Jurnal Kebidanan
Volume 14 Issue 2 Year 2025 Pages 111-118

P-ISSN 2301-8372 | E-ISSN 2549-7081
https://jurnal.unimus.ac.id/index.php/jur_bid

The Relationship Between Completeness of Basic Immunization and Maternal Visits to Posyandu and the Nutritional Status of Toddlers

Adinda Zahranisa[1], Diyan Indrayani[1*], Saur Sariaty[1], Yulidar Yanti[1]

[1]*Politeknik Kesehatan Bandung, Indonesia*

*Correspondence to: *diyan.indrayani@gmail.com*

Abstract: The problem of toddler nutrition in Indonesia is still high. Bandung Regency ranks third highest in terms of toddler nutrition problems. Poor nutritional status in toddlers can hinder physical growth and cognitive development, and make them more susceptible to disease. In addition, the completeness of immunizations and visits by mothers to health posts remain low. Low coverage of basic immunizations and regular visits to health posts are contributing factors to this issue. The purpose of this study is to determine the relationship between the completeness of basic immunizations and maternal visits to health posts with infantnutrition status. The study design is quantitative with a case-control design. The study population is all infants aged 12–59 months in Hegarmanah Village, with a sample size of 66 infants divided into case (malnourished) and control (well-nourished) groups. The sampling technique used simple random sampling. Data collection utilized observation forms, KIA books, and anthropometric measurement tools. Results analysis using the chi-square test showed between the completeness of basic immunization and the nutritional status of infants with a p-value< α (0.05), as well as between mothers' visits to the health post and the nutritional status of infants with a p-value < α (0.05). Infants who did not receive complete basic immunization were 3.75 times more likely to experience malnutrition, and infants whose mothers did not actively visit the posyandu were 3 times more likely to experience malnutrition. Strategic steps are needed to increase community interest and motivationfor regular posyandu visits and to complete immunization.

Keywords: immunization, nutritional status, Posyandu

How to Cite: Zahranisa, A., Indrayani, D., Sariaty, S., & Yanti, Y. (2025). The Relationship Between Completeness of Basic Immunization and Maternal Visits to Posyandu and the Nutritional Status of Toddlers. *Jurnal Kebidanan. 14(2), 111-118*

DOI: http://dx.doi.org/10.26714/jk.14.2.2025.111-118

Introduction

Nutritional problems in toddlers remain a common public health issue in Indonesia. Toddlers are individuals aged 0–59 months who are undergoing rapid growth and development (Ministry of Health of the Republic of Indonesia, 2023). Poor nutrition in early childhood not only disrupts physical growth but also affects cognitive development, immune system strength, and a child's future competitiveness potential. Toddlers experiencing nutritional issues tend to have a higher risk of contracting infectious diseases, which in turn exacerbates their nutritional status. In the long term, poor nutrition in children increases morbidity, mortality, and disability rates in childhood (Diagama, Amir, & Hasneli, 2019).

The World Health Organization (2022) reported that 148.1 million children under five are stunted (too short for their age), 45.0 million are wasted (too thin for their height), and 37.0 million are overweight (too heavy for their height) (WHO, 2022). In Indonesia, 19 provinces still face the problem of severe malnutrition and 18 provinces report cases of undernutrition. West Java Province is one of the regions with nutritional problems, with a prevalence reaching 20.2% in 2022. Bandung Regency ranks third highest

P-ISSN 2301-8372 | E-ISSN 2549-7081
https://jurnal.unimus.ac.id/index.php/jur_bid

among 26 districts/cities in terms of toddler nutrition problems, with a prevalence of 27.30% (Health Development Policy Agency, 2022).

Hegarmanah Village, located in Cikancung Subdistrict, Bandung Regency, has a significant toddler malnutrition issue that requires special attention. According to a preliminary study, the prevalence of malnutrition in toddlers is still high compared to other areas. Out of 751 toddlers, there were 234 with no weight gain, 43 underweight, 28 moderately malnourished, and 98 stunted. Meanwhile, the national target according to the Medium-Term National Development Plan (RPJMN) 2020–2024 is to reach 90% of toddlers with good nutritional status. This nutritional deficiency is caused by various factors, including inadequate intake of nutritious food and a high incidence of infectious diseases among toddlers whose immune systems are not yet optimal (Annisa, 2023).

