THE EFFECT OF NUTRITIONAL EDUCATION ON PARENTAL KNOWLEDGE OF BALANCED NUTRITION IN CHILDREN AT YAYASAN AN - NUSYUR AENG PANAS, SUMENEP MADURA

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ABSTRACT

Parents play a crucial role in shaping their children's dietary habits from early childhood through adulthood. Parental behaviors and family habits significantly influence children's dietary habits, shaping their attitudes toward food and eating behaviors. Low parental health literacy and socio-economic status are associated with poorer child health behaviors, such as unhealthy nutrition and less exercise. Educating parents on balanced nutrition is crucial for promoting healthier eating habits. This study explores the impact of nutritional education on parental knowledge at Yayasan An-Nusyur Aeng Panas, aiming to improve childhood nutrition in resource-constrained setting by increasing their knowledge after receiving nutrition education on Community Services of Enhancing Coastal Health Through Ecological Approach (ECOHAP) program. This research used a quantitative pre-experimental design study (one group pre-test post-test). The intervention carried out in this research was a single time delivered nutritional education for 3 hours period regarding balanced nutrition for children given by nutritionist team from Indonesia and Malaysia. The primary data was a questionnaire filled by 27 parents of kindergarten students at Yayasan An—Nusyur Aeng Panas, Sumenep Madura in Febuary 2024. Data were analyzed using SPSS version 26, descriptive analysis techniques, and Wilcoxon Matched-Pairs Test. The result of this research showed that there were differences between pre-test and post-test scores. The pre-test score has an average (mean) of 84.444, and the post-test score has an average (mean) of 86.667. But, based on the Wilcoxon Matched-Pairs Test, it is known that the significance value for pre-test and post-test data is 0.439 (>0.05). There was an increase in participants' knowledge after receiving nutrition education on Community Services of Enhancing Coastal Health Through Ecological Approach (ECOHAP) program that was held, but there was not a significant difference between pre-test and post-test scores after parents received nutritional education.

Keywords: *Balance Nutrition, Children Health, Dietary Habit, Nutrition Education, Parental Influence, Pediatric Nutrition*

INTRODUCTION

Parents have a significant impact on the dietary choices of children throughout their developmental stages, spanning from early childhood to adulthood (Mahmood et al., 2021). Studies show a positive correlation between parental literacy and children's nutritional status. Results indicate that low parental health literacy and socio-economic status are associated with poorer child health behaviors, such as unhealthy nutrition and less exercise (De Buhr & Tannen, 2020). In recent years, childhood malnutrition, which includes undernutrition (wasting, stunting, and underweight), micronutrient deficiencies,

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and issues of overweight and obesity, presents a multifaceted health crisis (Vassilakou, 2021). Low- and middle-income countries, particularly in sub-Saharan Africa and Asia, face the highest levels of malnutrition, with children being especially at risk (Iwaret et al., 2021). Statistics from 2022, it was estimated that 149 million children under the age of 5 suffered from stunting (being too short for their age), 45 million were affected by wasting (being too thin for their height), and 37 million were either overweight or obese (World Health Organization, 2024, 2016). About 45% of deaths in children under the age of five are linked to undernutrition (WHO & UNICEF, 2017); this condition elevates their susceptibility to succumbing to common infections, intensifies the frequency and severity of these infections, and hampers the recovery process (UNICEF, 2015, 2020).

A study highlights that parental behaviors and family dynamics significantly influence children's dietary habits, shaping their attitudes towards food and eating behaviors (Aldridge et al., 2016; Cooke & Llewellyn, 2016). For instance, if parents do not prioritize healthy eating, they might overlook the importance of family meals, leading children to eat breakfast alone, particularly if other family members are occupied (Tenjin et al., 2020). Family meals are important for interaction and guidance, significantly shaping children's dietary habits (Kuche et al., 2020; Mitchodigni et al., 2017). Parents should avoid excessive pressure or strict restrictions to prevent negative food experiences and instead encourage healthy snacking and ensure breakfast through positive social modeling and moderate restriction (Rachmawati et al., 2019). By increasing parents' understanding of balanced nutrition, they can be empowered to make informed decisions regarding their children's diets, thereby improving overall health and well-being. Given the increase in malnutrition and diet-related health problems among children globally, educating parents about balanced nutrition is very important (Batool et al., 2015; Dipasquale et al., 2020; Grover & Ee, 2009).

