

## **The Effect of Providing Additional Food Based on Local Food on Weight Changes in Wasting Toddlers**

**Melvira Alvenda<sup>1\*</sup>, Tri Makmur<sup>1</sup>, Ari Kurniasih<sup>1</sup>, Nondang Purnama Siregar<sup>1</sup>**

<sup>1</sup> Faculty of Medicine, Universitas Islam Sumatera Utara, Indonesia

---

### **Article Info**

#### **Article history:**

Received February 05, 2025

Revised February 11, 2025

Accepted March 05, 2025

---

#### **Corresponding Author:**

##### **Melvira Alvenda**

Faculty of Medicine, Universitas Islam  
Sumatera Utara, Indonesia

Email:

[melviraalvenda@gmail.com](mailto:melviraalvenda@gmail.com)

---

### **ABSTRACT**

**Background:** Wasting is a condition characterized by low body weight in relation to height or length. This condition is often caused by infections and inadequate nutritional intake in children. **Objective:** This study aims to determine the effect of Supplementary Feeding (SF) based on local food on the weight change of wasting toddlers. **Methods:** This study is a quasi-experimental research design using a pre-test and post-test framework over a period of 14 days. The sample consisted of 13 toddlers with wasting nutritional status who met the inclusion and exclusion criteria. Data analysis was performed using dependent t-test. **Results:** The findings showed that most respondents were male (76.9%) and aged between 1-3 years. The average weight before the provision of local food-based SF was 9.2 kg, and after the provision, it increased to 9.4 kg. The weight change difference before and after the SF was 0.2 kg, with the dependent t-test showing a p-value of 0.000. **Conclusion:** There is a significant effect of Supplementary Feeding based on local food on the weight change of toddlers with wasting status at Puskesmas Pangkalan Baru, Central Bangka Regency, Bangka Belitung Islands Province.

**Keywords:** *Health, toddlers, food*

This article is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).



---

## **1. INTRODUCTION**

Waste is a condition of malnutrition where the toddlers' weight is not appropriate based on their body length or height, resulting in thinness and affecting physical growth and cognitive development in toddlers (Efrizal 2021). Wasting is based on Body Mass Index resulting from measuring BB/PB or BB/TB (weight according to length or height) with the body length index used by children aged 0-24 months, while the body height index is used by children over 24 months (Werdani 2023).

Waste is one of the main health problems in children and can cause the most frequent morbidity and mortality worldwide. Worldwide, wasting causes more than a third of children to die, which could have been prevented through public health interventions (Danso and Appiah 2023). The global wasting target until 2030 aims to reduce the prevalence of wasting to below 5% by 2025 and less than 3% by 2030 (Organization. 2013). Currently, it is estimated that as many as 45.4 million or equivalent to 6.7% of toddlers worldwide are experiencing wasting (undernutrition) and toddlers who experience severely wasted (malnutrition) are as many as 13.6 million or 2% (Afrah, Desmawati, and Sriyanti 2024). According to WHO data, developed countries have cases of wasting, even though the prevalence is very low, for example, the United States at 0.7% and the Western Pacific at 2.1%.

Wasting incidents often occur in developing countries, particularly in Asia and Africa. Asia has a prevalence of wasting incidents of 69% in toddlers and 27% (Danso and Appiah 2023). In 2017, the WHO stated that up to 50% of infant and child deaths in Asia are due to wasting. The three developing countries in Asia with the highest wasting rates in toddlers from 2017 to 2021 were India with 5,772,472 cases, followed by Indonesia with 812,564 cases, and Pakistan with 678,925 (Utari et al. 2023). Asian countries with wasting incidence rates still quite high include Timor Leste 300 thousand, Laos 400 thousand, Cambodia 1 million, Myanmar 1.7 million, Vietnam 5.6 million, Philippines 5.6 million, Thailand 6.2 million, Indonesia 17.7 million (Ahdiat 2022).

Waste is a priority for the 2020-2024 RPJMN with the aim of reducing the prevalence of wasting to 7% by 2024 (Indonesia, R., Presiden, P., & Indonesia 2024). Based on the results of the 2022 Indonesian Nutritional Status Survey (SSGI) data, there is an increase in the wasting rate from 17% to 17.1% (Kesehatan 2022). According to 2023 Indonesian Health Survey data, the highest prevalence of wasting in toddlers according to (PB/TB) was in Maluku Province and 11% and the lowest in Bali Province at 3.1%. Several provinces have quite high wasting cases and some

are classified as low, such as Papua Province (9.2%), Southeast Sulawesi Province (8.3%), East Java Province (7.0%), Bangka Belitung Islands (5.6%), and North Sumatra Province (5.5%) (Indramayu 2020).

