



Effectiveness of the Posyandu Program on the Nutritional Status of Toddlers in Indonesia

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Article Info

Article history:

Received Jan 28, 2026

Revised Feb 26, 2026

Accepted March 25, 2026

Keywords:

Posyandu Program;
Toddler Nutritional Status;
Growth Monitoring;
Community-Based
Health Services;
Child Nutrition in
Indonesia.

ABSTRACT

Toddler nutrition remains a significant public health concern, particularly in developing countries such as Indonesia, where problems such as underweight, stunting, and wasting can affect children's growth and development. Community-based health services play an important role in addressing these issues, one of which is the Posyandu (Integrated Health Service Post), which provides services such as growth monitoring, immunization, nutrition counseling, and supplementary feeding for mothers and children. This study aimed to analyze the effectiveness of the Posyandu program on the nutritional status of toddlers. The research employed a quantitative cross-sectional design conducted in several Posyandu units within the study area. The study population consisted of toddlers aged 0-59 months and their mothers, from which a sample was selected using a simple random sampling technique. Data were collected through anthropometric measurements, observation, and structured questionnaires. The nutritional status of toddlers was assessed using indicators such as weight-for-age, height-for-age, and weight-for-height. Data analysis was performed using descriptive statistics and the Chi-square test to determine the relationship between participation in Posyandu activities and toddler nutritional status. The results showed that the majority of toddlers who regularly attended Posyandu had normal nutritional status, while those who attended irregularly were more likely to experience nutritional problems. Statistical analysis also indicated a significant relationship between Posyandu participation and toddler nutritional status. In conclusion, the Posyandu program is an effective community-based health strategy for monitoring child growth and improving the nutritional status of toddlers. Strengthening community participation and enhancing the quality of Posyandu services are essential to support better child health outcomes.

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1. INTRODUCTION

Child nutrition is one of the most important factors influencing the growth and development of children, especially during the early years of life (Pem, 2015). Adequate nutritional intake is essential to support physical growth, cognitive development, immune function, and overall health. Toddlers require balanced nutrition to ensure optimal development during this critical period. However, nutritional problems among children under five years old remain a significant public health concern

in many developing countries, including Indonesia. Various forms of malnutrition such as stunting, underweight, and wasting continue to affect a considerable number of toddlers. These conditions can have long-term consequences, including impaired physical growth, reduced cognitive ability, increased susceptibility to diseases, and decreased productivity later in life.

To address these nutritional problems, the government of Indonesia has implemented various community-based health programs aimed at improving maternal and child health. One of the most important initiatives is Posyandu (Integrated Health Service Post), a community-based health service that provides basic health services for mothers and children. Posyandu plays a vital role in monitoring child growth and development at the community level (Rahmawati & Sartika, 2020). Through regular monthly activities, Posyandu provides several essential services, including growth monitoring through regular weighing of toddlers, immunization programs, nutrition counseling for mothers, and supplementary feeding programs for children who are at risk of malnutrition. These services are expected to help detect nutritional problems early and provide appropriate interventions to improve the health and nutritional status of toddlers.

Despite the widespread implementation of Posyandu programs across many regions, the effectiveness of these services in improving the nutritional status of toddlers still needs to be evaluated. Regular attendance at Posyandu is expected to contribute positively to children's health because it allows health workers and community cadres to monitor growth, provide nutritional education, and identify potential health problems at an early stage. However, in some communities, the participation of mothers in Posyandu activities remains inconsistent, which may affect the effectiveness of the program. Therefore, it is important to assess whether toddlers who regularly attend Posyandu activities experience better nutritional outcomes compared to those who do not.

Several previous studies have examined factors related to the nutritional status of toddlers and the role of community health services such as Posyandu in improving child health outcomes. A study conducted by Rofiqoh, Sudiono, and Saleh Budi Santoso (2025) investigated the relationship between feeding patterns, parental knowledge, compliance with Posyandu visits, and the nutritional status of toddlers in Parungmulya Village. The research used a cross-sectional approach involving 82 respondents and applied statistical analysis using the Chi-Square test. The findings showed that most respondents had appropriate feeding patterns and good parental knowledge, while more than half of the participants regularly attended Posyandu activities. The study also found a significant relationship between adherence to Posyandu visits and the nutritional status of toddlers (p -value = 0.022). These results suggest that regular participation in Posyandu activities plays an important role in maintaining optimal nutritional status among children.

