

The role of posyandu cadres in child growth monitoring for early detection of stunting

Peran Kader Posyandu dalam Pemantauan Pertumbuhan Balita untuk Deteksi Dini Stunting

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ABSTRACT

Background: Stunting remains a major public health challenge with long-term consequences for the quality of human resources in Indonesia. Stunting prevention requires early detection through routine child growth monitoring conducted at Integrated Health Service Posts (Posyandu).

Objective: This study aimed to analyze the relationship between knowledge and motivation and the role of Posyandu cadres in child growth monitoring as an early detection strategy for stunting in the service area of Graha Indah Public Health Center, North Balikpapan.

Methods: A descriptive analytical study with a cross-sectional design was conducted. A total of 79 active Posyandu cadres were purposively selected as the study sample. Data were collected using structured questionnaires that had been tested for validity and reliability and were analyzed using Spearman's rank correlation test.

Results: The results showed that Posyandu cadres generally had good levels of knowledge and motivation and performed their roles optimally. A strong and statistically significant relationship was found between motivation and the role of cadres ($p=0,001$), whereas knowledge was not significantly associated with cadre roles ($p=0,650$).

Conclusion: These findings indicate that motivation is a key factor in optimizing the role of Posyandu cadres in child growth monitoring. This study recommends strengthening cadre motivation through continuous training, intensive supervision, and performance-based incentive systems to enhance the effectiveness of early stunting detection at the community level.

Keywords: cadre, knowledge, monitoring, motivation, role, stunting

ABSTRAK

Latar Belakang: Stunting masih menjadi tantangan kesehatan masyarakat yang berdampak jangka panjang terhadap kualitas sumber daya manusia di Indonesia. Upaya pencegahan stunting memerlukan deteksi dini melalui pemantauan pertumbuhan balita yang dilakukan secara rutin di Posyandu.

Tujuan: Penelitian ini bertujuan menganalisis hubungan antara pengetahuan dan motivasi dengan peran kader Posyandu dalam pemantauan pertumbuhan balita sebagai upaya deteksi dini stunting di wilayah kerja Puskesmas Graha Indah, Balikpapan Utara.

Metode: Penelitian menggunakan desain deskriptif analitik dengan pendekatan potong lintang (*cross-sectional*). Sampel berjumlah 79 kader Posyandu aktif yang dipilih secara purposif. Data dikumpulkan melalui kuesioner terstruktur yang telah diuji validitas dan reliabilitasnya, kemudian dianalisis menggunakan uji korelasi *Spearman Rank*.

Hasil: Hasil penelitian menunjukkan bahwa kader Posyandu umumnya memiliki pengetahuan dan motivasi yang baik serta menjalankan peran secara optimal. Terdapat hubungan yang kuat dan signifikan antara motivasi dan peran kader ($p=0001$),

sementara pengetahuan tidak berhubungan signifikan($p=0,650$). Hal ini menunjukkan bahwa motivasi merupakan faktor kunci dalam optimalisasi peran kader pada pemantauan pertumbuhan balita.

Simpulan: Temuan ini menegaskan bahwa motivasi merupakan faktor dominan yang memengaruhi optimalisasi peran kader dalam pelaksanaan pemantauan pertumbuhan Balita. Penelitian ini merekomendasikan penguatan motivasi kader melalui pelatihan berkelanjutan, supervisi intensif, serta sistem apresiasi berbasis kinerja guna meningkatkan efektivitas deteksi dini stunting di tingkat komunitas.

Kata kunci: kader, motivasi, peran, pengetahuan, pemantauan, stunting

INTRODUCTION

Stunting remains a complex public health problem in Indonesia. This condition reflects impaired linear growth in toddlers due to chronic malnutrition and ongoing socioeconomic factors from pregnancy to age two[1]. The impact of stunting is not only physical, but also affects cognitive development, productivity, and the quality of human resources in the future[2]. Therefore, addressing stunting is a national priority in efforts to improve the quality of future generations.

Based on the 2022 Indonesian Nutritional Status Survey (SSGI), the national stunting prevalence was recorded at 21.6%, then decreased to 21.5% in 2023, and reached 19.8% in 2024, or around 4.48 million toddlers.[3] Although this achievement has met the World Health Organization (WHO) target of under 20%, this figure is still above the Indonesian government's target of 14%[4]. In East Kalimantan, particularly Balikpapan City, the stunting problem continues to show worrying dynamics. Data from the past three years shows that the prevalence of stunting in the city has fluctuated, from 19.6% in 2022, decreasing to 13.36% in 2023, and then rising again to 19.3% in 2024[5].