Bangka Belitung Islands Province is one of the provinces facing wasting problems for toddlers. The prevalence of wasting has decreased from 2021 to 2022. From the results of the SSGI data in 2021, the prevalence of wasting in Bangka Belitung Islands Province was 6.2%, which decreased to 5.8% (Kesehatan 2022).

Based on the graph above, in Bangka Belitung Islands Province, there are seven districts with varying wasting incidence rates. The highest wasting prevalence of 8.9% is in the Central Bangka district, while the lowest prevalence of 4.2% is in the Bangka district (Kesehatan 2022).

The government is trying various ways to overcome the problem of wasting, one of which is to provide additional food (PMT), which aims to restore nutritional intake in toddlers. PTM is the provision of food without replacing the main food while still paying attention to the nutritional value of the food provided. Law No. 36 of 2009 contains the government's efforts to overcome this concern. According to this law, the government is very much needed to play an active role in increasing nutritional improvements in the community by looking at food problems (Pratiwi and Raharjo 2020).

To date, the government has provided additional food (PMT) in the form of manufactured foods, such as biscuits with special formulations, vitamins, and minerals. In 2023, the Ministry of Health changed its PMT strategy by using local food ingredients for pregnant women and toddlers. The food ingredients used must still pay attention to nutritional value, such as macronutrient content, which is divided into protein, fat, and carbohydrates, whereas micronutrients are divided into minerals and vitamins (Hadju et al. 2023). Providing additional food is expected to help restore wasting problems in toddlers and as an addition to fulfilling daily nutritional needs. PMT was given for 4 to 8 weeks. The implementation of monitoring the provision of PMT in toddlers includes the toddler's weight. The measurement of length or height is performed at the beginning and end of the PMT provision (Sinaga et al. 2023).

The results of Abdillah, Citra, and Nisatami's research at the Citeras Health Center, Garut Regency, showed differences in body weight, nutritional status BB/U, BB/PB, and BB/TB in toddlers before being given PMT and after PMT. Based on these results, there is a decrease in the prevalence of wasting in toddlers (Fajar, Anggraini, and Husnul 2022).

Based on the study above, the highest incidence of wasting in Bangka Belitung Province is in the Central Bangka Regency, with a prevalence of 8.9%, and the lowest in Bangka Regency, with a prevalence of 4.2%. This makes Central Bangka Regency rank first in wasting incidence, with the largest contributor to wasting incidence coming from the Pangkalan Baru Health Center area of 195 toddlers in 2023. From the results of the initial survey, it was found that the Pangkalan Baru Health Center has been implementing the Local Food-Based PMT program since 2023, but there has been no study on Local Food-Based PMT in the Pangkalan Baru Health Center work area. Therefore, researchers were interested in analyzing the Effect of Local Food-Based PMT on changes in the weight of wasting toddlers at the Pangkalan Baru Health Center, Central Bangka Regency, Bangka Belitung Islands Province.

## 2. METHOD

This type of research used a quantitative approach. The research design used was quasi-experimental, with a one group pre-post design. A one-group pre post design is usually used in health research. By measuring body weight before being given Local Food Based PMT (pre) then given an intervention in the form of Local Food Based PMT for 2 weeks (14 days) with administration in a day as much as 1 (one) time, After being given the intervention, the last body weight measurement (post) was carried out on the selected sample in line with the exclusion and inclusion criteria (Abraham, I. and Supriyati 2022).

This study used a one-group pre-post design because the researcher wanted to see the effect of changes in the weight of wasting toddlers before and after being given local food-based PMT with the intervention of PMT provision carried out by the Pangkalan Baru Health Center Cadres.

This study was conducted at the Pangkalan Baru Health Center. The Pangkalan Baru Health Center is one of the eight health centers in the Central Bangka Regency. The Pangkalan Baru Health Center has the highest wasting incidence rate among the eight health centers in the Central Bangka Regency. The working area of the Pangkalan Baru Health Center is 76.14 km<sup>2</sup> covering 1 (one) sub-district and 6 (six) villages; Dul Village, Beluluk, Padang Baru, Jeruk, Air Mesu, East Air Mesu, and Ketitik. The population in the working area of the Pangkalan Baru Health Center is 23,299 people, divided into 11,856 men and 11,443 women, with a population density of 306 people/km<sup>2</sup> and a total of 7,376 heads of families.

A population is an element of research that includes subjects and objects with certain characteristics and traits. (Amin et al., 2023). In this study, the population comprised wasted toddlers who received local food-based PMT at the Pangkalan Baru Health Center in 2024, totaling 68 toddlers with wasting nutritional status. Based on the calculation of the sample size using the Lameshow formula (1997), the sample size was found to be 13 using the consecutive sampling technique.