One of the most effective public health interventions to prevent infectious diseases in toddlers is basic immunization. Basic immunizations—which include vaccines for diseases such as polio, measles, diphtheria, tetanus, and hepatitis B—are administered from infancy through the first two years of life. WHO reports that immunization is among the most effective interventions, preventing 2–3 million child deaths each year from vaccine-preventable diseases (WHO, 2020). The coverage of complete basic immunization in Indonesia declined between 2016 and 2019 from the national target of 90%, dropping sharply to 82.6% in 2020 due to service disruptions during the COVID-19 pandemic (Ministry of Health RI, 2020).

A preliminary interview with the midwife in Hegarmanah Village revealed that the complete basic immunization coverage in the village reached only 65%, far below the national target of 90% (Preliminary Study in Hegarmanah Village, 2024). This low coverage increases the risk of infection in toddlers, which in turn may negatively affect their nutritional status. Previous research shows that children who receive complete immunizations tend to have better nutritional status because they are more resistant to infections and communicable diseases (Pebrianti, Wiguna, & Nurbaiti, 2022).

In addition to immunization, regular visits to the posyandu (integrated health post) also play an important role in monitoring toddler growth and development. According to data from the Ministry of Health, posyandu plays a vital role in monitoring child nutrition and health, especially in areas difficult to reach by formal health services. Activities conducted at the posyandu include child nutrition monitoring, basic immunizations, and diarrhea prevention. The posyandu also provides education for parents on child nutrition and developmental screening (Ministry of Health RI, 2012).

Mothers' active participation in monitoring their children's growth is reflected in the percentage of toddlers weighed monthly at the posyandu. The national target for toddler visit coverage at posyandu, according to the Ministry of Health, is 80% (Ministry of Health RI, 2018). However, in Hegarmanah Village, community participation in posyandu visits remains low: only 55% of mothers regularly bring their toddlers to the posyandu for growth monitoring. Based on these findings, it is crucial for mothers to bring their toddlers to the posyandu for essential health services. Nutritional monitoring—such as weight and height measurements—is vital to ensure a child's nutrition is adequate and to prevent stunting or growth failure (Green & Kreuter, 2005).

Based on this background, the researcher aims to further examine the relationship between the completeness of basic immunizations and mothers' visits to the posyandu with toddlers' nutritional status. The purpose of this study is to determine the relationship between the completeness of basic immunization and maternal visits to the posyandu with the nutritional status of toddlers.

Method

This research employed a quantitative approach with a case-control design aimed at determining the relationship between the completeness of basic immunization and maternal visits to the posyandu

P-ISSN 2301-8372 | E-ISSN 2549-7081
https://jurnal.unimus.ac.id/index.php/jur_bid

(integrated health post) with the nutritional status of toddlers. The study subjects were toddlers aged 12–59 months residing in Hegarmanah Village, Cikancung Subdistrict, Bandung Regency. A total sample of 66 toddlers was selected, consisting of a case group (malnourished toddlers) and a control group (well-nourished toddlers), chosen through a simple random sampling technique based on toddler data recorded in the village. The study was conducted from April 16 to May 10, 2025. Prior to data collection, the researcher obtained permission from the relevant authorities and ethical approval from the Health Research Ethics Committee of the Bandung Ministry of Health Polytechnic, with approval number PK.02.01/1.8/KEPK/028/2025.

Each respondent was given an explanation regarding the objectives and procedures of the study and signed an informed consent form upon agreeing to participate. Nutritional status assessment was carried out using standard anthropometric tools such as digital scales (baby scale and detecto), microtoise, and infantometer, adjusted to the child's age and ability to stand. Data on immunization completeness were obtained from the KIA (Maternal and Child Health) handbook, while data on the frequency of posyandu visits were collected from posyandu cadres' records and confirmation from the mothers. Data collection was performed through direct observation and recording of secondary data.

