

DIFFERENCE IN MOTHERS' KNOWLEDGE OF BALANCED NUTRITION FOR PRESCHOOL CHILDREN BEFORE AND AFTER RECEIVING NUTRITION EDUCATION USING POWERPOINT SLIDES AT biMBA AIUEO UNIT VILA BINTARO INDAH

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Submitted: February 20th 2023 ; Accepted: January 3rd 2024

<https://doi.org/10.36525/sanitas.2023.440>

ABSTRACT

Indonesia has a "Double Burden of Malnutrition". Based on Basic Health Research (Riskesdas) data for 2018, the prevalence of undernutrition is estimated at 13.8%, while the prevalence of overweight is reported to be at 8%. Balanced nutrition is crucial for normal growth, physical development, and cognitive abilities. The key to the success or failure of nutritional status in toddlers lies in the mother's knowledge regarding nutrition. Nutrition education is an effort to overcome nutritional problems by increasing mothers' knowledge. The purpose of this study is to examine the difference in mothers' knowledge of balanced nutrition for preschool children before and after receiving nutrition education using PowerPoint slides at biMBA AIUEO Unit Vila Bintaro Indah. The research method employed in this study was a pre-experimental design using a one-group pre-test-post-test approach. The total population in this study is 80 individuals and a total of 31 mothers were included as participants taken utilized purposive sampling. Data was collected through a questionnaire (Google Form). Statistical analysis were conducted using the Paired Sample t-test. The results showed that there is a significant difference in the mother's knowledge regarding balanced nutrition for preschool children with $p = 0.000$ ($p < 0.05$). The suggestion given is that the school encouraged to collaborate with the local Community Health Center (Puskesmas) to provide continuous nutrition education for preschool children.

Keywords: *Balanced Nutrition, Preschool Children, Mother Knowledge*

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INTRODUCTION

Indonesia is confronted with the phenomenon known as the "Double Burden of Malnutrition," characterized by a significant prevalence of both macro and micronutrient deficiencies coexisting with an escalating incidence of obesity (1). In the case of toddlers as per the Basic Health Research (Riskesdas) data for the year 2018, the prevalence of undernutrition in Indonesia is estimated at 13.8%, while the prevalence of overweight is reported to be at 8%. Meanwhile in Jakarta, the prevalence of undernutrition and overweight reached 12% and 7.9%. (2). The aforementioned data represents the nutritional status of toddlers in Indonesia, indicating a need for improvement. This situation can be attributed, in part, to inappropriate dietary patterns among children. Hence, a method is required to address the issue, one of which is by enhancing knowledge through nutritional education.

The preschool age (3-6 years) is considered the golden age period, during which children require adequate nutritional support, along with appropriate healthcare, education, and nurturing, in order to facilitate their optimal growth and development (3). Preschool-age children are categorized as passive consumers, as they are not yet capable of independently selecting and choosing their own food. During this stage, preschoolers rely on the food provided by their mothers or caregivers as their source of nutrition (4). If mothers can understand the nutritional needs of their children, comprehend how to meet those nutritional requirements, make efforts to improve their children's nutritional intake, and actively support their children's eating habits, then the nutritional needs of the children can be optimally met (5). Thus, the key to the success or failure of nutritional status in toddlers lies in the mother's knowledge regarding nutrition (6).

The findings of Van der Horst's research in 2017 explain that practicing protective feeding behaviors regarding food is known to be beneficial for children's nutrition. For example, monitoring food intake, setting a positive example, and promoting the consumption and availability of healthy foods at home (7). In the study conducted by Subarkah (2016), it was concluded that there is a relationship between dietary patterns and nutritional status among children aged 1-3 years. This relationship can be influenced by the

dietary patterns and parental behaviors that pay attention to the nutritional intake and quantity of food consumed by the child. (8).

Balanced nutrition is defined as a daily dietary pattern that contains nutrients in both appropriate types and quantities, meeting the body's nutritional requirements. Balanced nutrition is crucial for normal growth, physical development, and cognitive abilities of infants, children, and individuals of all age groups (9). The message of balanced nutrition is categorized according to age groups. The message of balanced nutrition for toddlers (2-5 years old) includes the following: having three meals a day (breakfast, lunch, and dinner) with the family, increasing the consumption of protein-rich foods, increasing the intake of vegetables and fruits, limiting the consumption of excessively sweet, salty, and fatty snacks, drinking an adequate amount of water, and engaging in daily physical activities and playtime. In 2017, the Ministry of Health introduced the slogan "Isi Piringku" (Fill My Plate), which serves as a guideline for meal servings based on age. For children aged 24-60 months (toddlers), the types and textures of food can already follow the family's meal patterns. A plate can be filled with 35% carbohydrates, 35% protein from both animal and plant sources, and 30% vegetables and fruits (9). The results of research by Anita Ariance Howay et al show that there is a relationship between personal social development and the fulfillment of balanced nutrition for children with a p value of $0.002 < 0.05$. Preschool children with good nutrition will also experience positive personal and social development (10).

