HTechJ Health and Technology Journal (HTechJ)

Volume 01, Number 02
April 2023
p-ISSN: 2986-5662
e-ISSN: 2985-959X

Effect of Supplementary Feeding on Weight Gain for Malnourished Toddlers Aged 6-59 Months

Rifqi Firmania Ayuni[1], Yessy Nur Endah Sary[1], Tutik Ekasari[1], Nova Hikmawati[4]

[1]*Stikes Hafshawaty Zainul Hasan, Probolinggo, Indonesia*

Correspondence should be addressed to:
Rifqi Firmania Ayunani
rifqiayunani88@gmail.com

Abstract:
One of the factors that affect a person's level of health is good nutritional status. Providing additional food or nutritional supplementation to malnourished toddlers is one of the treatments to overcome the problem of malnutrition. The purpose of this study was to determine the effect of supplementary feeding on weight gain in malnourished toddlers aged 6-59 months. This study used a pre-experimental design. Data was taken from direct observation sheets on respondents in the Pasirian Public Health Center work area which was carried out from July to August 2022 with a population of 32 respondents and a sample of 21 respondents using purposive sampling. technique. Data collection includes coding, editing, and tabulating. Then the data were analyzed by computer with the help of SPSS. The results showed that in malnourished toddlers who were given additional food, there were 17 respondents who experienced weight gain (81%) and 4 respondents who did not gain weight (19%). Statistical results using the T-test showed a p-value of 0.001. There is an effect of supplementary feeding on weight gain in malnourished toddlers aged 6-59 months at the Pasirian Public Health Center.

Article info:
Submitted:
09-01-2023
Revised:
29-03-2023
Accepted:
03-04-2023

Keywords:
supplementary food; body weight; toddler; malnutrition

DOI: https://doi.org/10.53713/htechj.v1i2.19

INTRODUCTION

One factor affecting a person's health level is the good nutritional status (Ministry of Health of the Republic of Indonesia, 2015). Assessment of nutritional status plays a role in determining whether there are problems with a person's nutritional status, carried out by measuring several parameters, then the results are compared with standards or references (Putri and Mahmudiono, 2020). An assessment of a child's nutritional status is a situation where the results of measurements of Body Length for Age or Height for Age are between -3 SD (Standard Deviation) to -2 SD. If the results of measurements of Body Length for Age or Height for Age are below -3 SD it is called very short (severe stunting) (Sari et al., 2023).

Stunting is a condition of a toddler with insufficient height or length (Kurniyawan et al., 2023). The high incidence of stunting is closely related to the nutritional intake given to children, especially in the first thousand days of life (Rudolfo et al., 2022; Ardiana et al., 2019). Stunting in children is a serious problem because it is associated with a greater risk of morbidity and mortality, future obesity and non-communicable diseases, short adulthood, and poor cognitive development (Carolin et al., 2021; Ardiana et al., 2021).

Based on child mortality data according to World Health Organization (WHO) in 2015, it is estimated that around 45% of all child deaths are related to malnutrition, making children more vulnerable to disease. Under-five deaths due to nutritional problems amounted to 2.8 million, and 2

Volume 01, Number 02
April 2023
p-ISSN: 2986-5662
e-ISSN: 2985-959X

billion suffer from micronutrient deficiencies. As many as 7.1% of toddlers in Indonesia experience it waste or malnutrition. In East Java, around 6.4% of children under five are undernourished, and more than 2.8 million are under five (SSGI, 2021). Based on health profile data for Lumajang Regency in 2020, there were 377 (0.53%) malnutrition and 2100 (3.01%) malnutrition. Of the 377 severely malnourished toddlers, 32 of them were in the working area of the Pasirian Health Center. The results of a preliminary study conducted in April 2022 on 11 severely malnourished toddlers aged 6-59 months in the Pasirian Public Health Center work area showed that 9 toddlers experienced weight gain according to weight gain while 2 toddlers did not.