Graha Indah Subdistrict is one of the areas with the highest number of toddlers at risk of stunting in Balikpapan City. According to Community-Based Nutrition Recording and Reporting (e-PPGBM) data, approximately 1,709 toddlers are classified as vulnerable to stunting in this area[6]. This situation highlights the challenges facing early detection and preventative interventions at the community level. One key strategy in preventing stunting is routine monitoring of toddler growth through activities at Integrated Service Posts (Posyandu). Posyandu serves as the spearhead of community-based health services, facilitating toddler growth monitoring, nutritional counseling, and early screening for growth disorders[7].

However, the effectiveness of Posyandu in carrying out these functions is highly dependent on the quality and active role of Posyandu cadres[8]. Cadres play a crucial role in recording, reporting, and communicating nutritional information to the community, particularly to mothers of toddlers. Numerous studies have shown that cadre performance is significantly influenced by their level of knowledge, motivation, training experience, support from health workers, and the availability of infrastructure[9], [10], [11]. Cadres with high competence and motivation are more capable of accurately performing anthropometric measurements, understanding growth indicators, and providing appropriate nutritional education to the community[12], [13].

Unfortunately, in many areas, including Graha Indah Village, challenges persist in the implementation of cadre duties. Some cadres are not optimal in recording and reporting toddler growth, resulting in delays in early detection of stunting cases. Contributing factors include a lack of ongoing training, inadequate supervision, limited facilities, and weak support from local health workers[14], [15]. This condition indicates the need for a more in-depth analysis of the factors that influence the role of cadres in monitoring toddler growth[16].

In the policy context, the government has issued the National Action Plan for the Acceleration of Stunting Reduction (RAN-PASTI), which emphasizes the importance of strengthening the capacity of cadres as the main strategy for specific and sensitive nutrition interventions [17], [18]. However, the implementation of this policy still faces challenges at the field level, particularly in terms of cadre competency and the effectiveness of the toddler growth and development monitoring system [19]. Therefore, research is needed that focuses on identifying factors that influence the role of Posyandu cadres, so that capacity-building interventions can be designed in a more targeted manner.

The novelty of this research lies in its analysis of the role of Posyandu cadres as the primary unit of analysis in monitoring toddler growth for early detection of stunting, with motivation as the dominant factor over knowledge. Furthermore, this research was conducted in a regional context with fluctuating stunting trends, providing a new empirical perspective on the challenges of implementing early stunting detection at the community level.

This research is important because the results are expected to provide an empirical basis for the formulation of policies and programs to strengthen the role of Posyandu cadres in early detection of stunting [20]. This study aimed to analyze the relationship between knowledge and motivation with the role of Posyandu cadres in monitoring toddler growth as an early detection effort for stunting in the working area of Graha Indah Community Health Center, North Balikpapan. The results are expected to provide an empirical basis for strengthening the capacity of cadres and optimizing the function of Posyandu in efforts to accelerate stunting reduction at the community level.

METHODS

Study design

This study employed a quantitative approach with a descriptive-analytical cross-sectional design to examine the relationship between knowledge and motivation and the role of Posyandu cadres in monitoring toddler growth (children aged 0–59 months) as an early detection strategy for stunting. The study subjects were Posyandu cadres, while toddlers were the focus of growth monitoring rather than the unit of analysis.

Data source and sampling procedure

The study was conducted in Graha Indah Village, Balikpapan City, East Kalimantan, from April to November 2025. The site was selected purposively due to its relatively high number of toddlers at risk of stunting. The study population comprised all 365 active Posyandu cadres registered in the working area of the Graha Indah Community Health Center. A total of 79 cadres were selected using purposive sampling based on predefined inclusion and exclusion criteria.

Variables of the study

The independent variables were knowledge and motivation, whereas the dependent variable was the cadres' role. In this study, the cadres' role was defined as their active involvement in toddler growth monitoring, including recording growth data, reporting findings, providing nutrition-related information to mothers, and conducting early detection activities for stunting. Several potential confounding variables were also identified, including age, highest educational level, employment status, duration of service as a cadre, and training experience.

Data collection

The instrument consisted of items assessing the frequency, consistency, and quality of task implementation at the Integrated Health Post (Posyandu). These variables were collected as respondent characteristics to provide contextual understanding and minimize bias in interpreting the associations between the main variables. Data were

collected through a self-administered structured questionnaire after respondents provided written informed consent. Enumerators were available to provide technical clarification when necessary, without influencing or interpreting respondents' answers. This procedure ensured standardized quantitative data collection.

Measurement and instruments

The research instrument was a structured questionnaire covering respondent characteristics, knowledge, motivation, and cadres' roles in monitoring toddler growth. Content validity was assessed by experts, and reliability testing yielded a Cronbach's alpha coefficient of ≥ 0.70 . Data on the cadres' role were collected using a structured questionnaire that had undergone validity and reliability testing, with a total score ranging from 0 to 100. The knowledge variable had a total score ranging from 0 to 40 and was categorized as low (<26), moderate (26–36), and high (>36). The motivation variable had a total score ranging from 0 to 100 and was categorized as low (<46), moderate (46–72), and high (>72). The cadres' role variable, also ranging from 0 to 100, was classified using the same cut-off points as the motivation variable. These categories were established to facilitate the interpretation of the levels of knowledge, motivation, and role performance.