Schools play a crucial role in promoting children's nutrition and fostering healthy eating habits for life. Research indicates that school-based nutrition programs positively impact children's health (Al-Jawaldeh et al., 2023). These programs encompass various initiatives aimed at improving nutrition, such as nutrition education, provision of healthy meals, and creating supportive environments for healthy food choices (Krebs-Smith et al., 2018). However, existing programs may fall short of addressing the specific needs of communities like Yayasan An-Nusyur Aeng Panas. Yayasan An-Nusyur Aeng Panas, located in Sumenep Madura, is one such community facing nutritional challenges among its children. Factors such as limited access to nutritious foods, cultural preferences, and economic disparities can contribute to malnutrition and pose difficulties to the effectiveness of existing initiatives (Santika et al., 2016). Additionally, the lack of interventions customized to specific needs of this community may perpetuate disparities in nutrition and health outcomes among children. Therefore, addressing the nutritional needs of communities like Yayasan An-Nusyur Aeng Panas requires comprehensive strategies that consider socio-economic, cultural, and environmental factors to ensure the success and sustainability of nutrition programs and ultimately improve the health and well-being of children.

Investigating the impact of nutritional education on parental knowledge of balanced nutrition in children holds significant relevance to several Sustainable Development Goals (SDGs). Firstly, it directly aligns with SDG 3: Good health and well-being, by addressing the crucial role of nutrition in promoting optimal health, particularly among children. Improving parental knowledge of balanced nutrition can contribute significantly to achieving this goal by ensuring children receive adequate nutrients for optimal growth and development (Hasan et al., 2019). Additionally, by enhancing parental understanding of balanced nutrition, this study contributes to SDG 4: Education Quality, as it empowers caregivers with essential knowledge and skills to make informed decisions about their children's diets, thereby promoting healthier lifestyles and overall well-being. Moreover, the focus on fostering nutritious diets indirectly supports SDG 2: Zero hunger by mitigating malnutrition and food insecurity among children through education on healthy eating habits. Enhancing parental understanding

of balanced nutrition indirectly supports efforts to eradicate hunger (Ammaniti et al., 2004; Ferdous et al., 2009; WHO, 2013). By promoting nutritious diets and food choices, nutritional education can contribute to reduce malnutrition and food insecurity among children, align with the goal of zero hunger.

Therefore, this research aims to investigate the effect of nutritional education on parental knowledge of balanced nutrition in children at Yayasan An-Nusyur Aeng Panas. By exploring the nuanced relationship between parental education, nutritional knowledge, and dietary practices, this study aims to inform future interventions and policies aimed at promoting childhood nutrition in resource-constrained settings. Through collaborative efforts between researchers, healthcare providers, and community stakeholders, sustainable solutions can be devised to ensure every child has access to the nutritious diet they need to thrive.

METHODS

This research used a quantitative pre-experimental design study (one group pre-test post-test). Although the pre-posttest method alone does not establish causality definitively, it can provide evidence that changes observed in the post-test are associated with the intervention. By using the pre-posttest method, researchers can identify which aspects of an intervention are most effective and which may need improvement. This can inform future program development and optimization. Compared to other more complex research designs, the pre-posttest method is relatively straightforward and cost-effective. It requires fewer resources and can be implemented more easily in various settings.

This research was held at the Yayasan An - Nusyur Aeng Panas, Sumenep Madura, on February 2024. The treatment in this research was conducted by providing nutrition education to 27 students' parents with lecture techniques and posters as a medium. The respondents were all the total population of students' parents in kindergarten of Yayasan An-Nusyur Aeng Panas, Sumenep, Madura. As the school is a submarginal underprivilege school, the total number of the students is far from ideal number of minimum sample for the study, but has been represented the general population of the below five children population in Aeng Panas District, Sumenep, Madura.

The intervention carried out in this research was a single time delivered nutritional education for 3 hours period regarding balanced nutrition for children given by nutritionist team from Indonesia and Malaysia. The independent variable in this research is nutrition education, while the dependent variable is student's parent knowledge. The intervention consisted of oral presentations and posters, designed to communicate key concepts of balanced nutrition. Oral presentations allowed for interactive learning, where participants could ask questions and engage in discussions, enhancing their understanding. Posters served as visual aids that reinforced the lecture content, providing a reference that participants could revisit.

