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The Influence of Nutritional Action on Mother's Knowledge about Feeding and the Level of Energy, Zinc and Vitamin C Consumption of Wasting Toddlers in Purwodadi Village, Malang City

Pengaruh Pendampingan Gizi terhadap Pengetahuan Ibu tentang Pemberian Makan serta Tingkat Konsumsi Energi, Zink, dan Vitamin C Balita Wasting di Kelurahan Purwodadi Kota Malang

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ABSTRACT

Background: Indonesia still faces quite serious nutritional problems, especially in children, because the first five years of a child's life are very vulnerable to nutritional problems. Therefore, balanced nutritional needs for toddlers must be met properly. Nutritional problems that arise are always related to food intake factors in children. If balanced nutritional needs in toddlers are not met properly, they can experience nutritional disorders such as malnutrition.
Objectives: To analyze the effect of nutritional assistance on the knowledge of mothers of toddlers, the level of energy consumption, zinc, and vitamin C of wasting toddlers.
Methods: This study is a quasi-experimental study targeting toddlers aged 12 to 59 months. Respondents were taken using the non-probability sampling method, namely total sampling. The data collected included the knowledge of mothers of toddlers taken with a questionnaire, the level of energy consumption, zinc, and vitamin C obtained by filling out the 24-Hour Food Recall form. The study was conducted by providing intervention in the form of nutritional assistance three times within three weeks. Data analysis tests used the paired t test, Wilcoxon signed rank, independent t-test, Mann Whitney U test.
Results: Nutritional assistance on the knowledge of mothers of toddlers before and after in the treatment group ($p=0.003$) had a more significant effect than in the control group ($p=0.011$). Then the level of consumption before and after in the treatment group also had a significant effect, namely energy ($p<0.001$), zinc ($p=0.006$), and vitamin C ($p=0.004$). However, the level of consumption before and after in the control group did not have a significant effect, namely energy ($p=0.583$), zinc ($p=0.366$), and vitamin C ($p=0.534$).
Conclusion: Nutritional assistance can affect the knowledge of mothers of toddlers, consumption of energy, zinc, and vitamin C of toddlers before and after the intervention in the treatment group. Meanwhile, in the control group it only affected the knowledge of mothers of toddlers.

Keywords: Malnutrition, Nutritional assistance, Toddler

ABSTRAK

Latar Belakang: *Indonesia masih menghadapi masalah gizi yang cukup serius, khususnya pada anak-anak, karena lima tahun pertama kehidupan anak sangat rentan terhadap masalah gizi. Oleh karena itu, kebutuhan gizi yang seimbang untuk balita harus dipenuhi dengan baik. Masalah gizi yang muncul selalu berkaitan*

dengan faktor asupan makanan pada anak. Jika kebutuhan gizi seimbang pada balita tidak terpenuhi dengan baik, maka mereka bisa mengalami gangguan gizi seperti kekurangan gizi dan gizi buruk.
Tujuan: *Menganalisis pengaruh pendampingan gizi terhadap pengetahuan ibu balita, tingkat konsumsi energi, zink, dan vitamin C balita wasting.*
Metode: *Penelitian ini adalah studi quasi eksperimental dengan sasaran balita berusia 12 hingga 59 bulan. Responden diambil menggunakan metode Non Probability Sampling, yaitu Sampling Total. Data yang dikumpulkan meliputi pengetahuan ibu balita diambil dengan kuesioner, tingkat konsumsi energi, zink, dan vitamin C diperoleh melalui pengisian Form Food Recall 24 Jam. Penelitian dilakukan dengan memberi intervensi berupa pendampingan gizi sebanyak 3 kali dalam waktu tiga minggu. Uji analisis data memakai paired t test, Wilcoxon signed rank, independent t-test, dan Mann Whitney U test.*
Hasil: *Pendampingan gizi terhadap pengetahuan ibu balita sebelum dan sesudah pada kelompok perlakuan (p=0.003) berpengaruh lebih signifikan dibandingkan pada kelompok kontrol (p=0.011). Kemudian tingkat konsumsi sebelum dan sesudah pada kelompok perlakuan juga berpengaruh signifikan yaitu energi (p<0.001), zink (p=0.006), dan vitamin C (p=0.004). Sedangkan untuk tingkat konsumsi sebelum dan sesudah pada kelompok kontrol tidak berpengaruh signifikan yaitu energi (p=0.583), zink (p=0.366), dan vitamin C (p=0.534).*
Kesimpulan: *Pendampingan gizi dapat mempengaruhi pengetahuan ibu balita, konsumsi energi, zink, serta vitamin C balita saat sebelum dan setelah intervensi pada kelompok perlakuan. Sementara itu, pada kelompok kontrol hanya berpengaruh pada pengetahuan ibu balita saja.*

