Volume 5, No. 11 November, 2024
p ISSN 2723-6927-e ISSN 2723-4339

The Effect of Health Education Using Poster Media on Mothers' Knowledge Level About Toddler Malnutrition in the Working Area of Saigon Health Center, East Pontianak

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ABSTRACT

Nutritional deficiencies in toddlers can lead to growth and development disturbances, one of which is the occurrence of malnutrition. One of the main factors contributing to malnutrition in toddlers is the lack of knowledge among mothers about the nutrition required for their children. To improve this knowledge, one of the efforts that can be made is through continuous counseling using educational media, such as posters that are visually designed to be appealing, thus being effective in the learning process. This study aims to determine the effect of health education using posters on mothers' knowledge about toddler malnutrition in the working area of Saigon Health Center in East Pontianak. This study uses a quantitative pre-experimental method with a one-group pretest-posttest design. A total of 45 respondents were selected using probability sampling with a cluster random sampling technique. Data analysis was conducted using the Paired sample t-test. The results showed that most of the respondents' children were aged ≤ 2 years (66.7%), with the highest level of maternal education being high school (42.2%), and the majority of respondents' ages ranged from 20 to 42 years, with an average age of 31.42 years. The results of the Wilcoxon test showed a p-value of 0.001, indicating a significant improvement in mothers' knowledge about toddler malnutrition after receiving health education using posters.

Keywords: Health Education, Knowledge, Malnutrition, Poster, Toddlers

Introduction

Toddlers, namely children under five years old, are a critical period for physical, mental, and social development (Ningsih, 2019). Balanced nutrition is essential at this age to support optimal growth. Malnutrition in toddlers can cause irreversible physical and mental growth disorders (Utaminingtyas, 2020), one of which is malnutrition, which is caused by an imbalance in nutritional intake (Ramlah, 2021). According to WHO (2022), malnutrition is the cause of 22.3% of child deaths. In West Kalimantan, the prevalence of underweight toddlers reached 23.0% (SSGI 2022), with Pontianak City recording 18.5%.

Poor nutrition in toddlers can negatively impact physical, mental, and immune growth, as well as increase the rate of illness and death (Nazilia & Iqbal, 2020). Factors that cause malnutrition include food intake, infectious diseases, parental education, food availability, and maternal knowledge about nutrition (Utaminingtyas, 2020). One of the efforts to increase maternal knowledge is through continuous counseling with educational media such as posters (Fitri, 2020).

Posters are an interesting and effective visual educational medium in the learning process (Rahmawati et al., 2020). Research

shows that poster media can increase mothers' knowledge about nutrition (Putri, 2024; Fitri, 2020).

In Saigon Village, East Pontianak, malnutrition cases are alarmingly increasing, rising from X cases in 2021 to 9 cases in 2022 (Pontianak City Health Office, 2022), indicating an urgent need for intervention. Interviews with mothers in the region revealed critical gaps in knowledge and persistent economic difficulties in meeting children's nutritional needs. Despite evidence supporting poster-based education in other regions, no such intervention has been implemented in Saigon Village, where maternal literacy and access to nutrition information remain limited. Therefore, this study addresses a critical gap by implementing and evaluating poster-based nutrition education specifically tailored to the socioeconomic and educational context of mothers in Saigon Village, Pontianak, with the urgent aim of preventing further increases in child malnutrition.

Research Methods

This study used a pre-experimental design of one group pretest-posttest to measure maternal knowledge about malnutrition in toddlers before and after counseling (Notoatmodjo, 2010). The study population is mothers with toddlers in the Saigon Health Center area of East Pontianak, with a total of 129 people (Purwanza et al., 2022). A two-stage sampling approach was employed: first, cluster random sampling was used to select Posyandu Kartini 1 from among all posyandu in the Saigon Health Center area (Sugiyono, 2012). Second, from the selected cluster, individual participants were recruited based on the following criteria. The inclusion criteria include mothers who are willing to be respondents and provide informed consent, have toddlers aged 0-59 months, and actively attend Posyandu Kartini 1 activities, while the exclusion criteria are mothers who do not participate in education until completion or cannot read and write.