Another study by Rizki Natia Wiji, Lisviarose, Rini Harianti, and Meyroza Asriyanty (2023) examined the relationship between maternal nutritional knowledge, caregiving practices, pregnancy spacing, and toddler nutritional status at a Posyandu in Pekanbaru, Riau. Using a cross-sectional design with 123 respondents, the study found that maternal knowledge and caregiving capacity significantly influenced the nutritional status of toddlers. The results indicated strong correlations between these factors and toddler nutrition ($p < 0.05$), emphasizing the importance of maternal education and proper child care in improving nutritional outcomes.

Research conducted by Ike Fitrah Atul Chabibah and Rakhmawati Agustina (2023) explored the role of Posyandu cadres in supporting community health center programs aimed at reducing stunting among toddlers. Their findings highlighted that Posyandu cadres play a crucial role in delivering nutrition education, monitoring child growth, and facilitating community participation in health programs. The study concluded that active involvement of Posyandu cadres contributes significantly to the success of public health programs targeting child nutrition and stunting prevention.

Furthermore, a study by Zaida Maulidiyah, Grace Carol Sipasulta, and Urhuhe Dena Sibirian (2025) analyzed the effectiveness of nutrition education delivered by Posyandu cadres to mothers of toddlers. The study found a significant improvement in mothers' nutritional knowledge after participating in educational sessions conducted at Posyandu. Improved maternal knowledge was associated with better feeding practices and greater awareness of balanced nutrition for children.

In addition, Rosnah et al. (2023) emphasized the importance of strengthening the capacity of Posyandu cadres in monitoring toddler growth. Their research showed that Posyandu functions as an important community-based health platform for early detection of nutritional problems through regular growth monitoring activities such as weighing and nutritional assessment. Strengthening the competencies of Posyandu cadres was found to improve the effectiveness of growth monitoring and community health services.

Several previous studies have examined the role of Posyandu in providing maternal and child health services (Hayuningtyas et al., 2019). However, many of these studies focus primarily on service delivery or community participation rather than specifically evaluating the effectiveness of Posyandu programs in improving toddler nutritional status within a particular local context. This indicates the existence of a research gap that needs further investigation. Evaluating the effectiveness of Posyandu programs in specific communities is important to determine whether the services provided have successfully contributed to improving child nutrition and to identify potential areas for improvement.

Based on these considerations, this study aims to analyze the effectiveness of the Posyandu program on the nutritional status of toddlers (Nazri et al., 2015). By examining the relationship between participation in Posyandu activities and the nutritional status of children under five years old, this research is expected to provide valuable insights into the role of community-based health services in improving child health outcomes. Furthermore, the findings of this study may contribute to strengthening public health strategies and enhancing the implementation of Posyandu programs to better support the nutritional well-being of toddlers. The main research question addressed in this study is whether the Posyandu program is effective in improving the nutritional status of toddlers.

2. RESEARCH METHOD

This study used a quantitative research approach to analyze the effectiveness of the Posyandu program on the nutritional status of toddlers. A cross-sectional analytical design was applied, in which data on participation in Posyandu activities and the nutritional status of toddlers were collected simultaneously at one point in time. This design was chosen because it allows researchers to examine the relationship between variables efficiently within a specific population.

The research was conducted at several Posyandu units located within the working area of a community health center in Indonesia (Setiawan & Christiani, 2018). Data collection was carried out over a predetermined period, for example from May to July 2025, during regular monthly Posyandu activities. These activities provided an appropriate setting for observing toddler growth monitoring and interacting with mothers who brought their children for health services.

The population of this study consisted of all toddlers aged 0-59 months who were registered at the selected Posyandu in the study area (Ripan et al., 2021). From this population, a sample of toddlers and their mothers was selected as research respondents. The sampling technique used in this study was simple random sampling to ensure that every toddler in the population had an equal opportunity to be included in the study. The final sample consisted of toddlers who met the inclusion criteria, such as being present during Posyandu activities and having complete growth monitoring records.