Kata Kunci: *Balita, Malnutrisi, Pendampingan gizi*

INTRODUCTION

Indonesia is still facing quite serious nutritional problems and this will affect the quality of human resources (HR). Nutritional problems need to be handled seriously, namely nutritional problems in children because the first five years of children are included in the golden period stage, where good nutritional status plays an important role in the growth and development of children (Kameliawati, Hediya Putri and Febriani, 2020). In the first five years, children are very vulnerable to nutrition so that balanced nutritional needs in toddlers must be met properly. Nutritional problems that occur are always related to food intake factors in children. If balanced nutritional needs for toddlers are not met properly, then toddlers will experience nutritional problems, such as suffering from malnutrition, which can ultimately lead to stunting (Saudia, 2020). Therefore, toddlers with malnutrition need to receive early attention and undergo an intervention that can help improve their nutritional status.

Malnutrition (wasting) is a situation where a child cannot achieve the appropriate weight, so that it can affect the growth of his height according to age in a certain period of time. Following up on the Decree of the Minister of Health Number 1995/Menkes/SK/XII/2010 concerning Anthropometric Standards for the Assessment of Children's Nutritional Status, Toddlers with malnutrition (wasted) have nutritional status determined by the Weight to Height Index (BB/TB) or Weight to Length (BB/PB) which has a Z-Score between -3 SD to -2 SD, while severe wasting has a Z-Score below -3 SD. Based on SSGI (Indonesian Nutritional Status Survey) data in 2022, the rate of malnutrition in Indonesia increased from 7.1 to 7.7 (Ministry of Health of the Republic of Indonesia, 2023) . In addition, at the Polowijen Health Center, Blimbing District, Malang City, the number of malnourished toddlers increased from 57 toddlers (5.9%) in 2020 to 83 toddlers (6.2%) in 2021. These data show that the percentage of malnourished toddlers in the Polowijen Health Center Work Area is higher than the percentage in Malang City. Meanwhile, the RPJMN target for the 2020-2024 period is to reduce the level of malnutrition problems in toddlers by 7% in 2024 (Ministry of Health of the Republic of Indonesia, 2020).

Malnutrition (wasting) is caused by many factors, both directly and indirectly. One direct cause is a lack of balance in adequate nutrition. Imbalance of macronutrients such as energy, protein, fat, and carbohydrates over a long period of time has an impact on the development of tissue and body weight of toddlers, namely weight loss (Diniyyah and Nindya, 2017) . Balanced nutritious food is an important part of a child's diet because it contains sources of macronutrients (energy, carbohydrates, fat, protein) and micronutrients (zinc, vitamin C) (Almatsier, 2004) . Zinc is needed more by children because it plays a role in good growth and development, protects the body from infection, and helps the wound healing process (Winarti, Purbowati

and Pontang, 2020) . Toddlers who lack zinc intake will experience decreased appetite and immune system, resulting in weight loss (Nugraheni et al., 2021) . Toddlers in the balanced nutrition category are toddlers with sufficient nutritional needs, one of which is for the vitamin C nutrient parameter. Lack of vitamin C will cause a decrease in the immune system, weaker muscle contractions, and fatigue, which has an impact on physical changes, one of which is weight loss (Rahmat, 2017) . Providing the right energy according to the child's needs and activities can keep their weight stable, so that their nutritional condition is good and they avoid nutritional problems (Anggraeni, Toby and Rasmada, 2021) .