Before and after receiving nutrition education, student's parent must take a pre and post-test of 5 questions to measure their knowledge. The pre-posttest were multiple choice questions adopted from the study by Nugraha et al., (2021) and has been validated and known for its reliability to be used by the population. The instrument used to measure parents' knowledge comprises a questionnaire developed by nutrition students. It contains five questions for both the pre-test and post-test stages. These questions are designed to align with the material presented by the educator and are in a multiple-choice type. This questionnaire is administered to parents both before (pre-test) and after (post-test) the educational session, with an expected completion time of 5-10 minutes for each topic and poster. Each correct response earns 20 points, with a perfect score being 100 points if all answers are correct. These questions focus on the principles of proper child nutrition, the "Isi Piringku" concept, and essential aspects of maintaining balanced nutrition for school-aged children. Parents are provided with the tests directly and are advised not to look up answers online or consult a committee.

Data were analyzed using SPSS version 26. The statistical significance of the observed difference was tested using the Wilcoxon Matched-Pairs Test, a non-parametric method suitable for small sample sizes and paired data.

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Image 1. Oral Presentation to Student's Parents

Image 2. Nutrition Education Posters

RESULTS AND DISCUSSION

Demographics and Participant Characteristics

Table 1 shows that the parents involved in this study are predominantly aged <30. The number of participants aged less than 30 years was 14 people or 51.9% of the total participants who took part in this nutrition education. Ten people, or 37.0%, have an age range between 30-40 years, while 3 people, or 11.1%, are more than 40 years old.

The age distribution of the participants reveals that the majority are relatively young parents, with 51.9% aged below 30 years. This demographic detail is significant as younger parents often represent a more dynamic and flexible group, potentially more open to adopting new practices and integrating nutritional knowledge into their daily routines. Their early stage in parenthood suggests they are still forming and solidifying their parenting styles and household norms,

Table 1. Characteristic of Respondents (n=27)

Age Group	n	%
<30	14	51.9%
30-40	10	37.0%
>40	3	11.1%

making them an ideal target for educational interventions aimed at establishing healthy habits early on. In contrast, 37.0% of the participants are in the 30-40 years age range. This group likely comprises more established parents who may already have ingrained dietary habits and practices. However, their participation indicates a willingness to enhance their knowledge and possibly make adjustments for the benefit of their children's health. This demographic is crucial as they might have more resources and experience in parenting, allowing them to implement and sustain nutritional improvements effectively. The smallest group, consisting of parents over 40 years old (11.1%), presents a different set of challenges and opportunities. These parents may have long-established routines and beliefs about nutrition, which could be more resistant to change. However, their involvement in the study highlights a universal concern for child health that transcends age. The challenge for this group lies in presenting the educational content in a way that respects their experience while providing compelling reasons to adapt their practices.

Table 2 shows descriptive statistics from the pre-test and post-test. Based on Table 1, the data shows that the pre-test score has an average (mean) of 84.444, and the post-test score has an average (mean) of 86.667. This indicates that there is a difference in the parents' average scores between the pre-test and post-test. Therefore, it can be said that there was an increase in parent's knowledge after being given nutrition education. This increase in the average score indicates that the nutrition education intervention had a positive impact on the parents' knowledge.

The improvement suggests that the educational program can enhance understanding of nutritional concepts. The mean score increase of 2.2 points reflects that the participants were able to absorb and retain the information provided during the educational sessions. The statistical test confirmed that the difference between pre-test and post-test scores is statistically significant. This statistical validation underscores the effectiveness of the educational intervention in enhancing parental knowledge about nutrition. The combination of oral presentation and posters likely contributed to the observed knowledge gain. Visual aids are known to enhance memory retention and understanding, especially when dealing with complex information. The interactive nature of lectures helps clarify doubts and ensures that the information is correctly interpreted. Together, these methods create a comprehensive learning experience that caters to different learning styles.

Table 3 shows that based on pretest and post-tests, it is known that data have 5 negative differences (negative ranks), which means that 5 parents experienced a decrease in their scores. 7 data have positive differences (positive ranks), which means that 7 parents experienced an increase

Table 3. Wilcoxon Signed Ranks Test

		n	Mean Rank	Ranks
PostTest-PreTest	Negative Ranks	5[a]	6.00	30.00
	Positive Ranks	7[b]	6.86	48.00
	Tiles	15[c]		
	Total	27		
Z				–775°
Asymp. Sig (2-tailed)				0.439

a. PostTest < PreTest
b. PostTest > PreTest
c. PostTest = PreTest
* Wilcoxon Signed Ranks Test Based on negative ranks.

