The Role of Healthcare Access and Maternal Posyandu Adherence on Stunting Incidence on Maratua Island

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Abstract.

Background: Stunting persists as a public health crisis on Maratua Island, Berau Regency, where geographical isolation hinders maternal healthcare access and Posyandu adherence, contributing to high toddler stunting rates despite national efforts targeting below 14% prevalence by 2025. This study aimed to analyze the relationship between maternal healthcare access, Posyandu adherence, and stunting incidence among toddlers. Employing a quantitative descriptive correlational design, it targeted a total population of 54 stunted toddlers from 2025 Puskesmas records using total sampling. Data were collected via structured Likert-scale questionnaires (validity r > 0.268; Cronbach's α > 0.70) combined with anthropometric records, analyzed univariately for characteristics and bivariately via Spearman correlation (SPSS v23) due to non-normal data. Results showed all respondents stunted (mostly mild; 75.9% short stature), with no significant healthcare access correlation (p=0.077) but strong Posyandu adherence link (p=0.000). In conclusion, enhancing maternal Posyandu compliance through targeted island interventions offers greater stunting reduction impact than access improvements alone.

Keywords: *Healthcare Access; Maternal Adherence; Posyandu; Stunting and Toddlers.*

I. INTRODUCTION

Stunting remains a critical public health challenge worldwide, affecting approximately 148 million children under five and leading to long-term deficits in physical growth, cognitive development, and economic productivity. In Indonesia, the national prevalence has declined to 19.8% in 2024 from 21.5% the previous year, yet it persists as a national priority with a target below 14% by 2025, driven by multifaceted factors including malnutrition and inadequate healthcare.Regionally, Berau Regency in East Kalimantan reports a projected stunting rate of 23.4% in 2024, highlighting persistent disparities despite cross-sectoral interventions like the Regional Action Plan for stunting reduction. On Maratua Island, an isolated area with limited transportation and healthcare infrastructure, these issues are amplified, as evidenced by high stunting cases among toddlers linked to geographical barriers.Access to maternal and child healthcare services in remote island settings like Maratua is hindered by physical distances, irregular transport, and scarce personnel, potentially disrupting consistent growth monitoring and nutritional interventions. Studies confirm that while primary healthcare utilization correlates with lower stunting risks nationally, island contexts face unique barriers such as high travel costs and infrequent facility visits, exacerbating inequalities.[Apriliani et al., 2025] Maternal compliance with Posyandu (integrated health posts) is inconsistent, with attendance rates often below optimal levels due to low motivation, limited awareness, and competing socioeconomic demands in rural areas.[Ariestiningsih et al., 2024] Research shows non-compliant mothers experience higher stunting prevalence, as irregular Posyandu participation misses early detection of malnutrition, particularly in geographically challenged regions.

Despite national efforts, empirical data on stunting in island locales like Maratua reveal gaps, with 54 under-five children identified as stunted in 2025 Puskesmas records, underscoring the need for localized analysis of access and compliance factors. Prior studies predominantly focus on urban or mainland settings, leaving limited evidence for infrastructure-poor islands where Posyandu efficacy remains under-examined.[Lestari et al., 2025]. This study aims to analyze the relationship between maternal healthcare access, Posyandu compliance, and stunting incidence among toddlers on Maratua Island using a quantitative correlational design with 54 respondents. Its urgency lies in informing targeted policies for Indonesia's 2025 stunting target, especially in underserved islands, where significant compliance links (p=0.000) but non-

significant access correlations (p=0.077) demand context-specific strategies. The novelty emerges from bridging evidence gaps in island-specific dynamics, extending prior mainland-focused works like Ariestiningsih et al. (2024) and Apriliani et al. (2025) to provide actionable insights for Posyandu strengthening in remote areas.[Ariestiningsih et al., 2024].