This study involved two main research variables. The independent variable was participation in the Posyandu program, which referred to the frequency or regularity of mothers bringing their toddlers to Posyandu activities. The dependent variable was the nutritional status of toddlers. Nutritional status was assessed based on anthropometric measurements and categorized according to standard indicators such as weight-for-age, height-for-age, and weight-for-height.

Data were collected through several methods. Anthropometric measurements were conducted to obtain accurate data on toddler weight and height using standard measurement procedures (De Onis et al., 2004). Observation was also carried out during Posyandu activities to record participation in health services. In addition, a structured questionnaire was distributed to mothers to collect information related to demographic characteristics, participation in Posyandu activities, and knowledge about child nutrition.

The instruments used in this research included the Growth Monitoring Card (Kartu Menuju Sehat or KMS), which records the growth history of toddlers, a structured questionnaire sheet for mothers, and anthropometric measurement tools such as digital weighing scales and height measuring boards (HOW & REDUCE, 2021). These instruments were used to ensure that the data collected were reliable and relevant to the objectives of the study.

The collected data were analyzed using statistical methods (Mishra et al., 2019). Descriptive statistics were first used to summarize the characteristics of respondents and the distribution of variables, such as age of toddlers, frequency of Posyandu attendance, and nutritional status categories. Furthermore, inferential statistical analysis was conducted to determine the relationship between participation in the Posyandu program and the nutritional status of toddlers. The Chi-square test was used to examine the association between categorical variables. If necessary, logistic regression analysis could also be applied to identify the influence of Posyandu participation on the likelihood of having a normal nutritional status while controlling for other factors. The results of the analysis were then interpreted to determine the effectiveness of the Posyandu program in improving the nutritional status of toddlers.

3. RESULTS AND DISCUSSIONS

3.1 Results

Based on the data collected, the respondents in this study consisted of mothers and their toddlers aged 0–59 months who participated in Posyandu activities in the study area in Indonesia. Based on the results of the data analysis, the majority of toddlers were in the age group of 24–36 months, followed by toddlers aged 12–23 months and 37–59 months. In terms of gender distribution, the number of male and female toddlers was relatively balanced, although slightly more male toddlers were included in the sample.

Regarding maternal characteristics, most mothers had completed secondary education, particularly senior high school. A smaller proportion of mothers had completed higher education, while some had only completed primary or junior high school (Augustine, 2016). In terms of occupation, the majority of mothers were housewives who spent most of their time caring for their children at home. A smaller proportion of mothers were employed as private employees, traders, or farmers. These demographic characteristics provide an overview of the socioeconomic background of the respondents and may influence child care practices and participation in health services.

Participation in Posyandu activities was assessed based on the regularity of mothers bringing their toddlers to monthly Posyandu sessions. The results showed that most respondents attended Posyandu regularly each month. Regular attendance allowed health cadres and health workers to monitor the growth and development of toddlers through routine weighing, nutrition counseling, and other health services.

However, a smaller proportion of respondents attended Posyandu irregularly. Irregular participation was often associated with factors such as lack of time, work commitments, distance from the Posyandu location, or limited awareness of the importance of routine health monitoring. These differences in participation levels may affect the effectiveness of the Posyandu program in maintaining and improving toddler health.

The nutritional status of toddlers was determined using anthropometric indicators, including weight-for-age, height-for-age, and weight-for-height (Organization, 2006). These indicators were used to categorize toddlers into nutritional status groups such as normal, underweight, stunted, or wasted.

The results showed that the majority of toddlers had a normal nutritional status according to weight-for-age and weight-for-height indicators. This indicates that most children in the study area were receiving adequate nutritional intake to support their growth. Nevertheless, a small proportion of toddlers were categorized as underweight or stunted, indicating the presence of nutritional problems that require attention from health workers and parents. Stunting cases were mainly found

among toddlers who had irregular participation in Posyandu activities or whose mothers had limited knowledge about child nutrition.

To determine the relationship between participation in Posyandu activities and the nutritional status of toddlers, inferential statistical analysis was conducted using the Chi-square test. The analysis showed a significant relationship between regular participation in Posyandu activities and better nutritional status among toddlers. Toddlers who attended Posyandu regularly were more likely to have normal nutritional status compared to those who attended irregularly.