Data were analyzed using univariate and bivariate analyses with the chi-square test at a significance level of $\alpha = 0.05$ to determine the relationship between the completeness of basic immunization and posyandu visits with the nutritional status of toddlers

Result and Discussion

The research findings showed that among toddlers with malnutrition, the highest number of cases was found in the age group of 37–48 months, with 11 children (33.3%). This can be associated with changes in feeding patterns and parenting approaches. At under 24 months of age, toddlers generally still receive intensive attention from their mothers in terms of food provision and care, with some still receiving breast milk as a nutritional supplement. Meanwhile, at over 24 months—particularly between 37 and 48 months—nutritional intake becomes fully reliant on family food, and maternal attention may already be divided with other activities or the presence of younger siblings. Research by Kuntari (2021) also indicates that toddlers aged 36–60 months are 2.4 times more likely to experience malnutrition due to irregular eating patterns and inadequate food quality.

In terms of gender, most toddlers with malnutrition were boys, totaling 22 children (66.7%). Nutritional needs between male and female toddlers do not differ significantly, but these differences may be influenced by factors such as parenting habits, food provision, and environmental influences. A previous study conducted in South Bangka found that male toddlers had a one-fold greater tendency to experience stunting compared to females (Savita & Amelia, 2020).

Table 1. Frequency Distribution of Respondents' Characteristics

Respondent Characteristics	Nutritional Status of Toddlers			
	Malnourished		Well-nourished	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Toddler Age				
12-24 month	9	27.3	14	42.4
25-36 month	5	15.2	8	24.2
37-48 month	11	33.3	6	18.2
49-59 month	8	24.2	5	15.2
Gender				

P-ISSN 2301-8372 | E-ISSN 2549-7081
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Respondent Characteristics	Nutritional Status of Toddlers			
	Malnourished		Well-nourished	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Male	22	66.7	12	36.4
Female	11	33.3	21	63.6
Mother's Age				
Adolescent	1	3	0	0
Early adulthood (20-30)	16	48.5	23	69.7
Middle adulthood (31-50)	16	48.5	10	30.3
Mother Education				
No schooling/did not complete elementary	2	6	0	0
Elementary school graduate	20	60.7	10	30.3
Junior high school graduate	7	21.2	7	21.2
Senior high school graduate	4	12.1	13	39.4
College graduate	0	0	3	9.1
Employment Status				
Entrepreneur	0	0	6	18.2
Civil servant	0	0	1	3
Laborer / farmer	4	12.1	1	3
Housewife	29	87.9	24	72.7
Private employee	0	0	1	3
Monthly Income				
< Regional Minimum Wage	22	66.7	16	48.5
≥ Regional Minimum Wage	11	33.3	17	51.5
Access to Health Services				
On foot	32	97	29	87.9
Private vechile	1	3	3	9.1
Public transportation	0	0	1	3

Based on maternal age among mothers of well-nourished toddlers, the majority were between 20–30 years old, totaling 23 individuals (69.7%). According to research by Hartati (2021), the optimal age for child-rearing is between 20 and 35 years, during which mothers are generally more psychologically prepared and mature in making decisions regarding their child's health.

In terms of education, most mothers of malnourished toddlers were elementary school graduates, totaling 20 individuals (60.7%). Research by Widodo (2022) indicates that a mother's level of education has a positive correlation with the nutritional status of toddlers; mothers with secondary or higher education levels are more likely to have children with better nutritional outcomes compared to those with only basic education.

Regarding employment status, the majority of mothers with malnourished toddlers were housewives, totaling 29 individuals (87.9%). This condition suggests that although mothers may spend more time at home to support their child's growth and development, family financial limitations still pose a barrier to meeting the nutritional needs of toddlers. This is consistent with the findings of Dewi, Arifin, and Syamsuddin (2020), who stated that economic dependence on the husband's income and limited access

P-ISSN 2301-8372 | E-ISSN 2549-7081
https://jurnal.unimus.ac.id/index.php/jur_bid

to nutritional information are contributing factors to suboptimal child nutrition, even if the mother does not work outside the home.