Ethical considerations

Ethical approval was obtained from the Health Research Ethics Committee of the East Kalimantan Health Polytechnic (No. DP.04.03/F.XXXIV.25/282/2025).

Data analysis

Data analysis was performed using SPSS version 26 in two stages: univariate analysis to describe the distribution of variables and bivariate analysis using Spearman's rank correlation coefficient (ρ) to assess the relationship between the independent and dependent variables.

RESULTS

Respondent Characteristics

This study involved 79 active Posyandu (Integrated Health Post) cadres spread across the Graha Indah sub-district of Balikpapan City. All respondents participated voluntarily and met the study's inclusion criteria. Respondent characteristics included age, religion, ethnicity, occupation, education level, duration as a posyandu cadre, and experience in cadre training, early stunting detection training, and toddler growth and development monitoring training, as follows:

Table 1. Respondent Characteristics

Characteristics	Category	Frequency (n)	Percentage (%)
Age	22–30 years	8	10.1
	31–40 years	12	15.2
	41–55 years	52	65.8
	>55 years	7	8.9
Religion	Islam	76	96.2
	Christian	3	3.8
Ethnicity	Javanese	47	59.5
	Bugis	10	12.7
	Banjar	9	11.4
	Others (Madurese, Sundanese, Ambonese, Dayak, Manadonese, Malay)	13	16.4

Characteristics	Category	Frequency (n)	Percentage (%)
Occupation	Homemaker	66	83.5
	Self-employed	4	5.1
	Private Employee	7	8.9
	Teacher/Educator	2	2.5
Highest Education Level	Elementary School	2	2.5
	Junior High School	10	12.7
	Senior High School	51	64.6
	Diploma/Bachelor's Degree (D3–D4/S1)	8	10.1
Duration as a Posyandu Cadre	<3 years	17	21.5
	3–10 years	42	53.2
	>10 years	20	25.3
Participation in Posyandu Cadre Training			
	Yes	71	89.9
	No	8	10.1
Participation in Stunting Early Detection Training			
	Yes	56	70.9
	No	23	29.1
Participation in Toddler Growth and Development Monitoring Training			
	Yes	53	67.1
	No	26	32.9

Based on Table 1, the majority of Posyandu cadres were aged 41–55 years (65.8%), predominantly Muslim (96.2%), and represented diverse ethnic backgrounds, with Javanese constituting the largest group (59.5%). Most cadres were homemakers (83.5%) and had completed senior high school as their highest level of education (64.6%). Regarding duration of service as a Posyandu cadre, more than half of the respondents had served for 3–10 years (53.2%), while 25.3% had more than 10 years of experience, indicating substantial experience in Posyandu activities. In terms of training participation, most cadres had attended Posyandu cadre training (89.9%), early detection of stunting training (70.9%), and toddler growth and development monitoring training (67.1%). These findings indicate that Posyandu cadres in Graha Indah Subdistrict possess relatively adequate experience and foundational competencies. However, some cadres had not participated in specific technical training, highlighting the need for continuous capacity strengthening.

Regular training is recommended, ideally conducted every 1–2 years, particularly for technical competencies such as anthropometric measurement and toddler growth monitoring. This frequency may help maintain skill consistency, ensure alignment with updated national guidelines, and minimize measurement errors that could delay early detection of stunting. Continuous training combined with regular supervision is likely to be more effective in sustaining cadre performance than one-time training without follow-up.

Analysis of Characteristics of Knowledge, Motivation, and Role of Cadres

An analysis of the knowledge, motivation, and role of Posyandu cadres was conducted to provide an overview of their cognitive capacity, internal motivation, and level of involvement in implementing toddler growth monitoring as an early detection

strategy for stunting. The results of the descriptive analysis for each variable are presented in Table 2.

Table 2. Distribution Based on Knowledge, Motivation, and Role of Posyandu Cadres

Variables	Category	n	Percentage (%)
Knowledge	High (>36)	72	91.1
	Moderate (26–36)	7	8.9
	Low (<26)	0	0.0
Motivation	High (>72)	78	98.7
	Moderate (46–72)	1	1.3
	Low (<46)	0	0.0
Role of Cadres	High (>72)	79	100.0
	Moderate (46–72)	0	0.0
	Low(<46)	0	0.0

Table 2 shows that the majority of cadres had a high level of knowledge (91.1%). Motivation was also predominantly high, with 98.7% of cadres categorized in the high group. Moreover, all cadres (100%) demonstrated a high level of involvement in monitoring toddler growth. Overall, these findings indicate that the capacity and performance of Posyandu cadres are optimal, which may reflect the effectiveness of ongoing guidance, training, and supervision provided by health workers in the Graha Indah Community Health Center area.