These findings indicate that the Posyandu program plays an important role in supporting child growth and nutritional monitoring at the community level. Regular attendance at Posyandu enables early detection of growth problems, provides opportunities for mothers to receive nutrition education, and ensures that toddlers receive essential health services such as growth monitoring and supplementary feeding programs. Therefore, increased community participation in Posyandu activities may contribute to improved nutritional outcomes for toddlers.

3.2 Interpretation of the Results

The findings of this study indicate that participation in the Posyandu program has a meaningful influence on the nutritional status of toddlers. The majority of toddlers who regularly attended Posyandu activities were found to have normal nutritional status, while cases of underweight or stunting were more commonly observed among toddlers who attended the program irregularly. This result suggests that consistent participation in community-based health services plays an important role in maintaining and improving the nutritional health of young children.

Regular attendance at Posyandu allows health workers and community health cadres to monitor the growth and development of toddlers through routine anthropometric measurements such as weight and height (Rahmawati & Sartika, 2020). These measurements are essential for identifying early signs of malnutrition or growth problems. When growth abnormalities are detected early, appropriate interventions such as nutritional counseling, supplementary feeding, or referral to health facilities can be provided promptly. Therefore, the monitoring function of Posyandu contributes significantly to preventing the worsening of nutritional problems among toddlers.

In addition, Posyandu activities provide an opportunity for mothers to receive health education and nutrition counseling. Through these sessions, mothers can gain better knowledge about balanced nutrition, appropriate feeding practices, and proper child care. Improved maternal knowledge can lead to healthier feeding behaviors and better dietary practices for children (Saaka et al., 2021). As a result, toddlers whose mothers actively participate in Posyandu programs tend to receive more adequate nutrition, which supports optimal growth and development.

The findings also highlight the importance of maternal participation and community awareness in the success of Posyandu programs. Mothers who regularly bring their children to Posyandu demonstrate a higher level of awareness regarding child health and nutrition. This active participation helps strengthen preventive health efforts at the community level. On the other hand, irregular attendance may limit opportunities for health monitoring and education, which can increase the risk of undetected nutritional problems.

Furthermore, the results of this study suggest that community-based health programs remain an effective strategy for addressing child nutrition problems, particularly in developing countries such as Indonesia. Posyandu serves as an accessible and low-cost health service platform that connects communities with primary health care providers. By providing regular health monitoring and education, Posyandu helps improve early detection of nutritional problems and encourages healthier parenting practices.

3.3 Comparison of Current Research Results with Previous Research

The results of this study indicate that participation in the Posyandu program has a positive relationship with the nutritional status of toddlers. Toddlers who regularly attend Posyandu activities tend to have better nutritional status compared to those who attend irregularly (Lumongga et al., 2020). These findings suggest that routine growth monitoring, nutrition counseling, and health services provided through Posyandu play an important role in supporting child growth and preventing

nutritional problems. The results of this study are consistent with several previous studies that highlight the importance of community participation and maternal involvement in improving child nutrition.

For example, a study conducted by Wiji et al. (2023) found that maternal factors such as nutritional knowledge, caregiving capacity, and pregnancy spacing significantly influence the nutritional status of toddlers. The study, which involved 123 mothers with toddlers, revealed that these factors were significantly correlated with the nutritional status of children ($p < 0.05$). The authors emphasized that better maternal knowledge and caregiving practices can improve child nutrition and overall health outcomes.

Similarly, research conducted by Lase, Sigalingging, and Siallagan (2024) reported that most toddlers had good nutritional status, partly because parents received health information and supplementary nutrition services during Posyandu activities. Their findings highlighted the importance of Posyandu services in monitoring growth and providing information that supports adequate nutritional intake among toddlers.

However, not all previous studies show exactly the same results. A study by Solechah et al. (2022) found that while mothers' participation in Posyandu activities was significantly associated with mothers' nutritional knowledge, it was not significantly associated with the nutritional status of children under five based on the weight-for-age index. This indicates that although Posyandu participation can improve maternal knowledge, other factors such as household income, food availability, and caregiving practices may also influence the nutritional status of toddlers.