In terms of monthly income, most mothers of malnourished toddlers had earnings below the regional minimum wage (UMR), totaling 22 individuals (66.7%). This indicates that low economic capacity adversely affects the quality of daily food intake and limits access to adequate health services. These findings are supported by Fitriani, Rahman, and Wahyuni (2022), who reported that limited income is closely related to poor consumption of nutritious food and limited access to regular health check-ups.

Regarding access to health services, nearly all mothers in the malnourished group reached health service locations on foot, totaling 32 individuals (97.0%). However, this physical accessibility was not accompanied by optimal utilization of posyandu services. Kartini, Sari, and Anggraini (2021) explain that although health facilities may be geographically accessible, the more influential factors on visit frequency are maternal awareness, habits, and knowledge about the importance of child growth monitoring. In other words, even if the posyandu is close to the residence, if the mother lacks sufficient awareness or understanding, the frequency of visits tends to be low, which ultimately affects the child's nutritional status.

Table 2. Association Between Completeness of Basic Immunization and Nutritional Status of Toddlers

Completeness of Basic Immunization	Nutritional Status of Toddlers				Total n (%)	P *value*	OR	CI
	Malnourished		Well-nourished					
	n	%	n	%				
Incomplete	25	75.8	15	45.5	40 (60.6)	0.0233*	3.750	1.312-10.721
Complete	8	24.2	18	54.5	26 (39.4)			
Amount	33	100	33	100	66 (100)			

(*) Chi Square Test

Association Between Completeness of Basic Immunization and Nutritional Status of Toddlers

Based on the table above, among 33 toddlers with malnutrition, 25 (75.8%) had incomplete basic immunization, and 8 (24.2%) had complete immunization. Meanwhile, among 33 well-nourished toddlers, 15 (45.5%) had incomplete immunization, and 18 (54.5%) had complete immunization.

The statistical test yielded a p-value of 0.023 ($p < 0.05$), indicating a significant association between the completeness of basic immunization and the nutritional status of toddlers. The odds ratio (OR) was 3.750, meaning that toddlers who did not receive complete basic immunization were 3.75 times more likely to experience malnutrition compared to those who received complete immunization.

Nutritional problems may arise due to an imbalance between nutrient intake and the presence of infectious diseases. Malnutrition can weaken the immune system, making the body more vulnerable to disease, particularly infections. Infection is one of the main factors that directly affects nutritional status, especially in children (Suryana et al., 2022). Basic immunization plays a role in reducing the risk of disease and mortality in children (Pebrianti, Wiguna, & Nurbaiti, 2022).

When a child suffers from an infection, appetite typically decreases, leading to reduced energy intake. On the other hand, the body requires more energy to combat the infection. In such conditions, energy needs increase to strengthen the immune system and repair damaged tissues. Insufficient energy intake and nutrient malabsorption can worsen a child's nutritional condition.

P-ISSN 2301-8372 | E-ISSN 2549-7081
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This research aligns with the findings of Wulandari, Agussafutri, and Andhikatias (2021), conducted in Karanganyar, which showed that higher immunization status corresponds with better nutritional status, and lower immunization status corresponds with poorer nutritional status (p = 0.003). Children who do not receive complete immunization have weaker immune systems, making them more prone to infections. Children who frequently suffer from infections tend to lose their appetite and experience nutrient absorption disorders. If this continues over time, it will negatively affect the child's nutritional status.

The researcher found that most mothers whose children did not receive complete immunization held misconceptions, believing that vaccines could cause illness. In several cases, vaccines such as PCV, IPV, and RV were unfamiliar to mothers of toddlers, as these are newly introduced programs by the government (Ministry of Health of the Republic of Indonesia, 2023)

Table 3. Association Between Maternal Visits to Posyandu and Nutritional Status of Toddlers

Maternal Visits to Posyandu	Nutritional Status of Toddlers				Total n (%)	P *value*	OR	CI
	Malnourished		Well-nourished					
	n	%	n	%				
Inactive	22	66.7	13	39.4	35 (53)	0.048*	3.077	1.126–8.412
Active	11	33.3	20	60.0	31 (47)			
Amount	33	100	33	100	66 (100)			

(*) Chi-Square Test

Association Between Maternal Visits to Posyandu and Nutritional Status of Toddlers