Variables are attributes of a person that have variations between one subject and another. Sugiyono describes research variables as something in any form that is determined by researchers to be studied so that information is produced from the problem, and then conclusions are drawn. The research variables were divided into two categories, independent variables (free) and dependent variables (bound) (Ulfa, 2020).

Independent variables, commonly known as free variables, are those that influence a condition or value that, when they appear, will change another condition or value (Ulfa 2020). In this study, the independent variable was the Provision of Additional Food (PMT), Based on Local Food.

### 3. RESULTS AND DISCUSSION

This analysis was conducted to study the incidence of wasting in toddlers who underwent Local Food-Based PMT at Pangkalan Baru Health Center, Central Bangka Regency.

#### 3.1. Univariate Analysis

Table 1. Frequency Distribution of Respondents at Pangkalan Baru Health Center by Age

Age	Freq	Percentage
1-3 years old	10	76,9
4-6 years old	3	23,1

According to Table 1, the age characteristics of wasting toddlers who received the most local food-based PMT were 10 toddlers (76.9%) aged 1-3 years, while there were 3 toddlers aged 4-6 years (23.1%).

The frequency distribution of the age of respondents receiving Local Food-Based PMT at the Pangkalan Baru Health Center, Central Bangka Regency, was divided into two categories, namely toddlers aged 1-3 years and toddlers aged 4-5 years. Respondents in this study were children aged 12-59 months with wasting nutritional status at the Pangkalan Baru Health Center, Central Bangka Regency, who were taken in accordance with the established criteria as many as 13 toddlers. Based on the Regulation of the Minister of Health (PMK) No. 28 of 2019 concerning the Recommended Nutritional Adequacy Rate for Indonesian people, especially toddlers, it is divided into two categories, namely 1-3 years and 4-5 years in parentheses flushed to the right margin, as in (1). The use of Microsoft Equation Editor or MathType was preferred.

Table 2. Frequency Distribution of Respondents at Pangkalan Baru Health Center by Gender

Age	Freq	Percentage
Male	10	76,9
Female	3	23,1

According to Table 2, the gender characteristics of wasting toddlers who received Local Food-Based PMT at the Pangkalan Baru Health Center were mostly male, with 10 toddlers (76.9%), while the gender characteristics were female, with 3 toddlers (23.1%).

Frequency distribution of gender of respondents receiving Local Food-Based PMT at Pangkalan Baru Health Center, Central Bangka Regency, is divided into two categories, male toddlers and female toddlers.

Table 3. Frequency Distribution of Respondents at Pangkalan Baru Health Center Based on Exclusive Breastfeeding

Breastfeeding	Freq	Percentage
No Breastfeeding	13	100

Table 3, shows the characteristics of exclusive breastfeeding in wasting toddlers who received local food-based PMT at the Pangkalan Baru Health Center, all 13 toddlers (100.0%) were not given breast milk.

Distribution of the frequency of exclusive breastfeeding of respondents receiving Local Food-Based PMT at the Pangkalan Baru Health Center, Central Bangka Regency, was divided into two categories, toddlers who received exclusive breastfeeding (children only received breast milk without other food and drinks besides breast milk) and toddlers who did not receive exclusive breastfeeding.

Table 4. Frequency Distribution of Respondents at Pangkalan Baru Health Center Based on Socioeconomics

Economic	Freq	Percentage
Poor	13	100

Table 4, shows the socio-economic characteristics of wasting toddlers who received Local Food-Based PMT at the Pangkalan Baru Health Center, all of which were poor or underprivileged families, totaling 13 toddlers (100.0%).

The frequency distribution of the socio-economic status of respondents receiving Local Food-Based PMT in the Pangkalan Baru Health Center area, Central Bangka Regency, is divided into two categories, toddlers born from poor families (Gakin) and toddlers born from well-off families.

Table 5. Frequency Distribution of Respondents at Pangkalan Baru Health Center Based on Birth Weight

Birth Weight	Freq	Percentage
Low	1	7,7
Normal	12	92,3

As shown in Table 5, the characteristics of the birth weight of wasting toddlers who received Local Food-Based PMT at the Pangkalan Baru Health Center were the highest, namely normal birth weight, as many as 12 toddlers (92.3%). The frequency distribution of birth weight of respondents receiving Local Food-Based PMT in the Pangkalan Baru Health Center area, Central Bangka Regency, is divided into two categories, toddlers born with low birth weight (LBW) if the child's birth weight is less than 2500 grams and toddlers born with normal weight (if the birth weight is more than 2500 grams).