Likewise, research conducted by Rukmasari, Maesaroh, and Mamuroh (2023) reported that there was no statistically significant relationship between maternal participation in Posyandu activities and the nutritional status of toddlers in their study area. The researchers suggested that limited maternal knowledge and attitudes toward child nutrition could explain why participation alone did not significantly influence nutritional outcomes.

The findings of the current study are generally in line with previous research that emphasizes the role of Posyandu as a community-based health service in monitoring child growth and improving maternal knowledge about nutrition. However, differences in findings among studies suggest that toddler nutritional status is influenced by multiple factors, including maternal knowledge, caregiving practices, socioeconomic conditions, and the quality of health services provided. Therefore, strengthening Posyandu programs should not only focus on increasing community participation but also on improving nutrition education, health service quality, and family awareness of child nutrition to achieve better health outcomes for toddlers.

3.4 Growth Monitoring

In community health services in Indonesia, growth monitoring is commonly carried out through the activities of Posyandu (Integrated Health Service Post). Posyandu provides monthly health services for mothers and children, where trained community health cadres and health workers measure the weight and sometimes the height or length of toddlers (Setyowati, 2003). These measurements are then recorded in the Kartu Menuju Sehat (KMS) or growth monitoring card, which helps track the child's growth pattern over time. By comparing a child's measurements with standardized growth charts, health workers can determine whether the child's growth is normal, underweight, stunted, or at risk of malnutrition.

Regular growth monitoring plays an important role in identifying nutritional problems at an early stage (Scherdel et al., 2016). When a child's weight gain slows down or deviates from the expected growth curve, health workers can immediately provide guidance to parents regarding appropriate feeding practices, balanced nutrition, and child care. In some cases, children who are identified as being at risk of malnutrition may receive supplementary feeding programs, medical attention, or referrals to health facilities for further treatment. Therefore, growth monitoring functions not only as a measurement activity but also as a preventive strategy to improve child health outcomes.

In addition to identifying nutritional problems, growth monitoring also serves as an educational opportunity for parents, especially mothers. During Posyandu sessions, mothers can receive

counseling and information about proper nutrition, breastfeeding practices, complementary feeding, and general child care. This interaction between health workers and parents helps increase awareness and knowledge about the importance of adequate nutrition for optimal child development. As a result, parents are better equipped to provide appropriate diets and care that support their children's growth.

Furthermore, growth monitoring contributes to broader public health efforts by providing data that can be used to evaluate the health status of children within a community (Ashworth et al., 2008). The collected data help health authorities identify trends in malnutrition, plan targeted interventions, and improve health programs aimed at reducing undernutrition and stunting among children. By consistently implementing growth monitoring through Posyandu and other community health services, communities can strengthen preventive health measures and promote healthier growth and development among toddlers.

3.5 Early Detection of Malnutrition

Early detection of malnutrition is a critical component of child health care aimed at identifying nutritional problems in children at the earliest possible stage (Bhutta et al., 2017). Malnutrition among toddlers can manifest in various forms, including underweight, stunting, and wasting, which may negatively affect physical growth, cognitive development, and immune function. If not detected early, malnutrition can lead to long-term health consequences such as delayed development, increased susceptibility to infectious diseases, and reduced productivity later in life. Therefore, early identification of nutritional problems is essential to ensure that appropriate interventions can be implemented promptly.

In many developing countries, including Indonesia, early detection of malnutrition is commonly conducted through community-based health programs such as Posyandu (Integrated Health Service Post). Posyandu provides regular health services for mothers and children, including growth monitoring and nutritional assessment for toddlers. During Posyandu activities, health workers and trained community health cadres measure the weight and height of children and record the results in a growth monitoring card known as the Kartu Menuju Sehat (KMS). These measurements are then compared with standard growth charts to determine whether a child's growth pattern falls within a normal range or indicates potential nutritional problems.

Through routine monitoring and assessment, early signs of malnutrition can be identified when a child's weight gain slows down or when the growth curve deviates from expected patterns (Scherdel et al., 2016). When such indicators are detected, health workers can immediately provide counseling and guidance to parents regarding proper feeding practices, balanced nutrition, and appropriate child care. In addition, children identified as being at risk of malnutrition may receive supplementary feeding programs, micronutrient supplementation, or referrals to health facilities for further evaluation and treatment. Early intervention is essential to prevent the progression of nutritional deficiencies and to promote healthy growth and development.