One way to achieve behavior change through nutrition education is by providing information to increase knowledge, which in turn raises awareness. Nutrition education is an effort to promote individual and community behaviors necessary for improving health status and maintaining good nutritional status through an educational approach (11). In line with the findings of Hesti Widowati et al.'s research in 2021, it can be concluded that there is a significant difference in the level of knowledge among respondents before and after nutrition education intervention (12).

PowerPoint is a specialized software designed to create visually appealing multimedia presentations. It offers a user-friendly interface and ease of use, making it

accessible to a wide range of users. It is a cost-effective solution as it only requires data storage devices to save and present presentations (13). The visual aspects presented in PowerPoint slides can effectively enhance respondents' understanding of the verbally conveyed material. The research conducted by Eka Puji Hastuti et al. in 2021 demonstrated a significant increase in knowledge among respondents after receiving nutrition education using PowerPoint slides focusing on balanced nutrition for children aged 1-6 years. The study revealed that the initial knowledge level of 50% significantly increased to 83.4% (14).

The purpose of this study is to examine the difference in mothers' knowledge of balanced nutrition for preschool children before and after receiving nutrition education using PowerPoint slides at biMBA AIUEO Unit Vila Bintaro Indah. biMBA AIUEO is a program that focuses on developing reading interests and learning for children aged 3-6 years. During this age, mothers' knowledge of providing balanced nutrition plays a crucial role in children's growth and development. Based on an interview with the owner, no previous research or nutrition education has been conducted at the research location. Hence, the researcher is interested in conducting this study.

RESEARCH METHODS

The research was conducted at biMBA AIUEO Unit Vila Bintaro Indah. The research method employed in this study was a pre-experimental design using a one-group pre-test-post-test approach. Due to the Covid-19 pandemic, data collection was carried out online (via the internet) using Zoom meetings for the nutrition education session. The research was conducted on May 29, 2022. Ethical approval for this study was obtained from the Ethics Commission of the Health Polytechnic of the Ministry of Health Jakarta II with approval number LB.02.01/1/KE/31/218/2022. Technical explanations are provided to the respondents through an explanatory script. After understanding and agreeing, respondents give their approval through informed consent. The respondents who agree to participate in the research will be gathered in a WhatsApp group to facilitate communication between the researchers and respondents.

The population of this study consists of all mothers of students enrolled at biMBA AIUEO Unit Vila Bintaro Indah. The total population in this study is 80 individuals. Purposive sampling was employed to select the sample, and a total of 31 mothers were included as respondents in the study.

The data on respondents' characteristics (independent) including their ages, educational levels, and sources of information, was collected through Google Forms. Simultaneously, questionnaires to assess knowledge (dependent) were administered through Google Forms for both the pre-test and post-test. The research was carried out in one day with an explanation lasting for approximately 30 minutes, followed by a discussion. The questionnaire used in this study had previously undergone a questionnaire trial, involving 10 mothers who were not part of the sample but had preschool-aged children.

The nutrition education session was conducted using PowerPoint slides via Zoom Meetings, with the assistance of four enumerators. The PowerPoint slides were created by the researcher and had undergone a media trial, involving 10 mothers who were not part of the sample but had preschool-aged children. The slides were filled with content on the definition of preschool children, characteristics of preschool children (growth and development), definition of balanced nutrition, guidelines for balanced nutrition, nutritional needs of preschool children, principles of balanced nutrition, visual representation of balanced nutrition, and nutritional messages for toddlers (2-5 years old). The evaluation of knowledge was conducted both before and after the nutrition education session (pre-test and post-test) among the mothers at biMBA AIUEO Unit Vila Bintaro Indah.

The processing and analysis of data on respondents' characteristics involved categorization and descriptive analysis to examine the proportions of the variables under investigation. Data processing and analysis were conducted using Microsoft Excel 2013 and the Statistical Package for the Social Sciences (SPSS) software, specifically IBM SPSS Statistics version 26. Additionally, a paired sample t-test was performed to address the research objectives.