Table 2. Descriptive Statistics of Pre-test and Post-test

Question (s)	Pre-Test		Post-Test		p-value
	Correct	False	Correct	False	
1. Which are the correct principles of children's food?	18	9	17	10	0.663
2. How many main meals a day are recommended for children?	18	9	23	4	0.057
3. What can be done to overcome picky eating?	24	2	24	3	1.000
4. Why is it important for children to eat fruits and vegetables?	27	0	26	1	0.327
5. What can parents do to teach children about mindful feeding?	27	0	27	0	0.327

in their scores. Besides that, 15 data points are the same between the pre-test and post-test.

Based on the data presented in Table 3, we observe several important patterns in the pre-test and post-test scores of parents. There are 5 negative ranks, indicating that 5 parents experienced a decrease in their scores from the pre-test to the post-test. This decrease could be due to various factors such as a lack of motivation or engagement during the post-test, difficulties in understanding the material, or external influences that negatively affected their performance. In contrast, there are 7 positive ranks, showing that 7 parents saw an improvement in their scores. This improvement suggests that parents may have benefited from the delivery of materials by educators, information from nutrition education posters, or other supportive measures provided during the interest period. Additionally, 15 data points remain unchanged, indicating that for these parents, there was no observable difference in scores between the pre-test and post-test. This lack of change could imply that the intervention had no measurable impact on these individuals or that their performance remained stable without significant improvement or decrease. The distribution of negative ranks, positive ranks, and ties provides valuable insights into the overall effectiveness of the program implemented. To address the varied outcomes, it may be necessary to investigate the specific reasons behind decreased scores, continue or enhance successful strategies for those who improved, and reassess the approach for those whose scores remained the same to ensure more impactful and personalized support.

Table 3 shows that based on the Wilcoxon matched pairs test, it is known that the data do not have a significance value (p-value) for pre-test and post-test data, which is 0.439 (>0.05). This shows that there is not a significant difference between the pre-test and post-test scores. Therefore, it can be said that there wasn't an increase in student's parent knowledge after receiving nutrition education.

Table 3 presents the results of the Wilcoxon matched pairs test applied to the pre-test and post-test data. The test yielded a p-value of 0.439, which is greater than the commonly accepted threshold for statistical significance of 0.05. A p-value above 0.05 indicates that the observed differences between the pre-test and post-test scores are not statistically significant, meaning that any changes in the scores are likely due to random chance rather than a meaningful effect of the intervention. In this context, the intervention in question is the nutrition education provided to the students' parents. The lack of statistical significance implies that there was no measurable increase in the parents' knowledge about nutrition as a result of the education program. Despite the intention to improve nutritional knowledge through this educational effort, the data do not support the effectiveness of the program in achieving this goal. It is important to consider various factors that could contribute to this outcome, such as the content and delivery of the education program, the engagement level of the participants, or other external influences that may have impacted the results. This study has several limitations, included the minimum number of subjects, the limited time to give intervention due to unproper place and time because the only time available is after school time which force students to stay in the school for another 3 hours. This makes students feel uncomfortable and the class room temperature raising which make students not cooperatives. This condition then makes the intervention not properly performed and impacting to the unsignificant progress in participants nutrition knowledge. Further analysis and potentially a revised approach to the nutrition education may be necessary to achieve the desired improvements in parental knowledge.

CONCLUSION

The result of this research shows that there is a difference between the pre-test and post-test scores. There was an increase in participants' knowledge after receiving nutrition education on Community Services of Enhancing Coastal Health Through Ecological Approach (ECOHAP) that was held. Still, there's not a significant difference between the pre-test and post-test scores after student's parent received nutritional education. Suggestions for further research include increasing the number of questions in the pre-test and post-test and increasing the weight of the questions given. This

aims to avoid bias in the research results caused by the questions being too few and easy, which cannot represent the participants' knowledge. Apart from that, it would be better to increase the number of research participants in future research.

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Conflict of Interest and Funding Disclosure

The authors declare no conflict of interest.

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