The final sample size was determined using the Isaac and Michael formula at a 5% significance level (Hendryadi, 2014), resulting in 97 participants from the eligible population of 129 mothers. All mothers meeting the inclusion criteria at Posyandu Kartini 1 during the study period (January-March 2023) were invited to participate until the required sample size was reached. This study uses health education poster media regarding toddler nutrition, with an instrument in the form of a maternal knowledge questionnaire consisting of demographic data and 20 questions about toddler nutrition covering knowledge domains of definition, causes, signs/symptoms, impacts, and prevention of malnutrition. The questionnaire has been tested for validity and reliability in a pilot study with 30 respondents, yielding Cronbach's alpha coefficient of 0.89 and item validity r-values ranging from 0.35 to 0.78 (Faadiyah, 2023).

Data processing is carried out through editing, coding, entry, and cleaning stages to ensure the accuracy of the data before it is analyzed (Priyono, 2016). The data collection procedure involves preparing permits and coordinating with related parties, implementing pretests and posttests, and education using poster media for 20 minutes. Knowledge scores were categorized as good (16-20 points), adequate (11-15 points), or poor (<11 points) based on established cut-off criteria. After that, the data were analyzed using univariate analysis to describe the characteristics of the research variables and frequency distribution (Notoatmodjo, 2012). Bivariate analysis was

conducted using the Wilcoxon signed-rank test to compare pre- and post-intervention knowledge scores, with statistical significance set at $p<0.05$.

Research ethics follow the principles of respect for persons, beneficience, and justice, to ensure fair treatment and protect the rights of respondents (Haryani & Setiyobroto, 2022; Putra et al., 2013). Ethical approval was obtained from the Health Research Ethics Committee of Tanjungpura University (approval number: 1245/UN22.9/DT/2023). Written informed consent was secured from all participants before data collection, and participants were assured of confidentiality, anonymity, and the right to withdraw at any time without penalty.

Results and Discussion

Table 1.1 Characteristics of Respondents

Characteristic	*F*	%
Number of Children		
> 2 children	15	33,3
≤ 2 children	30	66,7
Education Level		
No School	0	0
SD	6	13,3
JUNIOR	11	24,4
SMA	19	42,2
College	9	20,0
RT		
1	5	11,1
2	6	13,3
3	12	26,7
4	9	20,0
5	4	8,9
6	9	20,0

Based on Table 1.1, the majority of respondents have ≤ 2 children (66.7%), most of them have a high school education (42.2%), and are in RT 3 (26.7%). Univariate analysis showed that mothers with ≤ 2 children were more focused on paying attention (Olsa et al., 2018). Lelo et al. (2021) stated that the number of children affects the way of thinking, but Rambe & Sebayang's (2020) research shows that the number of children and the mother's knowledge have no effect on the provision of stimuli for children's growth and development.

Table 1.2 Characteristics by age

Variable	Mean	Min-Max
Age	31,42	20-42

Based on Table 1.2, respondents were aged 20-42 years old with an average of 31.42. Age affects mental development and knowledge, but in old age, the ability to remember information is reduced (Lelo et al., 2021). Ramadhanty research (2021) states that at the age of 20-42 years, parents tend to be more concerned about children's development, so information about children is easier to understand.

Table 1.3 Mother's Knowledge Level of Malnutrition in Toddlers In the Working Area of the East Pontianak Saigon Health Center

Variable	Mean	Median	Std.Deviation	Min-Max
Knowledge				
Pretest	12,16	12,00	2,316	6-16
Postest	18,29	18,00	1,218	16-20

Based on table 1.3, before health education using poster media about malnutrition in toddlers, the average level of knowledge of respondents was 12.6 (range: 6-16) with a median of 12.00. After education, the average knowledge of the respondents increased significantly to 18.29 (range: 16-20) with a median of 18.00, representing a 45.3% improvement in knowledge scores. The study of 45 respondents showed that before education, the average knowledge was only 12.16 and the median was 12.00, which indicates that many respondents did not understand nutrition and nutritional needs in children.