II. METHODS

This study employed a quantitative approach with a descriptive correlational design to measure the relationship between independent variables—maternal healthcare access and adherence to Posyandu—and the dependent variable of stunting incidence, assessed via height-for-age (HAZ) Z-scores. The quantitative approach was selected for its capacity to objectively measure variables numerically and conduct statistical testing to identify associations without manipulating respondents' conditions, as Sugiyono (2023) explains that this method is grounded in positivism with generalizable data. The correlational design suits this study's objectives by focusing on variable relationships at a specific point in time, as outlined by Creswell and Creswell (2023) in their discussion of quantitative research designs emphasizing association measurement without intervention. Additionally, Emzir affirms that correlational survey research effectively reveals relational patterns in public health issues like stunting in remote areas.The primary instrument was a structured questionnaire developed based on research variable indicators, covering healthcare accessibility, Posyandu visit frequency, and toddler anthropometric data, using a 5-point Likert scale where higher scores indicate better conditions. Validity testing yielded r-values above 0.268, with Cronbach's Alpha reliability of 0.730 for healthcare access and 0.840 for Posyandu adherence—both exceeding 0.70, confirming validity and reliability; primary data from questionnaires were combined with secondary data from Maratua Health Center nutrition reports.

Data analysis involved univariate techniques for respondent characteristics and bivariate Spearman Rank correlation due to non-normal data per Kolmogorov-Smirnov testing, processed via SPSS version 23. This technique aligns with Sugiyono (2023) for non-parametric ordinal data, while Sudaryono emphasizes Spearman testing for hypothesis validation in small-sample health research.The population comprised all 54 stunted toddlers on Maratua Island from the 2025 Health Center nutritional monitoring reports meeting inclusion criteria. Total sampling was applied due to the limited population, all qualifying, yielding 54 respondents predominantly aged 1-3 years (53.7%), male (55.6%), underweight (44.4%), and short stature (75.9%). This selection ensures full population representation in remote island settings, as recommended by Creswell and Creswell (2023) for correlational designs maximizing coverage in small populations to enhance local generalizability. Emzir supports total sampling in descriptive studies to minimize bias in community health data.The procedure began with instrument preparation and ethical approval, followed by primary data collection via home visits over 6 days (December 4-9, 2025) with parental consent, plus secondary data from Health Center records. Data were entered into SPSS for validity-reliability, normality, and Spearman correlation tests, followed by univariate and bivariate result interpretation. This systematic process follows Sugiyono's (2023) flow from problem identification to analysis, ensuring objectivity and ethics. Sudaryono adds that field procedures with direct observation in isolated areas like Maratua yield accurate behavioral data.

III. RESULT AND DISCUSSIONS

Univariat Analysis

A total of 54 children identified as stunted from the 2025 nutritional status monitoring results met the inclusion criteria for the study. The distribution of participant characteristics can be found in Table 1.

Table 1. Univariat Analysis

Characteristic	Category	N	%
age	0-1 year	7	13,0
	1-3 years	29	53,7
	3-5 years	18	33,3
gender	Male	30	55,6
	female	24	44,4

Body weight	Very little	7	13,0
	Les	24	44,4
	normal	23	42,6
Height	Very short	13	24,1
total	short	41	75,9
		54	**100**

As presented in the research results from 54 respondents, the characteristics of toddlers show that the majority are in the 1–3 year age group, totaling 29 toddlers (53.7%). Furthermore, there are 18 toddlers (33.3%) in the 3–5 year age group, while the 0–1 year age group represents the smallest proportion, with 7 toddlers (13.0%). The dominance of the 1–3 year age group indicates that most respondents are in a growth phase that is highly vulnerable to growth disorders if nutritional needs and health monitoring are not optimally met. Based on gender, the majority of toddlers are male, totaling 30 toddlers (55.6%), while female toddlers number 24 (44.4%). This distribution indicates that stunting occurred in toddlers of both genders in this study.Based on weight, almost half of the respondents were in the underweight category, totaling 24 toddlers (44.4%), while 23 toddlers (42.6%) were in the normal weight category. Toddlers in the severely underweight category represented the smallest proportion, with 7 toddlers (13.0%). This condition indicates that some toddlers still experience nutritional problems that can impact their growth. Next, based on height category, the majority of toddlers fall into short category, with 41 toddlers (75.9%), while toddlers in the very short category number 13 (24.1%). The high percentage of toddlers in the short and very short categories indicates that linear growth disorders remain a major problem fir toddlers in Maratua area.