Table 6 Distribution of Average Energy Intake Before and After Provision of Local Food-Based PMT

Energy Intake	Average (Kcal)	Minimum Value (Kcal)	Maximum Value (Kcal)	SD (Kcal)
Before	867,1	739,2	983,9	79,1
After	953,4	725,5	1163,8	122,08

Based on the results of the analysis above, it is known that the average energy intake before the Local Food-Based PMT at the Pangkalan Baru Health Center, Central Bangka Regency was 867.1 kcal, with a minimum energy value of 739.2 kcal and a maximum energy value of 983.9 kcal. After the Local Food-Based PMT, the average energy intake of toddlers increased to 953.4 kcal, with a minimum energy value of 725.5 kcal and a maximum energy value of 1163.8 kcal. This shows that there was an increase in energy intake in wasting toddlers after Local Food-Based PMT.

Table 7 Distribution of Average Protein Intake Before and After Provision of Local Food-Based PMT

Protein Intake	Average (Kcal)	Minimum Value (Kcal)	Maximum Value (Kcal)	SD (Kcal)
Before	27,8	23,9	32,9	2,75
After	28,8	25,0	32,2	2,38

Based on the analysis above, it can be seen that the average protein intake before the Provision of Local Food-Based Supplementary Feeding (PMT) at the Pangkalan Baru Health Center, Central Bangka Regency was 27.8 grams or equivalent to 111.2 kcal with a minimum protein intake value of 23.9 grams equivalent to 95.6 kcal and a maximum protein intake value of 32.9 grams equivalent to 131.6 kcal, while after PMT the average protein intake was 28.8 grams equivalent to 115.2 kcal with a minimum protein intake value of 25.0 grams equivalent to 100 kcal and a maximum protein intake value of 32.2 grams equivalent to 128.8 kcal. This shows that there was an increase in protein intake in wasting toddlers after PMT, with an average increase in protein intake of 1 g equivalent to 4 kcal.

Table 8 Distribution of Average Fat Intake Before and After Provision of Local Food-Based PMT

Fat Intake	Average (Kcal)	Minimum Value (Kcal)	Maximum Value (Kcal)	SD (Kcal)
Before	27,0	20,2	38,4	6,70
After	24,9	13,8	40,4	8,13

Based on the analysis above, it is known that the average fat intake in wasting toddlers before Local Food-Based PMT at the Pangkalan Baru Health Center, Central Bangka Regency was 27.0 grams equivalent to 243 kcal with a minimum fat intake value of 20.2 grams equivalent to 181.8 kcal, a maximum fat intake value of 38.4 grams equivalent to 345.6 kcal, while after Local Food-Based PMT, it is known that the average fat intake of wasting toddlers at the Pangkalan Baru Health Center, Central Bangka Regency was 24.9 grams equivalent to 224.1 kcal, with a minimum fat intake value of 13.8 grams equivalent to 124.2 kcal, and with a maximum fat intake value of 40.4 grams equivalent to 363.6 kcal. This shows that there was no increase; in fact, there was a decrease in fat intake in wasting toddlers after Local Food-Based PMT at the Pangkalan Baru Health Center, Central Bangka Regency.

Table 9 Distribution of Average Carbohydrate Intake Before and After Provision of Local Food-Based PMT

Carbohydrate Intake	Average (Kcal)	Minimum Value (Kcal)	Maximum Value (Kcal)	SD (Kcal)
Before	131,3	105,3	161,9	16,56
After	158,7	133,4	182,4	17,52

Based on the above analysis, it is known that the average carbohydrate intake of wasting toddlers before being given Local Food-Based PMT at the Pangkalan Baru Health Center, Central Bangka Regency was 131.3 grams equivalent to 525.2 kcal, the minimum carbohydrate intake value was 105.3 grams equivalent to 421.2 kcal and the maximum carbohydrate intake value was 161.9 grams equivalent to 647.6 A kcal, while after Local Food-Based PMT, it is known that the average carbohydrate intake of wasting toddlers at the Pangkalan Baru Health Center, Central Bangka Regency was 158.7 grams equivalent to 634.8 kcal, with a minimum carbohydrate intake value of 133.4 grams equivalent to 533.6 kcal, and a maximum carbohydrate intake value of 182.4 grams equivalent to 729.6 kcal. This shows that there was an increase in carbohydrate intake in wasting toddlers after being given Local Food-Based PMT at the Pangkalan Baru Health Center, Central Bangka Regency, by 27.4 grams or equivalent to 109.6 kcal. It can be seen that the average weight of wasting toddlers before PMT Based on Local Food at the Pangkalan Baru Health Center, Central Bangka Regency was 9.2 kg, with a minimum weight of 6.2 kg and a maximum weight of 12.4 grams, while after PMT Based on Local Food, it is known that the average weight of wasting toddlers at the Pangkalan Baru Health Center, Central Bangka Regency was 9.4 kg, with a minimum weight of 6.4 kg, and a maximum weight of 6.4 kg. This shows that there was an increase in the weight of wasting toddlers by 0.2 kg after PMT Based on Local Food at the Pangkalan Baru Health Center, Central Bangka Regency..