Toddler food intake depends on the parenting pattern of feeding the child. On cause of parents resulting in in nutritional problems in toddlers is the mother's knowledge about providing good and balanced nutrition to toddlers (Zogara, Loaloka and Pantaleon, 2021). With the knowledge possessed by a mother, namely by carrying out feeding practices, it can prove to what extent a mother will meet the child's nutritional needs. Therefore, maternal knowledge is one of the components that influence the child's nutritional status. If the problem of malnutrition in toddlers lasts a long time, this will affect the child's growth and development. Children can experience serious impacts, such as problems with suboptimal physical growth, disruption of the mental and intelligence development process, and even the risk of death in toddlers (Kemenkes RI, 2019).

One of the facilities and activities for families in preventing and overcoming nutritional problems experienced by their family members is through nutritional assistance (Simbolon, 2019). From the nutritional assistance activities, it is expected to increase the knowledge of mothers of toddlers about proper feeding so that the nutritional intake of toddlers is met properly. This problem is the reason for researchers to investigate whether there is an impact of nutritional assistance on mothers' knowledge about toddler food, as well as energy, zinc, and vitamin C consumption in toddlers.

METHODS

The study was implemented in the sub-district Purwodadi, District Blimbing, Malang City in June 2023 and categorized as study of nutrition in society. This research was conducted based on Ethical Approval (EA) No.DP.04.03/F.XXI.31/892/2023 issued by the Polytechnic of Health Ministry of Health Malang on August 15, 2023. This is quasi-experimental research with two group pre-test and post-test design conducted on control group and experiment group with 1:1 ratio.

The study target study is toddlers with malnutrition living in the sub-district Purwodadi, District Blimbing, Malang City with inclusion criteria of toddler aged 12–59 months and parents want to participate as respondent with signed informed consent. Exclusion Criteria are toddlers currently sick (have accompanying disease), refusal to participate in the study and toddlers with comorbid conditions such as severe infections, chronic diseases (e.g., TB, HIV), genetic disorders, or chronic digestive disorders. Retrieval of respondent used total sampling, where all populations are included as samples in the study, namely 27 respondents. However, during the study, five respondents withdrew and could not be contacted again, so the sample used was 22 respondents. The subjects were divided into a control group and a treatment group, each consisting of 11 respondents with nutritional status categories, namely thin with a Z-Score of -3 to -2 SD and very thin with a Z-Score <-3 SD (Permenkes RI, 2020). Anthropometric measurement data for respondent selection were obtained from the local health center (Puskesmas) and rechecked or remeasured directly by the researcher to determine eligible respondents. These anthropometric measurements were conducted both before and after the intervention.

The independent variable in this research is nutrition mentoring, carried out three times over three weeks using a booklet as a medium. The mentoring is delivered through nutrition counseling sessions lasting 15–45 minutes for the intervention group. Meanwhile, the control group was only provided with a booklet containing an overview of undernourished toddlers, including the causes and impacts, as well as prevention efforts through proper feeding covering nutritional needs, eating patterns, and the selection of food ingredients. Nutrition assistance was carried out by visiting each respondent's home. The dependent variable is the knowledge of mothers of toddlers about feeding, which was obtained from a knowledge questionnaire consisting of 25 questions that had been tested for validity (p-value<0.05) and reliability (Cronbach's alpha>0.7) on 30 respondents. The results of the knowledge questionnaire were categorized using standard deviation method: good (score>mean+SD), adequate (mean -SD<score<mean+SD), and poor (score<mean-SD). Then the level consumption energy, zinc, and vitamin C were obtained from interviews using 24 Hour Food Recall to parents or caregiver of toddlers. Results of the 24 Hour Food Recall were analyzed using Nutrisurvey then compared with number adequacy nutrition (RDA) 2019 to evaluate adequacy energy, zinc, and vitamin C in respondents and finally categorized based on total diet Ssandards (2014) as very deficient (<70% AKE), deficient (70%-<100% AKE), according to AKG (100%-<130% AKE), more than AKG (≥130% AKE) .