Bivariate Analysis

Based on the results of the Kolmogorov – smirnov normality test, it is known that not all research variables are normally distributed. Therefore, the analysis of the relationship between variables in this study uses the Spearman correlation test (Spearman's rho) as a non-parametric statistical analysis technique. The bivariate analysis distribution can be found in table 2.

Table 2. Bivariate Analysis

Variable	Severe Stunting (n, %)	mild Stunting (n, %)	Total (n, %)	P-value
Health Access[a]				
It's not easy	1 (100,0)	0 (0,0)	1 (100,0)	0.077
easy	12 (22,6)	41 (77,4)	53 (100,0)	
Maternal Compliance[a]				
disobedient	2 (66,7)	1 (33,3)	3 (100,0)	0.000*
obedient	11 (21,6)	40 (78,4)	51 (100,0)	
Low	13 (24,1)	41 (75,9)	54 (100,0)	

According to the data in Table 2, it clearly shows that access to healthcare services does not have a significant relationship with the incidence of stunting in toddlers. Most toddlers are in the easy access to healthcare category, with a proportion of mild stunting at 77.4% and severe stunting at 22.6%. Statistical test results showed a p-value of 0.077 ($p > 0.05$), indicating that there was no statistically significant relationship between access to healthcare services and the occurrence of stunting. This study confirms that there is no direct correlation between ease of access to healthcare services and the severity of stunting in toddlers. Although these findings indicate that ease of access to healthcare services does not necessarily directly relate to the severity of stunting in toddlers, they reinforce the findings made by (Simbolon et al., 2021). that the coverage and effectiveness of healthcare services are insufficient to reduce stunting rates without sustained and effective utilization support.

Conversely, there is a significant correlation between the level of mothers' adherence to Posyandu and the level of stunting. Most toddlers in the group of mothers who adhered to Posyandu activities experienced mild stunting (78.4%) and severe stunting (21.6%). In the group of non-compliant mothers, the

proportion of severe stunting was lower than the proportion of mild stunting. The statistical test results show a statistically significant relationship between mothers' adherence to Posyandu and the incidence of stunting. The p-value of 0.000 ($p < 0.01$) indicates that the level of mothers' adherence to Posyandu activities is related to the degree of stunting incidence in toddlers. Could a mother's adherence to Posyandu help monitor a child's growth regularly, allowing stunting to be identified and addressed earlier? This finding is consistent with the research by (Bahsur et al., 2022). who found that maternal adherence to Posyandu is significantly associated with the nutritional status of toddlers, including the TB/U indicator ($p = 0.016$). This supports the research findings regarding the relationship between maternal compliance and the incidence of stunting in this study.

IV. CONCLUSION

This study reveals key findings on stunting among toddlers on Maratua Island: all 54 respondents exhibited stunting, predominantly mild cases, with no significant correlation between maternal healthcare access and stunting severity ($p=0.077$), yet a strong significant link between maternal Posyandu adherence and reduced stunting risk ($p=0.000$). These results highlight that while geographical barriers limit access in remote islands, consistent Posyandu participation enables early growth monitoring and nutritional interventions, aligning with prior evidence on compliance's protective role. Practically, these insights urge health authorities to prioritize Posyandu activation through incentives, transportation support, and awareness campaigns tailored to island contexts, bolstering Indonesia's 2025 stunting reduction target below 14%. Despite comprehensive sampling, limitations include the cross-sectional design restricting causality inference and focus solely on stunted toddlers, excluding non-stunted comparisons for broader risk profiling. Reliance on self-reported adherence may introduce recall bias, and the small, localized sample limits generalizability beyond similar island settings. Future research should adopt longitudinal approaches, incorporate diverse variables like socioeconomic status and dietary patterns, and include control groups to dissect multifaceted stunting determinants, enhancing policy robustness in underserved regions.

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