### 3.2. Bivariate Analysis

Bivariate analysis was used to determine whether there was an effect of Local Food-Based PMT on changes in the weight of wasting toddlers before and after being administered Local Food-Based PMT at the Pangkalan Baru Health Center, Central Bangka Regency.

The provision of local food-based PMT is expected to improve the nutritional status of wasting toddlers. Thirteen toddlers were administered PMT for 14 days. The effect of providing local food-based PMT on changes in the weight of wasting toddlers can be seen in the following table.

Table 10. Distribution of the Effect of Body Weight Before and After Provision of Local Food-Based PMT

Group	Mean Before $\pm$ SD	Mean After $\pm$ SD	p-Value	T
Weight	9,23 $\pm$ 1,90	9,38 $\pm$ 1,92	0,000	-6,008

Based on the analysis above, the average weight of wasting toddlers before Local Food-Based PMT at Pangkalan Baru Health Center, Central Bangka Regency was 9.23 $\pm$ 1.90 kg and the average weight after Local Food-Based PMT was 9.38 $\pm$ 1.92 kg.

Based on the results of the paired sample t-test Statistical Test, it can be seen that there is a difference between the weight of wasting toddlers before and after being given Local Food-Based PMT at the Pangkalan Baru Health Center, Central Bangka Regency. In this test, the results of the Statistical Test with the paired sample t-test with a significance level of <0.05, and a confidence level of 95% with a p-value of 0.000, meaning that there is a significant effect on the Provision of Local Food-Based Additional Food on Changes in the Weight of Wasting toddlers.

From the results of a study conducted for 14 consecutive days with the Provision of Local Food-Based PMT in the Pangkalan Baru Health Center area, Central Bangka Regency, and monitoring of toddlers, which is often carried out by researchers to increase the weight of toddlers, it can be seen that Local Food-Based PMT can help increase the weight of wasting toddlers because Local PMT is high in protein, carbohydrates, and energy, where protein, carbohydrates, and energy, carbohydrates are macronutrients that play an important role in increasing the weight of wasting toddlers.

This research is in line with (Purbaningsih & Ahmad Syafiq, 2023) shows that there is a difference between body weight before and after being given Local Food-based PMT for 14 days with a p value of 0.0005 < alpha (0.05). Providing additional local food in Taktakan Village, Taktakan District, Serang City is effective for increasing body weight that does not increase, underweight, and undernourished toddlers.

#### 3.2.1. Discussion

Insufficient energy intake can result in energy imbalances that result in nutritional problems, such as chronic energy, which affects changes in toddler weight. Food energy can be obtained from macronutrients in the form of protein, carbohydrate, and fat intake. Energy functions to support body metabolism and, growth processes and plays a role in the activity process (Abdullah, Wahyuni, and Nurcahyani 2022). The energy consumed by each person varies depending on the type of food consumed. The protein, fat, and carbohydrate contents of a food ingredient can determine its energy value. Protein and carbohydrates have an energy value of 4 kcal/gram, while oil and fat have an energy value of 9 kcal/gram (Rejeki et al. 2022)

Based on the results of a study of 13 wasting toddlers obtained from direct interviews using the 1x24 hour food recall method before and after being given a Local Food-Based PMT, which was then processed using the Nutri Survey application. The average energy intake results before and after being given Local Food-Based PMT showed an increase of 867.1 kcal to 953.4 kcal. This could be caused by the provision of local food-based PMT for 14 days with seven food menus.

This research is in line with (Telisa et al. 2019) showed the results of changes in the form of an increase in average energy intake from 1197.9 kcal to 1464.5 kcal. Other research conducted (Abdullah, Wahyuni, and Nurcahyani 2022) showed an increase in energy intake from 3.4% to 4%.

Proteins have a function in lifting, forming structural components, growth, and storing nutrients, enzymes, and the formation of antibodies and energy sources. Protein is very necessary for the development and growth of toddlers (Abdullah, Wahyuni, and Nurcahyani 2022). Protein intake is useful for toddler growth and development, and low protein intake increases the risk of toddlers experiencing nutritional problems. Low protein intake in toddlers is associated with a 1.8 times greater risk of malnutrition (Rizkia, Sekarwana, and Damailia 2023).