Knowledge of mother about method giving food to toddlers, consumption energy, consumption zinc, and consume vitamin C was compared before and after assistance in providing nutrition, using data with normal distribution ($p>0.05$) and tested through paired t-test. For non-normally distributed data ($p<0.05$), Wilcoxon signed rank test with SPSS for windows was used. To compare knowledge of mothers regarding giving food to toddlers, level of consumption energy, zinc, and vitamin C in the control group and intervention group, data with normal distribution ($p>0.05$) were tested using independent t-test and data not normally distributed ($p<0.05$) were tested with Mann Whitney U test via SPSS for windows.

Primary data obtained cover information about respondent and parents/caregivers, eating patterns and child health through face-to-face interview, and data regarding consumption level energy, zinc, and vitamin C were obtained through 24 Hour Food Recall interview. Secondary data collected are information from health center polowijen to obtain related data numbers as well as to identity toddlers registered in the sub-district Purwodadi. In addition, anthropometric data such as body weight and height of the children were also recorded to assess their nutritional status. The data collection was carried out over a period of two weeks by trained enumerators. All data were then validated and entered into a database for further analysis.

RESULTS AND DISCUSSION

Respondents selected as research samples have the same characteristics and the characteristics of respondents are adjusted based on the objectives and needs of the research. The characteristics of respondents in this study are based on several variables, including the age of the mother of the toddler, education level, occupation of the head of the family and the mother of the toddler, number of family members, family income, gender of the toddler, age of the toddler, and nutritional status. This data are divided into two groups, namely the control group and the treatment group, with the number and percentage displayed for each category. The analysis of these characteristics aims to provide an overview of the distribution of respondents in the study.

The number of respondents in this study was 22 toddlers, including 11 individuals from the control group and 11 individuals from the treatment group. Based on the respondent characteristics table (Table 1), the nutritional status of the study respondents based on BB/TB was mostly thin. Toddlers aged 1–3 years were 90.91% and 4–6 years were 9.09%, namely in the control group and the treatment group were the same. The gender of toddlers in the control group was 36.36% female and 63.64% male, while in the treatment group it was 45.45% female and 54.55% male.

In the control group, mothers aged 15–39 years were 63.64% and the treatment group was 90.9%. The level of education of mothers for the treatment was 63.64% who had graduated from high school. The majority of the head of the family's occupation in the control group or the treatment group was private, namely 45.46% and 72.73%, respectively, while for the occupation of mothers of toddlers, most of the control and treatment groups were the same, namely as housewives, namely 81.82%. Then for the distribution of the number of family members in the control and treatment groups, most were 3–4 people, namely 81.82% and 63.64% with family income less than the UMR, respectively, namely 81.82% and 54.54%.

Table 1. Respondent Characteristics

Variables	Control		Treatment	
	n	%	n	%
Age of Mother of Toddler				
15-39 Years	7	63.64	10	90.9
40–49 Years	4	36.36	1	9.1
Level of Education				
Elementary School or equivalent	1	9.1	0	0
Junior High School or equivalent	1	9.1	2	18.18
High School or equivalent	3	27.27	7	63.64
D3 or equivalent	0	0	2	18.18
Bachelor's Degree or equivalent	6	54.54	0	0
Head of Family Occupation				
Private	5	45.46	8	72.73
Self-employed	3	27.27	2	18.18
Trader	2	18.18	1	9.1
Laborer	1	9.1	0	0
Toddler Mother Jobs				
Housewife	9	81.82	9	81.82
Private	2	18.18	2	18.18
Number of Family Members				
3–4	9	81.82	7	63.64
5-6	2	18.18	4	36.36
Family Income				
<UMR (Rp3.309.144)	9	81.82	6	54.54
≥UMR (Rp3.309.144)	2	18.18	5	45.46
Toddler Gender				
Female	4	36.36	5	45.45
Male	7	63.64	6	54.55
Toddler Age				
1–3 years	10	90.91	10	90.91
4–6 years	1	9.09	1	9.09
Nutritional Status				
Thin	10	90.91	11	100
Very Thin	1	9.09	0	0

