recommended that mothers increase their knowledge on how to provide healthy meals for toddlers and regularly take children to health centers to monitor their growth and development.

## **CONCLUSION AND SUGGESTIONS**

### **Conclusion**

The research results on the impact of nutrition education on healthy menu preparation on improving mothers' knowledge and the children's weight gain chart in Tibang Village, Syiah Kuala Subdistrict, Banda Aceh City, show the following:

1. The majority of mothers' knowledge before receiving education on healthy menu preparation in Tibang Village, Syiah Kuala Subdistrict, Banda Aceh City was categorized as poor, accounting for 52.6%.
2. The majority of mothers' knowledge after receiving education on healthy menu preparation in Tibang Village, Syiah Kuala Subdistrict, Banda Aceh City was categorized as good, accounting for 57.9%.
3. The majority of children's weight before receiving education on healthy menu preparation in Tibang Village, Syiah Kuala Subdistrict, Banda Aceh City was categorized as not showing any significant weight gain, accounting for 63.2%.
4. The majority of children's weight after receiving education on healthy menu preparation in Tibang Village, Syiah Kuala Subdistrict, Banda Aceh City showed a moderate weight gain, accounting for 68.4%.
5. There is a significant effect of providing education on healthy menu preparation on mothers' knowledge, with a p-value of 0.000 ( $p < \alpha: 0.05$ ).
6. There is a significant effect of providing education on healthy menu preparation on children's weight gain, with a p-value of 0.001 ( $p < \alpha: 0.05$ ).

### **Suggestions**

#### 1. Respondents

Respondents should be encouraged to increase their knowledge about healthy menu preparation for children aged 1-5 years and to regularly bring their children to the integrated health post (Posyandu) to monitor their growth and development.

#### 2. Research Location

The research location should ensure the implementation of monthly Posyandu activities to monitor children's growth and development.

#### 3. Educational Institutions

The findings of this research can serve as a reference for the development of knowledge in the fields of healthy menu preparation and child growth and development.

#### 4. Future Researchers

Future researchers are advised to expand the number of variables and samples studied in order to enrich the scientific knowledge in this field.

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