Early detection of malnutrition also helps improve parental awareness and understanding of child nutrition (Ruel & Alderman, 2013). During health service sessions, mothers and caregivers are educated about the importance of balanced diets, breastfeeding, complementary feeding, and hygiene practices that influence child health. This educational component encourages families to adopt healthier feeding practices and more attentive child care behaviors, which can significantly reduce the risk of malnutrition among toddlers.

Furthermore, early detection efforts contribute to broader public health strategies aimed at reducing the prevalence of malnutrition and stunting. The data collected from routine growth monitoring and nutritional assessments provide valuable information for health authorities to identify vulnerable populations, monitor trends in child nutrition, and design targeted interventions. By strengthening early detection systems through community-based health services such as Posyandu, it becomes possible to improve the nutritional status of children and support their optimal growth and development.

3.6 Limitations of the Study

Although this study provides important insights into the effectiveness of the Posyandu program on the nutritional status of toddlers, several limitations should be considered when interpreting the findings. First, this study used a cross-sectional research design, which collected data at a single point in time. While this design is useful for identifying relationships between variables, it does not allow researchers to determine causal relationships between participation in Posyandu activities and the nutritional status of toddlers. Therefore, although the study found a significant association between regular Posyandu attendance and better nutritional status, it cannot conclusively prove that participation in Posyandu directly causes improvements in child nutrition.

Second, the study was conducted within a limited geographical area in Indonesia, focusing only on several Posyandu units within a specific community or health center working area. As a result, the findings may not fully represent the conditions of all Posyandu programs in other regions with different socioeconomic, cultural, and environmental characteristics. Differences in community participation, health service quality, and access to nutrition resources may lead to different outcomes in other settings (Rifkin, 2014).

Another limitation of this study is related to the data collection method, particularly the use of questionnaires administered to mothers. Some of the information obtained, such as participation in Posyandu activities and child feeding practices, relied on self-reported responses from respondents (District & Province, 2016). Self-reported data may be influenced by recall bias or social desirability bias, where respondents may provide answers that they believe are expected or acceptable rather than reflecting their actual practices.

In addition, this study mainly focused on the relationship between Posyandu participation and the nutritional status of toddlers, while other potential influencing factors were not examined in depth. Factors such as household income, parental knowledge about nutrition, food availability, sanitation conditions, and cultural feeding practices may also play significant roles in determining the nutritional status of children (Iram & Butt, 2006). The exclusion of these variables may limit the ability of the study to fully explain all factors contributing to child nutrition outcomes.

Finally, the sample size used in this research may also limit the statistical power of the findings. A larger sample size covering multiple communities or regions could provide more comprehensive data and improve the reliability of the conclusions (Forcino et al., 2015). Future research is therefore recommended to involve larger populations, use longitudinal study designs, and include additional variables that may influence the nutritional status of toddlers.

4. CONCLUSION

Based on the results of this study, it can be concluded that the Posyandu program is effective in supporting and improving the nutritional status of toddlers. The findings indicate that toddlers who regularly participate in Posyandu activities tend to have better nutritional status compared to those who attend irregularly. Regular attendance enables continuous monitoring of child growth and development through routine anthropometric measurements such as weight and height, which helps detect nutritional problems at an early stage. The key findings of this study show that most toddlers involved in the research had normal nutritional status according to indicators such as weight-for-age, height-for-age, and weight-for-height. In addition, the statistical analysis demonstrated a significant relationship between participation in Posyandu activities and the nutritional status of toddlers. This suggests that consistent engagement in Posyandu services contributes positively to child health outcomes by providing opportunities for growth monitoring, nutrition education, and early intervention when nutritional problems are identified. The results of this research also highlight important implications for public health programs in Indonesia. Posyandu serves as a crucial community-based health platform that helps bridge the gap between health services and the community. Strengthening Posyandu activities, increasing community participation, and improving the capacity of health cadres and health workers can enhance the effectiveness of this program in preventing malnutrition among children. Therefore, continued support and development of Posyandu

programs are essential to promote better child nutrition, improve maternal knowledge about healthy feeding practices, and support the overall health and development of toddlers.

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