The effects of malnutrition are felt by society and impact the economy. Malnutrition can lead to ongoing poverty. Although poverty contributes to malnutrition, lack of knowledge and practices of childcare and inadequate child feeding also contribute to high malnutrition rates. Maternal health also plays an important role. Many women who become pregnant during their teens do not eat properly during pregnancy, so they often give birth to babies who are small or low weight (Putri and Mahmudiono, 2020). The nutritional status of pregnant women greatly affects the health and development of the fetus. Disrupted uterine growth can cause low birth weight (Ardiana et al., 2021; Andansari et al., 2023), which triggers stunting (Novelia et al., 2021). Several factors that cause LBW are a history of preeclampsia due to parity, maternal age, premature birth, premature rupture of membranes, twin pregnancies, history of previous low birth weight, environment, and fetus (congenital abnormalities) (Komariah et al., 2023). Handling nutritional problems is prioritized for diseases that require special efforts to save lives and have the greatest impact on the incidence of stunting. The diseases referred to are at risk of failure to thrive, malnutrition or poor nutrition, premature babies, low birth weight babies, allergies to cow's milk protein, and congenital metabolic disorders (Onainor, 2019). In the 2020-2024 National Medium-Term Development Plan for the health sector, it is stated that one of the indicators is increasing the percentage of public health centers capable of managing malnutrition in toddlers by 60%. Providing additional food or nutritional supplementation to malnourished toddlers is one procedure for overcoming malnutrition (Ministry of Health of the Republic of Indonesia, 2021).

Food Supplements are nutritional supplementation in the form of additional food in the form of biscuits with special formulations and fortified with vitamins and minerals, which are given to children under five aged 6-59 months and are prioritized in the skinny category to meet nutritional needs. Supplements for Recovery are Supplementary food given to improve nutritional status on target. Targets given additional recovery food are thin toddlers aged 6-59 months (index BB/PB or BB/TB with Z-score <-2 SD, for very thin toddlers with Z-score <-3 SD). As recommended by the Nutrition Care Team for Malnourished Children and KEK pregnant women, additional food can be given for more than 1 (one) month accompanied by nutritional counseling until the nutritional status of toddlers improves, which can be monitored through weight or gain or Z-score. Provision of additional food containing macronutrients and micronutrients for toddlers is very necessary in order to prevent nutritional problems from the beginning of life, such as Low Birth Weight Babies (LBW) and short toddlers or stunting (Ministry of Health of the Republic of Indonesia, 2019).

Research conducted by Putri and Mahmudiono (2020) regarding the effectiveness of supplementary feeding on the nutritional status of toddlers; obtained the results that there was no difference in the nutritional status of toddlers with the anthropometric index of weight/height before supplementary feeding and after supplementary feeding. After 3 months of receiving additional food, there was an increase in the percentage of toddlers with normal nutritional status from 65.8% to 68.4%. After not receiving additional food, there was a decrease in the percentage of toddlers with normal nutritional status to 63.2%. There was no significant difference in the nutritional status of toddlers based on weight/height before and after giving recovery additional food (p=0.585). No

Volume 01, Number 02
April 2023
p-ISSN: 2986-5662
e-ISSN: 2985-959X

difference in nutritional status can be caused by the consumption of additional food that is not optimal. Likewise, it was also known that there was no significant difference in the nutritional status of toddlers after being given additional food and when they were not receiving additional food (p=0.430).

The equation of the research above is that all three use observational research methods. While the difference lies in the location of the study, the time of the study, and the number of samples, two studies conducted in the city of Semarang both obtained results that there were differences in the nutritional status of toddlers before and after supplementary feeding. At the same time, in Surabaya, there were no significant differences in the nutritional status of toddlers after giving additional food Recovery and when you didn't get additional food. Based on the background above, the researchers wanted to analyze the relationship between supplementary feeding and weight gain in malnourished toddlers at the Pasirian Health Center, Lumajang Regency, in 2022.

METHOD

This study uses an approach pre-experimental design, namely carrying out the intervention on the independent variable and weighing the impact or consequences of the intervention on the dependent variable. In this study, researchers looked at the effect of supplementary feeding on weight gain in severely malnourished toddlers aged 6-59 months at the Pasirian Public Health Center. The population in this study were 32 severely malnourished toddlers aged 6-59 months at the Pasirian Health Center in June 2022 at the Pasirian Public Health Center.

In this study, the sample criteria included inclusion and exclusion criteria which determined whether the sample was used. The sample inclusion criteria in this study were severely malnourished toddlers aged 6-59 months who were in the working area of the Pasirian Public Health Center, severely malnourished toddlers aged 6-59 months who had no comorbidities, severely malnourished toddlers aged 6-59 months who were not currently being treated for the disease, malnourished toddlers aged 6-59 months receive supplementary feeding, willing to be studied. The sample exclusion criteria in this study were malnourished children aged 6-59 months with co-morbidities and severely malnourished children aged 6-59 months who were being treated for illness and were unwilling to be studied. The sampling technique used is non-probability sampling by purposive sampling. The instrument used in this research is the observation sheet. Data analysis in this study was univariate analysis using frequency distribution and bivariate analysis using a t-test.

