The Relationship between the Implementation of Clean and Healthy Living Behavior (PHBS) in the Household Environment and the Incidence of Malnutrition in Toddlers in the Batunadua Health Center Working Area

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ABSTRACT

Malnutrition in toddlers is still a significant public health problem at the global and national levels. This study aims to analyze the relationship between the implementation of clean and healthy living behaviors (PHBS) in the household environment and the incidence of malnutrition in toddlers in the working area of the Batunadua Health Center. **Methods:** This study used an analytical quantitative design with a cross sectional study approach. The population and sample are all toddlers registered in the Batunadua Health Center area. Data were collected using questionnaires and weight measurements of toddlers based on the BB/U index. Data analysis was conducted using the chi-square test with a significance level of $\alpha = 0.05$. There was a relationship between the history of exclusive breastfeeding and the incidence of malnutrition ($p=0.001$), there was a relationship between diet and the incidence of malnutrition ($p=0.018$). There was no association between immunization history ($p=0.128$) and handwashing habit with soap ($p=0.072$) with the incidence of malnutrition in toddlers. It was found that exclusive breastfeeding and diet were significantly related to the incidence of malnutrition in toddlers. Immunization and soap hand washing habits did not show a significant relationship in this study. So it is necessary to increase nutritional literacy for families under five.

Keywords: PHBS; malnutrition; news; exclusive breast milk; diet.

INTRODUCTION

Malnutrition in toddlers is a condition when toddlers do not get adequate intake of energy and macro and micronutrients to support optimal growth, development, and health (1,2). The nutritional status of toddlers reflects the balance between intake and nutritional needs according to their growth stages. An unbalanced diet can interfere with growth and increase the risk of malnutrition. Rostanty et al. (2023) stated that the formation of a healthy diet from an early age greatly determines the nutritional adequacy of children (3), while Arianti et.al (2025) emphasized that the quality of the food consumed also determines nutritional status. In addition, family behavior in the selection and presentation of food is an important factor that contributes to the increase in cases of malnutrition (4).

The nutritional status of toddlers is influenced by direct and indirect factors. Direct factors include food intake and infectious diseases, while indirect factors include socioeconomic conditions, parental education, and health behaviors in the household (5,6). One of the behavioral approaches that plays an important role is clean and healthy living behavior. Clean and Healthy Living Behavior reflects family awareness in maintaining health through clean and healthy living practices, such as exclusive breastfeeding, complete immunization, use of clean water, and the habit of washing hands with soap (7,8). Exclusive breast milk is a major protective factor because it contains complete nutrients and immunological components that cannot be replaced by formula milk (9). The World Health Organization recommends exclusive breastfeeding for six months to prevent infections and malnutrition. However, this practice is still not optimal (10). In addition to breastfeeding, immunization and personal hygiene are also closely related to the nutritional status of toddlers (11). Complete immunization reflects access to health services and plays a role in preventing infectious diseases that can worsen nutritional status (12). The Ministry of Health of the Republic of Indonesia states that children with complete immunization tend to have better health conditions, so the risk of decreased nutritional status due to infection can be reduced (13). The habit of washing hands with soap has also been shown to be associated with a reduced risk of stunting and gastrointestinal infections due to bacterial contamination (14–16). Home environmental factors such as sanitation and access to clean water also increase the risk of child growth disorders (17). The incidence of undernutrition has shown significant fluctuations in the last five years, with an increase in cases in 2022 and 2024 (5,8,18,19). The results of the observation show that the implementation of several PHBS indicators is still low, especially exclusive breastfeeding, nutritious diet, and complete immunization (20–22). Therefore, this study aims to analyze the relationship between the implementation of PHBS in the household environment and the incidence of malnutrition in toddlers in the working area of the Batunadua Health Center.

METHODS

This study uses an analytical quantitative design with a cross-sectional study approach to analyze the relationship between the implementation of clean and healthy living behaviors (PHBS) in the household environment and the incidence of malnutrition in toddlers. The research will be carried out in January 2026 in the working area of the Batunadua Health Center. The research population is all toddlers recorded in the Batunadua Health Center work area in January 2026 as many as 140 toddlers. The sample size was calculated using the Slovin formula with an error rate of 5%, so that a sample of 104 respondents was obtained. The sampling technique used purposive sampling with inclusion criteria: mothers who have toddlers and KIA books, are domiciled in the work area of the Batunadua Health Center, and are willing to be respondents. Primary data was collected through a structured questionnaire to measure PHBS variables (exclusive breastfeeding, diet, immunization history, and handwashing habits with soap) as well as weight measurement of toddlers using digital scales to determine nutritional status based on BB/U indicators. Data processing is carried out through editing, coding, and tabulation stages. Univariate analysis is used to describe the characteristics of

respondents in the form of frequency and percentage distributions. Bivariate analysis was performed using a chi-square test with a significance level of 95% ($\alpha = 0.05$) to determine the relationship between independent and dependent variables. The strength of the relationship is interpreted using the phi coefficient. The entire analysis was carried out with the help of SPSS software. This research has paid attention to the ethical principles of research, including informed consent, anonymity, and confidentiality. Respondents were given an explanation of the purpose of the research and guaranteed the confidentiality of their identity through the use of codes on the questionnaire.