Differences in the Level of Mothers' Knowledge and Toddler Consumption Levels Before and After Nutrition Assistance in the Control Group

To evaluate the impact of the nutritional assistance program on the control group, an analysis was conducted on changes in the level of maternal knowledge and the level of nutritional consumption in toddlers before and after the program was implemented. This evaluation is important to assess the extent to which the intervention provided is able to improve mothers' understanding of toddler nutritional needs and changes in children's nutritional consumption patterns in the household. Several indicators analyzed include the level of maternal knowledge about toddler nutrition, as well as the level of energy, zinc, and vitamin C consumption by toddlers. Changes that occur in each indicator are compared using appropriate statistical tests to ensure the significance of the differences that occur. The results of this analysis can be seen in detail in Table 2.

Table 2. Differences in the Level of Mothers' Knowledge and Level of Toddler Nutrition Consumption Before and After Nutrition Assistance in the Control Group

Variables	Before	After	*ρ*value
	Percentage (%)		
Level of Knowledge of Mothers of Toddlers			
Good (result x>mean+SD)	18	36	0.011 [a]
Sufficient (mean-SD result <x< mean+SD)	64	45	
Less (result x<mean-SD)	18	18	
Total	100	100	
Toddler Energy Consumption Levels			
Very Poor (<70% AKE)	18	18	0.583 [a]
Less (70%-<100% AKE)	45	36	
According to AKG (100%-<130% AKE)	18	36	
More than AKG (≥130% AKE)	18	9	
Total	100	100	
Toddler Zinc Consumption Levels			
Very Poor (<70% AKE)	18	36	0.366 [a]
Less (70%-<100% AKE)	18	18	
According to AKG (100%-<130% AKE)	36	18	
More than AKG (≥130% AKE)	27	27	
Total	100	100	
Vitamin C Consumption Levels for Toddlers			
Very Poor (<70% AKE)	64	64	0.534 [b]
Less (70%-<100% AKE)	27	18	
According to AKG (100%-<130% AKE)	0	9	
More than AKG (≥130% AKE)	9	9	
Total	100	100	

[a] *Paired t-test* [b] *Wilcoxon signed rank*

The level of knowledge in the control group after being given nutritional assistance increased to good by 36%. The results of the paired t-test showed that there was a significant difference between the knowledge of mothers at the beginning and the end in the control group (ρ=0.011). This happened because, although the control group was not given intensive assistance but only given a booklet and a little explanation, based on the educational background of the mothers, most of whom were graduates, they were able to try to find and explore new information about feeding toddlers from other sources. The level of education is one of the factors that will affect a person's knowledge (Notoatmodjo, 2012) . However, the level of energy and zinc consumption was still less than adequate. The results of the paired t-test on the level of energy consumption (ρ=0.583) and the level of zinc consumption (ρ=0.366) showed no significant difference in the level of energy and zinc consumption at the beginning and end in the control group. The lack of significant changes in energy and zinc consumption in the control group was likely due to the intervention being insufficient to influence dietary behavior, as it only involved a booklet and brief explanation. Without intensive mentoring, mothers may have found it difficult to translate knowledge into actual feeding practices. Additionally, external factors such as economic limitations and limited access to nutritious food may have hindered improvements in energy and zinc intake for toddlers.