Based on the results of a study of 13 wasting toddlers obtained from direct interviews using the 1x24 hour food recall method before and after being given a Local Food-Based PMT, which was then processed using the Nutri Survey application. The average results of protein intake before and after being given Local Food-Based PMT showed an increase of 27.8 grams equivalent to 111.2 kcal to 28.7 grams equivalent to 114.8 kcal. This could be caused by the provision of local food-based PMT for 14 days with seven food menus.

In this study, we found increased protein intake in toddlers with a wasting nutritional status. This is because the Local Food-Based PMT menu contains high protein, including proteins such as eggs, chicken, fish, and milk, whereas vegetable protein is obtained from tempeh and tofu. A total of 13 toddlers used as samples in this study consumed eggs on average every day, the PMT menu provided also included an egg menu and was able to finish it. One large chicken egg contained 7 g protein. In addition to eggs, protein intake, such as chicken, fish, and milk, on average, almost half of the portion that had been provided was completed by the samples in this study.

This research is in line with (Telisa et al. 2019) showed the results of changes in the form of an increase in protein intake before and after the intervention was given by 34.2 grams to 39.5 grams. Other research conducted (Veronica et al. 2023) showed results in the form of an increase in protein intake before and after the intervention of 17.3 grams to 27.5 grams.

Food intake that is less than energy causes the body to use fat in the adipose tissue to obtain energy. If this continues repeatedly, weight decreases (Veronica et al. 2023). It is recommended that the fat requirement for toddlers be 15-20% of the total energy. Fat functions as a source of good fat, a solvent for vitamins K, E, D, and A, and provides a good taste to food. If fat intake in food is lacking, it will affect the body's activity and metabolic processes (Rizkia, Sekarwana, and Damailia 2023).

Based on the results of a study of 13 wasting toddlers obtained from direct interviews using the 1x24 hour food recall method before and after being given a Local Food-Based PMT, which was then processed using the Nutri Survey application. The average results of fat intake before and after being given Local Food-Based PMT showed no increase, namely 27.0 grams equivalent to 243 kcal to 24.9 grams equivalent to 224.1 kcal. This could be caused by the PMT not running out, resulting in a decrease in fat intake.

In this study, the sources of fat intake used in the Local Food-Based PMT included chicken, milk, tofu, and tempeh. These foods also have high protein content and are rich in fat. A total of 13 toddlers who were sampled in this study did not experience an increase in fat intake because during the 14 days of Local Food-Based PMT, they were unable to finish food with high fat sources. This can be caused by the toddlers being found consuming snacks so that their interest in staple foods that are rich in nutrition has decreased.

This research is in line with (Veronica et al. 2023) showed results in the form of an increase in average fat intake before and after the intervention of 20.2 grams to 25.4 grams. Other research conducted (Telisa et al. 2019) showed results in the form of an increase in average fat intake before and after the intervention of 30.7 grams to 42.8 grams. Malnutrition in children can be caused by low carbohydrate intake that continues to occur. The recommended carbohydrate contents for toddlers is 60-70% of the total energy. Carbohydrates are a source of energy needed by toddlers, and there is no minimum requirement for carbohydrates because glucose in circulation can be obtained from fat and protein. If carbohydrates are consumed below daily needs, the energy required will use the existing protein, resulting in disrupted growth (Rizkia, Sekarwana, and Damailia 2023).

Based on the results of a study of 13 wasting toddlers obtained from direct interviews using the 1x24 hour food recall method before and after being given a Local Food-Based PMT, which was then processed using the Nutri Survey application. The average carbohydrate intake before and after being given Local Food-Based PMT showed an increase of 131.3 grams equivalent to 525.2 kcal to 158.7 grams equivalent to 634.8 kcal. This could be caused by the provision of local food-based PMT for 14 days with seven food menus.

Carbohydrates are divided into two types, simple and complex. Complex carbohydrates are divided into rice, wheat bread, potato, and corn. Simple carbohydrates include fruits, honey, milk, and vegetables. In this study, the sources of carbohydrates were white rice, lontong rice, and porridge. A total of 13 toddlers who were sampled in this study consumed almost all the carbohydrate intake from the portions that had been adjusted to the needs of the samples used. The rice given in one serving at a time was 100 g for ages 12-23 months and 150 g for ages 24-59 months, while lontong was 60 g for ages 12-23 months and 100 g for ages 24-59 months, and porridge was 100 g for ages 12-23 months and 200 g for ages 24-59 months.

This research is in line with (Veronica et al. 2023) showed results in the form of a difference in average carbohydrate intake before and after the intervention of 107.92 grams to 142.58 grams. Other research conducted (Telisa et al. 2019) showed a change in average carbohydrate intake before and after the intervention of 215.7 grams to 242.2 grams.