The table above shows that mothers of toddlers who were inactive in attending posyandu visits had a higher rate of children with malnutrition (66.7%) compared to those who were active in attending (33.3%). Conversely, mothers who were active in visiting posyandu had a higher proportion of well-nourished children (60.0%) compared to those who were inactive (39.4%). The Chi-Square test result indicated a significant relationship between maternal visits to posyandu and the nutritional status of toddlers (p-value = 0.048). The odds ratio (OR) calculation showed that toddlers whose mothers were inactive in attending posyandu had a 3.077 times greater likelihood of experiencing malnutrition compared to those whose mothers were active in attending (95% CI: 1.126–8.412).

The result of p = 0.048 (p < 0.05) indicates a significant association between maternal visits to posyandu and the nutritional status of toddlers. The OR value of 3.077 means that toddlers whose mothers were inactive in attending posyandu were 3.077 times more likely to experience malnutrition compared to those whose mothers actively attended posyandu.

This finding is supported by previous research conducted by Firza and Ayu (2022), which also demonstrated a relationship between maternal participation in posyandu activities and toddler nutritional status. That study reported a p-value of 0.003, indicating a statistically significant relationship as it falls below the 0.05 significance threshold.

Compliance with health services is a key factor in ensuring mothers utilize the available facilities, including regular visits to posyandu. Attendance at posyandu reflects not only physical presence but also the mother's attentiveness and involvement in monitoring the child's growth and development (Notoatmodjo, 2012). Posyandu visits enable various health interventions, including child weighing, which is crucial for assessing health status. Weighing provides an early indication of whether a child is growing normally or is at risk of nutritional problems. Additionally, posyandu enables early detection of health issues, allowing for immediate treatment or referral. The services also support follow-up interventions, such as providing

P-ISSN 2301-8372 | E-ISSN 2549-7081
https://jurnal.unimus.ac.id/index.php/jur_bid

supplementary food, nutrition supplements, or health education. Through these activities, mothers can gain improved knowledge, attitudes, and behaviors related to child care, including proper feeding practices and healthy parenting (Persagi, 2010).

To ensure that posyandu visits are truly effective, continuity of care is required—sustained health services from birth through toddlerhood. Continuity of care ensures that children receive consistent monitoring and follow-up, rather than one-time visits. For example, if a child experiences weight loss, the next visit will assess the impact of the previous intervention. Moreover, monitoring and evaluation (monev) of posyandu services are essential. Monev helps health workers and mothers determine whether the child's growth is on track, whether issues recur, and whether interventions are effective. Without routine monev, nutritional problems may be addressed too late (Kurniasih & Yuniarti, 2020).

Research by Putu et al. (2020) also supports this finding, showing that low maternal participation in posyandu is associated with higher malnutrition rates among toddlers. This confirms that maternal visits to posyandu play a significant role in early detection and management of growth disorders in toddlers. Through posyandu, mothers can access information on child feeding practices, exclusive breastfeeding, and appropriate complementary feeding (MP-ASI), all of which contribute to improved child nutrition. The success of the posyandu program greatly depends on the active involvement of mothers and the empowerment of community health volunteers (kader).

Conclusion

Based on the research conducted in Hegarmanah Village, Cikancung Subdistrict, Bandung Regency in 2025 involving 66 toddlers aged 12–59 months, it was found that the majority of toddlers were aged 37–48 months, male, and had mothers aged 20–30 years, with elementary school education, unemployed, and earning below the regional minimum wage. Most toddlers had not received complete basic immunization (60.6%), and the majority of mothers did not regularly attend posyandu (53%). There was a significant association between the completeness of basic immunization and maternal visits to posyandu with the nutritional status of toddlers ($p < 0.05$), where toddlers who did not receive complete immunization had a 3.75 times greater risk of experiencing malnutrition, and toddlers whose mothers did not routinely attend posyandu had a 3 times greater risk of malnutrition.

A strategic approach is required that includes improving the quality of posyandu services, enhancing the active role of families in supporting posyandu activities, and conducting more massive and targeted socialization on the importance of immunization and posyandu.

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