RESULT

Overview of Research Sites

This research was conducted at the Pasirian Health Center, Lumajang Regency, in August 2022. The Pasirian Health Center is one of the health centers in the Pasirian District, Lumajang Regency. The Pasirian Health Center has seven villages in its working area: Pasirian Village, Nguter Village, Sememu Village, Madurejo Village, Condro Village, Selokawar-awar Village, and Selokanyar Village. Services at the Pasirian Health Center consist of Individual Health Efforts (*Usaha Kesehatan Perseorangan*=UKP) and Community Health Efforts (*Usaha Kesehatan Masyarakat*=UKM). Public Health Efforts (UKM) consist of Essential UKM and Development UKM. The nutrition program is included in the Essential UKM, where one of the programs is the provision of additional food.

Volume 01, Number 02
April 2023
p-ISSN: 2986-5662
e-ISSN: 2985-959X

General data

Table 1. Characteristics of Respondents based on Age and Gender (n=21)

Variables	Frequency	Percentage
Age (months)		
6-11	3	14.3
12-59	18	85.7
Gender		
Man	12	57.1
Woman	9	42.9

Table 1 shows that of the 21 respondents, almost all were in the age range of 12-59 months, with a total of 18 respondents (85.7%). It shows that of the 21 respondents, most were male, with 12 respondents (57.1%).

Characteristics of Respondents Based on Body Weight Before and After Intervention

Table 2. Respondents Based on Body Weight Before and After Intervention

Body Weight	Before Intervention	After Intervention
	n (%)	n (%)
Increase	8 (38)	17 (81)
Doesn't increase	13 (62)	4 (19)
Total	21 (100)	21 (100)

Table 2 shows that of the 21 respondents, most experienced weight gain before the intervention, with a total of 13 respondents (62%). It shows that of the 21 respondents, almost all experienced weight gain after giving the intervention, with 17 respondents (81%).

The Effect of Supplementation on Weight Gain

Table 3. Effect of Supplementary Feeding on Weight Gain

Body weight	Minimum	Maximum	Mean	SD	p-value
Before intervention	5.9	11.7	8.7048	1.85377	0.001
After intervention	6.1	12.1	8.8333	1.87199	

Based on Table 5. shows the results of cross-tabulation of initial body weight before giving additional food; there were 8 respondents in the category of experiencing weight gain (38%) and 13 respondents (62%) in the category of not gaining weight. However, after the supplementary feeding intervention, the results showed that 17 respondents (81%) experienced weight gain, while 4 respondents (19%) did not gain weight. Statistical results using t-test the result is a p-value of 0.001, p-value<α (0.05), which means that supplementary feeding affects weight gain in malnourished toddlers aged 6-59 months.

DISCUSSION

Weight Before Supplementary Feeding in Malnourished Toddlers Aged 6-59 Months

The results of research on body weight before supplementary feeding in severely malnourished toddlers aged 6-59 months showed that the average body weight before being given

Volume 01, Number 02
April 2023
p-ISSN: 2986-5662
e-ISSN: 2985-959X

additional food at the Pasirian Health Center was 8.7 kg. Weight gain is a graph of a child's weight following a growth line or weight gain equal to KBM (Minimum Weight Gain) or more (Ministry of Health of the Republic of Indonesia, 2015).

Body weight is the most important anthropometry because it can be used to see the rate of physical growth and nutritional status and can also be used as the basis for calculating drug and food doses. Body weight is a very unstable anthropometric parameter. Under normal circumstances, where the state of health is good, and the balance between consumption and the need for nutrients is guaranteed, body weight develops with age. In contrast, in abnormal circumstances, there are 2 possibilities, namely body weight can develop faster or slower than in normal conditions (Ambarita et al., 2022)

The results showed that 8 respondents experienced weight gain, and 13 did not gain weight before giving additional food. According to the researchers' assumptions, this is influenced by the food consumed, family food security, and parenting style. The food consumed by malnourished toddlers greatly influences weight gain. Foods with high calories are very helpful in accelerating weight gain. Lack of modification or variety in the diet also affects.