RESULTS

This research was carried out in the working area of the Batunadua Health Center, with a total of 104 respondents under five. Most of the toddlers were 24-35 months old (37.5%) and female (51%). Based on nutritional status, as many as 40 toddlers (38.5%) experienced malnutrition, while 64 toddlers (61.5%) had normal nutritional status. The proportion of toddlers who do not receive exclusive breastfeeding is higher (61.5%) than those who receive exclusive breastfeeding (38.5%). There are also more toddlers with an inappropriate diet (56.7%) than those with an appropriate diet (43.3%). Most of the toddlers have an incomplete history of immunization (87.5%). Meanwhile, 64.4% of mothers reported having implemented the habit of washing their hands with soap.

Bivariate analysis showed that there was a significant relationship between a history of exclusive breastfeeding and the incidence of malnutrition (p=0.001; phi=0.341). Toddlers who do not receive exclusive breastfeeding experience more malnutrition than those who receive exclusive breastfeeding. In addition, there was a significant relationship between diet and the incidence of malnutrition (p=0.018; phi=0.252). On the other hand, no significant association was found between immunization history (p=0.128; phi=0.179) and handwashing habits with soap (p=0.072; phi=0.197) and the incidence of malnutrition. The value of the phi coefficient on all variables indicates the strength of the relationship in the weak to very weak category.

DISCUSSION

Clean and healthy living behaviors are a series of behaviors that support efforts to maintain health, both for yourself, your family, and the environment. Clean and healthy living behaviors include various actions such as consuming nutritious food, washing hands with soap, exclusive breastfeeding, and maintaining the cleanliness of the household environment (23,24). Malnutrition in toddlers is a condition in which children experience nutritional deficiencies, which can be seen from inadequate nutritional status, such as low weight, stunting, or malnutrition. This condition is often caused by an unbalanced diet, lack of access to nutritious food, and ignorance about the importance of good nutrition in children under five (25,26). The implementation of PHBS and the incidence of malnutrition in toddlers can be seen from epidemiological data and observation results that show that families who implement PHBS well tend to have toddlers with better nutritional status. Conversely, families that do not implement PHBS properly are more susceptible to malnutrition problems in children under five (27,28). The proper implementation of PHBS can minimize the risk of toddlers developing diseases that can affect their nutritional status, such as diarrhea or acute

respiratory infections (ARI). In addition, families that implement PHBS well have a higher awareness of the importance of nutritious feeding, proper dietary arrangements, and regular health check-ups to monitor the nutritional status of toddlers (29).

The implementation of PHBS in the household environment has a great effect on the incidence of malnutrition in toddlers. Families who are able to implement PHBS well, such as maintaining environmental cleanliness, providing exclusive breastfeeding, and consuming nutritious food, tend to have toddlers with better nutritional status. The proper implementation of PHBS can minimize the risk of toddlers developing diseases that can affect their nutritional status, such as diarrhea or acute respiratory infections (ARI). In addition, families that implement PHBS well have a higher awareness of the importance of nutritious feeding, proper dietary arrangements, and regular health check-ups to monitor the nutritional status of toddlers (29). The results of the study showed that exclusive breastfeeding was significantly related to the incidence of malnutrition. These findings are in line with the World Health Organization's recommendation that exclusive breastfeeding for the first six months is able to meet the nutritional needs of babies and increase immunity to infections. Toddlers who do not get exclusive breast milk are more susceptible to infections such as diarrhea and ISPA which can interfere with the absorption of nutrients. These results are also consistent with Yuniar's (2020) research which shows a significant relationship between exclusive breastfeeding and the nutritional status of toddlers. However, the strength of the relationship in this study was relatively weak, which suggests that there are other factors that also affect nutritional status (30).

Diet has also been shown to be significantly related to the incidence of malnutrition. According to UNICEF, the direct causes of malnutrition are inadequate food intake and infectious diseases (31). Toddlers with inappropriate diets have a greater risk of developing energy and protein deficits that have an impact on weight loss. These results support the research of Fitriani et al. (2024) who found a significant relationship between diet and nutritional status of toddlers. However, the strength of the weak relationship suggests that the quality and quantity of food, as well as the child's health history, need to be considered comprehensively (32). In contrast, immunization history did not show a significant association with the incidence of malnutrition. Although immunization plays a role in preventing infectious diseases, nutritional status is more influenced by the adequacy of daily nutrient intake. The Ministry of Health of the Republic of Indonesia emphasizes that immunization is important to prevent infectious diseases, but does not directly improve nutritional status without adequate nutritional intake (33). The habit of washing hands with soap also did not show a significant association with the incidence of malnutrition, although theoretically hygiene behavior plays a role in preventing gastrointestinal infections. The World Health Organization reports that poor sanitation and hygiene increase the risk of diarrhea which can affect nutritional status. However, in this study, it is likely that food intake and socioeconomic conditions are more dominant in influencing nutritional status than the practice of washing hands with soap alone. This shows that nutrition interventions need to be carried out in a multidimensional manner by integrating nutrition education, proper feeding practices, and improving clean and healthy living behaviors (34).

CONCLUSION

The implementation of Clean and Healthy Living Behaviors in the household environment has a significant influence on the incidence of malnutrition in toddlers. Families that implement PHBS well, such as maintaining environmental cleanliness, providing exclusive breastfeeding, and consuming nutritious food, tend to have toddlers with better nutritional status. The proper implementation of PHBS can minimize the risk of toddlers getting diseases that can interfere with their nutritional status, such as diarrhea or acute respiratory infections (ARI). However, the association found in this study was relatively weak, suggesting that there are other factors that also affect nutritional status. Therefore, it is necessary to take a multidimensional approach in handling malnutrition in children under five, which involves nutrition education, the implementation of proper feeding practices, and the improvement of clean and healthy living behaviors in the household environment.

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