Absence of significant changes at the beginning and end occurred because the control group was not given an intervention in the form of nutritional assistance. The absence of monitoring and nutritional assistance during the study resulted in the mother's feeding pattern to her child being less than optimal. According to research by Nurmaliza and Herlina (2019) , with good education, parents can get all the information from outside about how to educate children effectively, especially about how mothers provide food to their children. Knowledge in the form of the types and amounts of food obtained has not reached the application stage. Mothers were only able to apply it to adding fruits and vegetables so that the level of vitamin C consumption according to the AKG in the control group was able to increase even though no differences were found before and after nutritional assistance (ρ=0.534).

Differences in the Level of Mothers' Knowledge and Toddler Consumption Levels Before and After Nutrition Assistance in the Treatment Group

Nutrition assistance provided to the treatment group aims to increase mothers' knowledge about nutrition and improve toddlers' nutritional consumption patterns. Through this intervention, it is hoped that there will be positive

changes in mothers' understanding of the importance of adequate nutrition and an increase in the quality of nutritional intake received by toddlers. The assessment was carried out by comparing data before and after assistance, including the level of mothers' knowledge and consumption of energy, zinc, and vitamin C by toddlers. This evaluation uses statistical tests to determine the significance of the changes that occur in each indicator. The results of the detailed analysis of the differences, both in terms of percentage and p-value which indicate the effectiveness of the intervention program can be seen in Table 3.

Table 3. Differences in the Level of Mothers' Knowledge and Level of Toddler Nutrition Consumption Before and After Nutrition Assistance in the Treatment Group

Variables	Before	After	ρ −value
	Percentage (%)		
Level of Knowledge of Mothers of Toddlers			
Good (result x>mean+SD)	18	36	0.003 [b]
Sufficient (mean-SD result <x< mean+SD)	64	64	
Less (result x<mean-SD).	18	0	
Total	100	100	
Toddler Energy Consumption Levels			
Very Poor (<70% AKE)	27	0	0.000 [a]
Less (70%-<100% AKE)	64	27	
According to AKG (100%-<130% AKE)	9	64	
More than AKG (≥130% AKE)	0	9	
Total	100	100	
Toddler Zinc Consumption Levels			
Very Poor (<70% AKE)	27	0	0.006 [a]
Less (70%-<100% AKE)	45	36	
According to AKG (100%-<130% AKE)	9	45	
More than AKG (≥130% AKE)	18	18	
Total	100	100	
Vitamin C Consumption Levels for Toddlers			
Very Poor (<70% AKE)	73	18	0.004 [b]
Less (70%-<100% AKE)	0	36	
According to AKG (100%-<130% AKE)	3	18	
More than AKG (≥130% AKE)	0	27	
Total	100	100	

[a] *Paired t-test* [b] *Wilcoxon signed rank*

Knowledge of mothers of toddlers in the treatment group increased to the good category by 36%. Likewise, the level of energy, zinc, and vitamin C consumption increased according to the AKG. The results of the Wilcoxon signed rank analysis showed a significant difference in maternal knowledge (ρ=0.003) and the level of vitamin C consumption (ρ=0.004) before and after treatment in the treatment group. Then in the paired t-test analysis, the level of energy consumption (ρ=0.000) and the level of zinc consumption (ρ=0.006) in the treatment group also showed a significant difference before and after. This happened because previously respondents from the treatment group did not know much about feeding children, but after being given nutritional assistance there was an increase in understanding so that mothers of toddlers understood more about how to feed their children. This is supported by Hikmiyah, Riyadi and Nurmayanti (2021) who showed a significant difference (p=0.000) in knowledge before and after providing nutritional assistance.