Body Weight After Supplementary Feeding in Malnourished Toddlers Aged 6-59 Months

Based on the results of research on body weight after supplementary feeding in malnourished toddlers aged 6-59 months showed that the average body weight after being given additional food at the Pasirian Health Center was 8.83 kg. Feeding is one of the factors that affect nutritional status. Inappropriate feeding can cause malnutrition, and excessive feeding will result in obesity (Astuti, 2020). Supplemental Food is nutritional supplementation in the form of additional food in the form of biscuits with special formulations and fortified with vitamins and minerals given to children under five aged 6-59 months, and priority in the skinny category to meet nutritional needs (Ministry of Health of the Republic of Indonesia, 2019).

The results showed that 17 respondents experienced weight gain, while 4 did not gain weight after being given supplementary feeding interventions. This shows that supplementary feeding is proven to increase body weight, so if given routinely, it can improve the nutritional status of malnourished toddlers. However, the lack of modification of supplementary feeding can make toddlers bored. This can result in the additional food not being eaten according to the rules it should be. So, there is no weight gain after feeding.

Effect of Supplementary Feeding on Weight Gain in Malnourished Toddlers Aged 6-59 Months

Based on the results of cross-tabulation of body weight before supplementary feeding, there were 8 respondents (32%) in the category of experiencing weight gain and 13 respondents (68%) in the category of not gaining weight. However, after the supplementary feeding intervention, the results showed that 17 respondents (81%) experienced weight gain, while 4 respondents (19%) did not gain weight. Statistical test results using t-test the results obtained a p-value of 0.001. There is an effect of supplementary feeding on weight gain in malnourished children aged 6-59 months.

This research is supported by research conducted by Rini et al. (2017) in the city of Semarang concerning changes in the nutritional status of severely malnourished toddlers after providing supplemental food for recovery for 3 months showing the results that there were differences in changes in nutritional status of toddlers before and after supplementary feeding Recovery according to the anthropometric index of weight/age. The weight/height index showed that after giving additional food for recovery, the prevalence of very underweight toddlers

Volume 01, Number 02
April 2023
p-ISSN: 2986-5662
e-ISSN: 2985-959X

decreased from 100% to 40.9%, while based on the weight/age index, from 86.4% of children with very underweight children decreased to 59.1%.

Providing supplementary food is one of the strategies to increase access to nutritious food to meet children's needs in overcoming nutritional status problems. This activity can continue to be carried out to improve the nutritional status of toddlers in order to create healthy human resources. So, it is very necessary to submit a budget plan for supplementary feeding activities for malnourished toddlers so that these activities can be carried out regularly in sets.

CONCLUSION

The results of the weaning age found that most respondents carried out weaning at <2 years of age (inappropriate weaning). The results of the nutritional status of toddlers aged 2 years showed that a small portion or almost half of the toddlers experienced malnutrition from an inappropriate weaning age. There is a relationship between the age of weaning and the nutritional status of children aged 2 years at Posyandu Melati, Pasirian Village, Lumajang Regency. So improper weaning results in low nutritional intake received by children aged 2 years. Likewise, children who have started to be weaned must pay special attention so that the nutrition that the child gets is sufficient.

CONCLUSION

Based on the results of the research conducted by the researchers regarding the effect of supplementary feeding on weight gain in malnourished toddlers aged 6-59 months, it was concluded that: the average body weight before supplementary feeding was 8.7 kg, the average body weight after supplementary feeding was 8.83 kg, and it was found that there was an effect of supplementary feeding on weight gain in malnourished toddlers aged 6-59 months with an average weight gain of 0.13 kg or 130 grams.

ACKNOWLEDGEMENT

We want to thank Hafshawaty Zainul Hasan Genggong High School of Health Sciences for all their support to publish this article.

CONFLICT OF INTEREST

There is no conflict of interest.

REFERENCES

Ambarita, E., Setyawati, I., & Yulihastuti, D. (2022). The Anthropometry Relationship Long Bone To Height Of Batak Toba Tribe Student In Bekasi City. *Simbiosis, 10*(1), 28-41. doi:10.24843/JSIMBIOSIS.2022.v10.i01.p03

Andansari, DR., Sunanto, & Iis Hanifah. (2023). Relationship between Gestational Age and Neonatorum Asphyxia in the Neonatal Intensive Care Unit. *Health and Technology Journal (HTechJ), 1*(1), 74–80. https://doi.org/10.53713/htechj.v1i1.12

Ardiana, A., Afandi, A. T., Masahid, A. D., & Rohmawati, N. (2019). Utilization Of Agricultural Products For The Management And Prevention Stunting Through Empowering Health Cadres In Jember District. *Darmabakti Cendekia: Journal of Community Service and Engagements, 2*(1), 9-14.