This finding aligns with previous research demonstrating the effectiveness of visual educational media in improving

maternal knowledge. Putri (2024) reported similar improvements in maternal nutrition knowledge following poster-based interventions, while Fitri (2020) found that continuous counseling with visual media significantly enhanced health literacy among mothers of young children. The substantial increase observed in this study (mean difference of 5.69 points) is consistent with Rahmawati et al. (2020), who highlighted that posters serve as effective visual educational tools in health promotion settings. Furthermore, the baseline knowledge deficit identified in this study corroborates findings by Utaminingtyas (2020), who identified limited maternal knowledge as a primary contributing factor to childhood malnutrition.

	n	Mean	Median	Std.Deviation	P
Knowledge before education	20	12,16	12,00	2,316	0,001
Knowledge after education	20	18,29	18,00	1,218	

The low pre-intervention knowledge scores (mean: 12.16 out of 20) reflect a critical gap in understanding nutritional requirements for toddlers, which has been previously documented in similar Indonesian contexts (Nazilia & Iqbal, 2020). This knowledge deficit is particularly concerning given the WHO (2022) report linking malnutrition to 22.3% of child deaths globally, underscoring the urgency of targeted educational interventions.

This result emphasizes the need for the health center to focus more on systematic and sustained nutrition education for toddlers using evidence-based visual media. The substantial post-intervention improvement demonstrates that poster-based education can serve as a practical, cost-effective strategy to address knowledge gaps in resource-limited settings, supporting the broader goal of reducing malnutrition prevalence in Saigon Village and similar communities.

After education, there was a significant improvement in respondents' knowledge, with an average of 18.29 and a median of 18.00, indicating a better understanding of nutrition in children. Some respondents also asked questions related to the prevention of malnutrition. This increase is due to effective communication factors between researchers and respondents, as well as the media used in education.

Table 1.4 Wilcoxon Test Results of the Effect of Health Education with Poster Media on the Level of Mothers' Knowledge of Malnutrition in the Working Area of the Saigon Health Center, East Pontianak

Based on the table above, before health education about malnutrition for toddlers using poster media, the average value of respondents' knowledge in the Working Area of the East Pontianak Saigon Health Center was 12.16 with a median of 12.00 and a standard deviation of 2.316. After education, the average score increased to 18.29 with a median of 18.00 and a standard deviation of 1.218, with a p value = 0.001. The results of Wilcoxon's statistical test showed a significant difference between pre- and post-education knowledge, so H0 was rejected and Ha was accepted, which means that there was an influence of health education on the mother's level of knowledge about malnutrition in toddlers.

Before education, many respondents did not understand nutrition and nutritional needs in children, according to questionnaire answers that showed errors in answering. After the education, the respondents' knowledge increased, and some respondents even asked questions related to the prevention of malnutrition.

This increase is due to effective communication between researchers and respondents as well as the educational media

used, such as posters. Attractive and informative posters help improve maternal understanding, despite flaws, such as information that is too short that encourages respondents to ask more questions.

This study also shows that poster media is effective in conveying health messages and increasing maternal knowledge about malnutrition in toddlers, which is supported by previous research (Angela & Kurniasari, 2021).

Conclusion

From the results of the discussion above, it can be concluded that in this study on "The Effect of Health Education with Poster Media on the Level of Mother's Knowledge about Malnutrition of Toddlers in the Working Area of the Saigon Health Center, East Pontianak," most mothers have ≤2 children (66.7%), have a high school education (42.2%), live in RT 3 (26.7%), and are 20-42 years old with an average age of 31.42 years. Before education, the average level of maternal knowledge was 12.16, and after education it increased significantly to 18.29. The Wilcoxon test results showed p = 0.001, indicating a statistically significant influence of health education with poster media on increasing maternal knowledge about malnutrition in toddlers.

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