Level of energy, zinc, and vitamin C consumption of toddlers also proves that there is a difference before and after being given treatment in the form of nutritional assistance because, with good knowledge in mothers, it can prove that mothers of toddlers can apply the information they have obtained during nutritional assistance into their daily lives. According to Simbolon, Rahmadi and Jumiyati (2019) , nutritional assistance is the right way to improve mothers' attitudes and actions to be better. Nutritional assistance with this counseling method facilitates communication between respondents and researchers to identify consumption problems in children and discuss finding alternative ways to solve these problems so that respondents' food consumption has begun to vary from the original majority of respondents consuming staple foods in the form of rice and bread only to changing by trying to provide vermicelli, sweet potatoes and even corn processed with milk and cheese. Fats from animal and vegetable side dishes are also given more varied than those only sourced from eggs and tofu and

tempeh with fried or stir-fried processing into fish and nuts.

According to Almatsier (2004), high-concentration energy sources consist of foods containing fat, such as animal oils and fats, as well as nuts and seeds. Then, the amount and frequency of feeding children have also begun to be adjusted to the child's needs after being given nutritional assistance. Mothers of toddlers also began to understand how to deal with GTM (Closed Mouth Movement) children when eating because children's food consumption is very important and has an impact on the quality of growth and development of toddlers. Ayuningtyas, Simbolon and Rizal (2018) explain that there are several causes that result in low energy consumption in toddlers, including the frequency and amount of food given, decreased appetite, and low energy density.

Differences in the Level of Mothers' Knowledge and Toddler Consumption Levels Before and After Nutrition Assistance in the Control and Treatment Groups

To determine the effectiveness of nutritional assistance more comprehensively, a comparative analysis was conducted between the control group and the treatment group. This analysis aims to assess the extent to which the changes that occurred in the treatment group were significantly different compared to the control group that did not receive direct intervention. The variables observed included the level of maternal knowledge, as well as the level of energy, zinc, and vitamin C consumption in toddlers before and after assistance. The statistical tests used were adjusted to the data distribution, namely the independent t-test and Mann Whitney U test. The results of the comparison of the two groups are presented in detail in Table 4 below, which describes the distribution of differences in average values (means) along with the p-value of each variable.

Table 4. Distribution of Differences in Mothers' Knowledge and Toddler Consumption Levels Before and After Nutrition Assistance in the Control and Treatment Groups

Variables	x̄ Control Group		x̄ Treatment Group		*ρ*value	
	Before	After	Before	After	Before	After
Level of Knowledge of Mothers of Toddlers	62.55	68.73	60.73	73.1	0.772 [a]	0.016 [b]
Toddler Energy Consumption Levels	903.91	869.98	787.81	1027.01	0.218 [a]	0.096 [a]
Toddler Zinc Consumption Levels	3.65	3.3	2.75	3.61	0.127 [a]	0.642 [a]
Vitamin C Consumption Levels for Toddlers	22.1	19.2	20, 43	40.5	0.622 [b]	0.009 [b]

[a] *Independent t-test* [b] *Mann Whitney U test*

Independent t-test analysis showed that there was no difference in the level of knowledge of mothers before receiving nutritional assistance between the control and treatment groups (ρ= 0.772). The average level of knowledge of the control group was 62.55, while the treatment group was 60.73. This could be due to the two groups not having received any intervention so that the knowledge of mothers of toddlers in both groups was still obtained from information or knowledge they had previously. In accordance with the research of Simbolon, Rahmadi and Jumiyati (2019), the score of maternal knowledge before nutritional assistance in both groups was not found to have any influence. However, the average knowledge before in the control group was greater than in the treatment group because of the educational history of mothers of toddlers, most of whom held bachelor's degrees, so they had more insight than in the treatment group.

Level of energy consumption with independent t-test analysis did not find any difference before being given nutritional assistance between the control and treatment groups (ρ=0.218) and the level of zinc adequacy (ρ=0.127) while the level of vitamin C adequacy (ρ=0.622) through Mann-Whitney U test analysis showed no difference between the control and treatment groups before nutritional assistance. Respondents from the control group showed a higher average consumption than the treatment group because the mothers in this group had better knowledge and higher levels of education, so they had more insight and influenced their children's eating patterns. This suggests that maternal education plays an important role in shaping children's dietary habits even before any intervention. However, other factors such as socioeconomic status and food availability might also affect consumption levels. Therefore, addressing these factors could improve the effectiveness of nutritional programs.