Based on the results of the study conducted with a sample of 13 toddlers, the results showed a change in body weight before and after being given Local Food-Based PMT. As many as 13 people or all samples in the study showed an effect on changes in body weight from the results of Local Food-Based PMT for 14 days. Changes that occur in the weight of toddlers with wasting nutritional status can be seen from the increase in energy, protein, and carbohydrate intake before and after PMT.

The results of the statistical test were obtained with a paired sample t-test with a significance level of  $<0.05$ , and a confidence level of 95% with a p-value of 0.000, indicating that there is a significant relationship between the influence of the provision of local food-based additional food on changes in the weight of wasting toddlers at the Pangkalan Baru Health Center.

This research is in line with (Hapsari et al., 2021) shows the results of a statistical test with a p-value = 0.000, meaning that there is a significant influence. Other research conducted (Telisa et al. 2019) shows the results of statistical tests with a statistical test value of  $p = 0.000$ , indicating that there is a significant effect.

From the results of the study, the provision of Local Food-Based PMT for 14 consecutive days, and monitoring of the weight gain of wasting toddlers at the Pangkalan Baru Health Center, Central Bangka Regency, Bangka Belitung Islands Province, it was found that there was a significant change in weight. This is known to increase the weight of wasting toddlers, with an average difference in weight before and after Local Food-Based PMT of 0.20 Kg.

This research is in line with (Purbaningsih and Ahmad Syafiq 2023) showing a p value = 0.0005, meaning there is a significant difference in the body weight of wasting toddlers before and after being given additional food from local foods for 14 days.

#### 4. CONCLUSION

According to the results of the research that has been carried out. The average macronutrient intake before being given Local Food-Based PMT was an energy intake of 871.1 kcal, protein 27.8 grams, carbohydrates 131.3 grams and fat 27.0 grams, while after being given Local Food-Based PMT the average macronutrient intake increased with an average energy intake of 953.4 kcal, protein 28.7 grams, carbohydrates 158.7 grams, while there was no increase in fat, in fact there was a decrease of 24.9 grams. The average body weight before being given Local Food Based PMT was 9.2 kg, while the average body weight after being given local food-based PMT was 9.4 kg. The difference or average difference in body weight before and after being given a local food-based PMT is 0.20 Kg, which can be seen from the body weight after being given a PMT of 9.4 Kg and before being given a PMT of 9.2 Kg. The results of the analysis test revealed that there was a significant relationship between the weight of wasting toddlers before and after being given Local Food-Based PMT with a p-value of 0.000, so it can be concluded that there is an Effect of Local Food-Based PMT on Changes in the Weight of wasting toddlers.

#### ACKNOWLEDGEMENTS

The author thanks all people and institutions in most cases and the, sponsor and financial support acknowledgments.

#### REFERENCES

- [1] Abdullah, A. R., F. Wahyuni, and I. D. Nurcahyani. 2022. "Pengaruh Pemberian Cookies Dengan Penambahan Tepung Daun Kelor Terhadap Kenaikan Berat Badan Balita Usia 2-5 Tahun Dengan Status Gizi Kurang Berdasarkan BB/TB Di Wilayah Kerja Puskesmas Bontoa Tahun 2021: The Influence Of Cookies With The Addition Of The S."
- [2] Abraham, I., and Y. Supriyati. 2022. "Desain Quasi Eksperimental Dalam Pendidikan. 8(3), 2476–2482." doi:<https://doi.org/10.36312/jime.v8i3.3800>.
- [3] Afrah, Rahmayani, Desmawati Desmawati, and Roza Sriyanti. 2024. "Tackling Toddler Malnutrition: Exploring Maternal Influences on Wasting." *International Journal of Research and Review* 11(1): 31–40. doi:10.52403/ijrr.20240105.
- [4] Ahdia, A. 2022. "Food and Agriculture Organization (FAO)."
- [5] Danso, Francis, and Maxwell Afranie Appiah. 2023. "Prevalence and Associated Factors Influencing Stunting and Wasting among Children of Ages 1 to 5 Years in Nkwanta South Municipality, Ghana." *Nutrition* 110: 111996. doi:10.1016/j.nut.2023.111996.
- [6] Efrizal, Wiwin. 2021. "Analisis Status Gizi Baduta (0-2 Tahun) Di Provinsi Kepulauan Bangka Belitung Berdasarkan e-PPGBM Agustus 2020." *Jurnal Kesehatan* 14(1): 17–25. doi:10.23917/jk.v14i1.12331.
- [7] Fajar, Suratman Abdillah, Citra Dewi Anggraini, and Nisatami Husnul. 2022. "Efektivitas Pemberian Makanan Tambahan Pada Status Gizi Balita Puskesmas Citeras, Kabupaten Garut." *Nutrition Scientific Journal* 1(1): 30–40. doi:10.37058/nsj.v1i1.5975.
- [8] Hadju, V., S. Basri, U. Aulia, and P. Mahdang. 2023. "Pengaruh Pemberian Makanan Tambahan (PMT)