Volume 01, Number 02
April 2023
p-ISSN: 2986-5662
e-ISSN: 2985-959X

Ardiana, A., Afandi, A. T., Rohmawati, N., & Masahida, A. D. (2021). Focus Group Discussion Dalam Peningkatan Pengetahuan Kader Untuk Melakukan Penyuluhan Kepada Masyarakat Tentang Pencegahan Stunting Sejak Dini. *Jurdimas (Jurnal Pengabdian Kepada Masyarakat) Royal, 4*(3), 225-230.

Ardiana, A., Afandi, A. T., Mahardita, N. G. P., & Prameswari, R. (2021). Implementation of peer group support towards knowledge level of mother with toddlers about stunting. *Pakistan J Med Heal Sci, 15*(1), 260–3.

Astuti, K. (2020). Hubungan antara pemberian asi eksklusif dengan status gizi pada anak usia 24-36 bulan di desa giripurwo. 6–18.

Carolin, B. T., Siauta, J. A., Amamah, N., & Novelia, S. (2021). Analysis of Stunting among Toddlers at Mauk Health Centre Tangerang Regency. *Nursing and Health Sciences Journal (NHSJ), 1*(2), 118-124. https://doi.org/10.53713/nhs.v1i2.56

Kementerian Kesehatan Republik Indonesia. (2015). *Data riskesdas 2015.*

Kementerian Kesehatan Republik Indonesia. (2019). *Petunjuk Teknis Makanan Tambahan Balita & Ibu Hamil.* Kementerian Kesehatan RI

Kementerian Kesehatan Republik Indonesia. (2021). *PEDOMAN PROSES ASUHAN GIZI PUSKESMAS*. Kementerian Kesehatan RI

Komariah, A. L., Sunanto, & Iis Hanifah. (2023). The Relationship between Preeclampsia and Premature Incidence Rates. *Health and Technology Journal (HTechJ), 1*(1), 57–62. https://doi.org/10.53713/htechj.v1i1.8

Kurniyawan, E. H., Rondhianto, Sulistyorini, L., Ardiana, A., Asmaningrum, N., Susanto, T., & Purwandari, R. (2023). *Buku Ajar Agronursing Pendekatan Asuhan Keperawatan pada Sektor Agroindustri.* KHD Production

Novelia, S., Lubis, R., Yuliani, L., & Marta, H. (2021). The Implementation of Stunting Prevention Program during COVID-19 Pandemic in Pandeglang Regency. *Nursing and Health Sciences Journal (NHSJ), 1*(3), 180-183. https://doi.org/10.53713/nhs.v1i3.46

Onainor, E. R. (2019). Hubungan antara status pekerjaan ibu menyusui dengan pemberian asi eksklusif pada bayi usia 6-12 bulan di dusun ngabean ngalik kabupaten sleman. 1:105–112.

Putri, A. S. R. & Mahmudiono, T. (2020). Efektivitas pemberian makanan tambahan (PMT) pemulihan pada status gizi balita di wilayah kerja puskesmas simomulyo, surabaya. *Amerta Nutrition, 4*(1), 58.

Rini, I., Pangestuti, D. R., & Rahfiludin, M. Z. (2017). Pengaruh Pemberian Makanan Tambahan Pemulihan (PMT -P) Terhadap Perubahan Status Gizi Balita Gizi Buruk Tahun 2017 (Studi di Rumah Gizi Kota Semarang). *Jurnal Kesehatan Masyarakat, 5*(4), 698 - 705. https://doi.org/10.14710/jkm.v5i4.18753

Rudolfo, A., Ira Rahmawati, & Peni Perdani Julianingrum. (2022). The Description of Parents' Knowledge in Modifying Food Ingredients in Efforts to Prevent Stunting in Children in the Tugusari Agricultural Area. *Nursing and Health Sciences Journal (NHSJ), 2*(4), 336-343. https://doi.org/10.53713/nhs.v2i4.183

Sari, D. K., Sunanto, & Hanifah, I. (2023). The Effects of Nutritious Food on Stunting. *Health and Technology Journal (HTechJ), 1*(1), 68–73. https://doi.org/10.53713/htechj.v1i1.9

SSGI. (2021). Buku saku hasil studi status gizi indonesia (ssgi) tingkat nasional, provinsi, dan kabupaten/kota tahun 2021. *Angewandte Chemie International Edition, 6*(11), 951–952.