RESULTS AND DISCUSSION

A. Characteristics of Respondents

Table 1. Frequency Distribution of Respondents Based on Age, Education Level, Occupation, and Source of Information (n=31)

Variables	n (%)
Age	
Late Adolescence (17-25 years)	19,4
Early Adulthood (26-35 years)	58,1
Late Adulthood (36-45 years)	16,1
Elderly (46-55 years)	6,4
Education Level	
High School Graduates	42
Diploma Graduates	29
Higher Education Graduates	29
Occupation	
Unemployed (Homemaker)	45,2
Employed	54,8
Previously Received Information on Balanced Nutrition for Preschool Children	
Yes	64,5
No	35,5
Sources of Information on Balanced Nutrition for Preschool Children	
Electronic Media	50
Print Media	5
Healthcare Professionals	30
Posyandu Cadres	15

Source: Research Data

Based on Table 1, the majority of respondents in this study fall under the age group of 26-35 years (early adulthood) with a percentage of 58.1%. They have completed high school education with a percentage of 42%. In their daily lives, the majority of respondents are employed with a percentage of 54.8%. Moreover, 64.5% of the respondents have previously received information about "Balanced nutrition for preschool children". Among those who have received information, the majority obtained it through electronic media with a percentage of 50%. Knowledge can be influenced by various factors, including education. This is because individuals with higher education tend to have better information absorption capabilities (15).

B. Knowledge

Table 2. Frequency Distribution Of Respondents' Answers Regarding Balanced Nutrition Knowledge In Preschool Children Before And After Education Using Powerpoint Slides

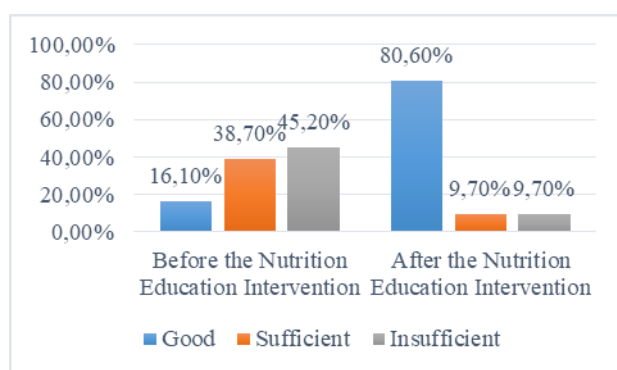
No.	Question	Before				After			
		Correct		Incorrect		Correct		Incorrect	
		n	%	n	%	n	%	n	%
1	Definition of Balanced Nutrition	27	87.1	4	12.9	30	96.8	1	3.2
2	Importance of Balanced Nutrition	25	80.6	6	19.4	28	90.3	3	9.7
3	Principles of Balanced Nutrition	7	22.6	24	77.4	26	83.9	5	16.1
4	First Principle of Balanced Nutrition	17	54.8	14	45.2	24	77.4	7	22.6
5	Arrangement of Balanced Nutrition Menu	15	48.4	16	51.6	25	80.6	6	19.4
6	Percentage of Isi Piringku (Staple Food)	9	29	22	71	21	67.7	10	32.3
7	Presentase Isi Piringku (Side Dishes)	16	51.6	15	48.4	26	83.9	5	16.1
8	Presentase Isi Piringku (Vegetables and Fruits)	17	54.8	14	45.2	24	77.4	7	22.6
9	Division of Children's Mealtime	24	77.4	7	22.6	30	96.8	1	3.2
10	Restrictions on Children's Consumption	13	41.9	18	58.1	24	77.4	7	22.6

Source: Research Data

Based on Table 2 above, data obtained indicate that the frequency of respondents' correct answers before the education is highest for questions regarding the definition of balanced nutrition, with 27 respondents (87.1%), while the highest proportion of incorrect

answers is for questions about the principles of balanced nutrition, with 24 respondents (77.4%).

After the education, the highest proportion of correct answers is for questions regarding the definition of balanced nutrition, with 30 respondents (96.8%), and the division of children's mealtime, also with 30 respondents (96.8%). Meanwhile, the highest proportion of incorrect answers is for questions about the presentation of staple foods on *Isi Piringku* for toddlers, with 10 respondents (32.3%).