- Terhadap Perubahan Status Gizi Pada Pada. *Gema Wiralodra*, 14(1), 105–111.”
- [9] Indonesia, R., Presiden, P., & Indonesia, R. 2024. “Rencana Pembangunan Jangka Menengah Nasional 2020-2024.”
- [10] Indramayu, B. K. 2020. “SKI-2023-Dalam Angka-BKPK-Kemenkes. In Kota Bukittinggi Dalam Angka (Vol. 01).”
- [11] Kesehatan, Kementerian. 2022. “Buku Saku: Hasil Survei Status Gizi Indonesia (SSGI) 2022. Kementerian Kesehatan Republik Indonesia, 1–99. <https://Promkes.Kemkes.Go.Id/Materi-Hasil-Survei-Status-Gizi-Indonesia-Ssgi-2022>.”
- [12] Organization., World Health. 2013. “World Health Organization.” <http://www.who.int/en/>.
- [13] Pratiwi, A., and B. Raharjo. 2020. “Pelaksanaan Program Pemberian Makanan Tambahan Pemulihan (PMT-P) Pada Balita Gizi Buruk. *Higeia Journal of Public Health Research and Development*, 1(3), 625–634.”
- [14] Purbaningsih, Heny, and Ahmad Syafiq. 2023. “Efektivitas Pemberian Makanan Tambahan (PMT) Berbahan Pangan Lokal Terhadap Kenaikan Berat Badan Balita.” *Media Publikasi Promosi Kesehatan Indonesia (MPPKI)* 6(12): 2550–54. doi:10.56338/mppki.v6i12.4206.
- [15] Rejeki, S., R. H. F. Faradilla, I. Elvira, and N. Nadila. 2022. “Analisis Asupan Energi, Karbohidrat, Dan Serat Dari Pangan Pokok Di Wilayah Non Pertanian Di Kota Baubau 2022. *Jurnal Gizi Ilmiah (JGI)*, 11(1), 35–41.”
- [16] Rizkia, Putri, Nanan Sekarwana, and Ratna Damailia. 2023. “Hubungan Asupan Zat Gizi Makro Dengan Status Gizi Pada Anak Usia 2-5 Tahun Di Puskesmas Karang Tengah Kabupaten Cianjur.” *Bandung Conference Series: Medical Science* 3(1). doi:10.29313/bcsms.v3i1.6007.
- [17] Sinaga, Evi Susanti, Indra Azis Rasyid, Muhammad Rizky Mubarak, Novia Indriani Sudharma, and Helfi Nolia. 2023. “Pemantauan Konsumsi Pemberian Makanan Tambahan (PMT) Dalam Meningkatkan Berat Badan Balita Dengan Masalah Gizi.” *ABDI MOESTOPO: Jurnal Pengabdian Pada Masyarakat* 6(1): 1–8. doi:10.32509/abdimoestopo.v5i2.2236.
- [18] Telisa, I., P. Podojoyo, B. Farihani, and Y. Hartati. 2019. “Pengaruh PMT Biskuit Ubi Jalar Kuning Tempe Kedelai Terhadap Perubahan Berat Badan Anak Wasting. *Jurnal GIZIDO*, 14(1 Mei), 8–14.”
- [19] Ulfa, R. 2020. “Variabel Penelitian Dalam Penelitian Pendidikan. 6115, 342–351.”
- [20] Utari, M. P., E. W. Gultom, T. Muliani, and S. Tirtasari. 2023. “Report on Community Diagnosis to Reduce the Number of New Malnutrition Cases in the Toddlers. 10(6).”
- [21] Veronica, W., A. Siregar, P. Podojoyo, S. Susyani, and Y. Hartati. 2023. “Efektifitas Pemberian Nugget Tinggi Protein Terhadap Peningkatan Berat Badan Pada Balita Wasting Usia 12-59 Bulan Di Puskesmas Taman Bacaan. *Media Kesehatan Politeknik Kesehatan Makassar*, 18(1), 136–145.”
- [22] Werdani, A. R. 2023. “Hubungan BBLR Dengan Kekurangan Gizi ( Wasting ) Pada Anak Usia 6-23 Bulan. 3(3).”