The results of the study on maternal knowledge (ρ=0.016) and vitamin C consumption (ρ=0.009) with Mann Whitney U test analysis showed a difference after being given nutritional assistance between the control group and the treatment group. This shows that there is a

significant difference between the control and treatment groups after receiving nutritional assistance, because the control group did not receive in-depth nutritional assistance, but only in the form of a booklet and a little explanation, while the treatment group was given intensive nutritional assistance for three weeks three times for 15-45 minutes each assistance so that from the nutritional counseling in the treatment group it was able to increase the insight of mothers of toddlers and the variety of foods given to children, one of which was the type of vegetables and fruits which increased in the treatment group. These improvements indicate that structured and continuous nutrition education can have a meaningful impact on maternal knowledge and dietary practices. Additionally, the personalized approach during home visits may have contributed to better understanding and application of the advice. Future programs should consider incorporating similar methods to achieve better nutritional outcomes.

Level of energy consumption (ρ=0.096) and level of zinc consumption (ρ=0.642) in the two groups after being given nutritional assistance with the independent t-test analysis showed that there was no difference. This means that both groups have the same average level of consumption. This shows that the three-week nutritional assistance program for mothers with toddlers does not guarantee changes in the level of nutritional intake when compared to the group that only received a booklet and a brief explanation. It is possible that changes in energy and zinc intake require a longer intervention period or additional support such as food supplements or practical cooking sessions.

This study has proven that the intervention provided as many as six meetings through house visits giving mentoring nutrition in the form of intensive counseling to mothers of toddlers in the treatment group meant the mothers' response to material increased but was not able to meet all nutritional needs because the feeding practices carried out by mothers have not been optimal, and the media assistance with booklets has not been able to improve skills in processing food. This suggests that while knowledge may improve through counseling, practical skills and consistent behavior change require more interactive and hands-on approaches. In addition, factors such as limited access to diverse foods and time constraints for mothers may also hinder the application of proper feeding practices. Therefore, future interventions should consider incorporating cooking demonstrations and community support to enhance mothers' skills and motivation. Continuous monitoring and follow-up visits could help sustain positive changes in feeding behavior over time.

The strengths of this study allowed for a comparison between mothers of children under five who received the booklet along with nutrition counselling and those who were only given the booklet to read, thus showing the extent to which nutrition counselling influenced mothers' knowledge and consumption levels of children under five. The disadvantage of this study is that the knowledge and consumption levels were only measured before and after the intervention, so changes in knowledge and consumption at each mentoring session were not monitored, making the assessment less comprehensive. Additionally, the study did not account for other external factors such as socioeconomic status or cultural practices that might have influenced the results. Future research should include more frequent assessments during the intervention period to better understand how knowledge and behavior evolve over time. It would also be beneficial to consider qualitative data to capture mothers' perspectives and challenges in applying nutritional knowledge. Moreover, expanding the sample size and including diverse populations could improve the generalizability of the findings.

CONCLUSION

Mentoring nutrition owns significant impact on difference in knowledge of mother about giving food as well as consumption level of vitamin C among treatment and control groups. However, assistance showed no significant influence to different energy and zinc consumption levels in control and treatment groups. Therefore, more studies about factors that influence mentoring nutrition in regard to consumption and nutrition substance levels between control and treatment groups are needed, which includes duration mentoring, methods applied, and media used in nutrition assistance.

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None.

Author Contributions

RS: conceptualization, data curation, formal analysis, funding acquisition, investigation, methodology, resources, writing-original draft, editing. INTK: conceptualization, data curation, formal analysis, investigation, methodology, resources, supervision, validation, visualization, writing-review. BDR: conceptualization, data curation, formal analysis, investigation,

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