Source: Research Data

Figure 1. Frequency Distribution of Knowledge on Balanced Nutrition for Preschool Children Before and After PowerPoint-Based Nutrition Education Intervention

Based on Figure 1, the knowledge of respondents before the nutrition education intervention had the highest percentage in the "Insufficient" category. After the intervention, there was a decrease in the "Insufficient" category. The final result indicates an improvement in respondents' knowledge, with the "Good" category increasing from 16.1% to 80.6%.

Table 3. Mean Knowledge Scores of Respondents Regarding Balanced Nutrition for Preschool Children Before and After PowerPoint-Based Nutrition Education Intervention

Knowledge	n	SD	Mean	Min	Max	t-value	Df	P Value
Before	31	21.109	54.52	20	90	-28.710	15.651	0.000
After		17.585	83.23	30	100			

* Independent t-test, significance level $p < 0.05$

Source: Research Data

Based on Table 3, there was an improvement in knowledge, with the average knowledge score before the intervention being 54.52 (\pm SD 21.109) and increasing to 83.23 (\pm SD 17.585) after the intervention, showing an average difference of 28.1. The median value before the intervention was 54.52 and increased to 83.23 after the intervention, indicating an average difference of 28.71 points. The minimum score before the intervention was 20.00 and after the intervention was 30.00, with a difference of 10.00 points. As for the maximum score, it was 90.00 before the intervention and increased to 100.00 after the intervention, showing a difference of 10.00 points. The increase in the average knowledge score of the mothers indicates the success of the nutrition education intervention, which can be attributed to their willingness to understand the importance of balanced nutrition for preschool children. Additionally, the nutrition education intervention played a significant role in improving the knowledge of the respondents.

The findings are in line with the research conducted by Utamingtyas (2020), which revealed that health education interventions have a significant influence on improving mothers' knowledge about balanced nutrition for toddlers (6). Supported by the research conducted by Baiq Dewi Sukma Septiani et al. (2021) in the Beleke Village, West Lombok District, it can be concluded that there was an improvement in knowledge among mothers of undernourished toddlers after receiving nutrition education (16). This concurs with the research conducted by Elvia Riska (2019), which found an increase in knowledge before receiving nutrition education using PowerPoint slides in Zoom Cloud Meeting. (17). Similarly, Mochamad Rachmat et al. study (2023) found a significant difference in maternal knowledge before and after being given counseling about “Isi Piringku” for early

childhood (6-59 months) using video blog media, with a knowledge p-value of 0.000 ($p < 0.05$) (18).

The results of this research are supported by statistical calculations from the t-test, which indicate a significant difference among respondents with a p-value of 0.000 ($p < 0.05$). This finding is consistent with the research conducted by Prangga Asih Waskito (2018), which also observed a difference in knowledge before and after an intervention involving nutrition education using PowerPoint slides. The provision of education aided by audiovisual media, such as PowerPoint, effectively increased the knowledge of respondents significantly, as demonstrated by statistical evidence (19). In line with the research conducted by Ai Kustani and Artha Prima Misa (2018), it was found that there was a significant difference in the percentage of knowledge levels before and after nutrition education intervention (20).

CONCLUSION

The majority of the respondents were in the age group of 26-35 years (early adulthood). They had completed high school education with a percentage of 41.9%. The majority of the respondents were employed in their daily lives. Moreover, 64.5% of the respondents had previously received information about "Balanced nutrition for preschool children". Among those who had received information, the majority obtained it through electronic media. The average knowledge scores of the respondents before and after the education increased by 28.1 points. Therefore, it can be concluded that there is a significant difference in the knowledge of mothers regarding balanced nutrition for preschool children before and after receiving nutrition education using PowerPoint slides at biMBA AIUEO Unit Vila Bintaro Indah.

SUGGESTION

The school is encouraged to collaborate with the local Community Health Center (Puskesmas) to provide continuous nutrition education for preschool children. They should

also motivate mothers to be innovative in preparing balanced nutritious meals for their children.

It is recommended for future researchers to develop a more diverse range of educational media that are suitable for different contexts. Additionally, it is suggested to investigate changes in maternal behavior related to the implementation of balanced nutrition for preschool children. This is intended to ensure the effective implementation of acquired knowledge into daily feeding practices for children.

ACKNOWLEDGEMENT

The author would like to express gratitude to the owner and head of biMBA AIUEO Unit Vila Bintaro Indah, all lecturers from the Nutrition Department Health Polytechnic the Ministry of Health Jakarta II, my parents, and enumerators who have provided permission, knowledge, and assistance both morally and materially to the author throughout the research process.

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