Knowledge, Motivation, and Role of Cadres

Based on the measurement results of three main variables, namely knowledge, motivation, and the role of Posyandu cadres. Knowledge and motivation were selected as independent variables because they are the main factors that influence the performance of Posyandu cadres, while the role of cadres was positioned as the dependent variable that represents the actual implementation of toddler growth monitoring. The selection of these three variables was based on the theoretical framework of health behavior and the national policy to accelerate stunting reduction that emphasizes strengthening the capacity and role of cadres at the community level. The distribution of categories for each variable is shown in Table 3. Descriptive analysis was conducted to describe the level of ability and involvement of Posyandu cadres in implementing toddler growth monitoring as an effort to detect stunting early in the work area of the Graha Indah Community Health Center. As follows:

Table 3. Distribution Based on Knowledge, Motivation, and Role of Posyandu Cadres

Variables	Mean±SD	Median	Min-Max
Knowledge	38.4 ± 1.6	39	34-40
Motivation	87.2 ± 7.1	88	72-100
Role of Cadres	85.0 ± 6.9	86	74-100

Based on Table 3, descriptive statistical analysis using numerical scores, it was obtained that the average knowledge score of cadres was 38.4 ± 1.6 with a range of values 34–40. The motivation score showed an average value of 87.2 ± 7.1 with a range of 72–100, while the role score of cadres had an average of 85.0 ± 6.9 with a range of 74–100. In general, the high average values for the three variables indicate that Posyandu cadres in the working area of Graha Indah Health Center have a relatively optimal level of knowledge, motivation, and role implementation in toddler growth monitoring activities. The non-normal distribution of scores is the basis for using the Spearman Rank correlation test in the analysis of relationships between variables.

Relationship between variables

An inter-variable correlation analysis was conducted to assess the closeness and direction of the relationship between the independent variables (knowledge and motivation) and the dependent variable (the role of Posyandu cadres) in toddler growth monitoring activities as an effort to detect stunting early. In addition, an additional analysis was conducted between knowledge and motivation to see the internal relationship between the independent variables. The Spearman Rank correlation test (ρ) was used because the data were ordinal and not normally distributed. The results of the analysis are presented in Table 4.

Table 4. Analysis of the Relationship Between Variables

Variable Relationship	Correlation Coefficient (ρ)	p-value	Information
Knowledge ↔ Role of Cadres	0.052	0.650	Not significant
Motivation ↔ Role of Cadres	0.687	< 0.001	Significant (strong positive)
Knowledge ↔ Motivation	0.200	0.078	Not significant

Based on Table 4, the results of the analysis show that motivation has a strong and significant relationship with the role of cadres ($p = 0.001$), while knowledge does not show a significant relationship ($p = 0.650$). Additional analysis between knowledge and motivation also does not show a significant relationship ($p = 0.078$), which indicates that the two independent variables stand relatively separately in influencing the role of cadres.

DISCUSSION

The results of this study show that the majority of Posyandu cadres in the Graha Indah Community Health Center area have a good level of knowledge and motivation and optimally carry out their roles in monitoring toddler growth. This demonstrates the effectiveness of the cadre development and training program that has been implemented, while also emphasizing the importance of cadres as the spearhead of early stunting detection at the community level. This finding aligns with health behavior theory, which states that an individual's ability to implement health actions is influenced by cognitive (knowledge), affective (motivation), and supportive social environmental factors[21], [22].

Although most cadres possess good knowledge, the analysis shows that knowledge is not significantly related to their role. This can be explained by the fact that high levels of knowledge do not necessarily translate into practical application in the field. Implementation of knowledge requires support in the form of supervision, ongoing coaching, and opportunities for hands-on practice in Posyandu activities. Thus, knowledge serves as a basic prerequisite, but it is not the sole factor determining the quality of cadre task implementation. Several previous studies have also suggested that increased knowledge needs to be balanced with practical training and a monitoring system to translate into effective actions in the field [23], [24], [25], [26].

On the other hand, cadre motivation was shown to have a very strong relationship with the implementation of their role in monitoring toddler growth. This indicates that internal and external motivations, such as a sense of social responsibility, support from health workers, and appreciation for performance, are the main drivers of cadre success in carrying out their functions. This finding supports Herzberg's motivation theory, which states that intrinsic motivators such as recognition, achievement, and work meaning contribute significantly to a person's performance. In the context of Posyandu, cadres with high motivation tend to be more active, consistent, and able to overcome operational obstacles in the field[21], [24], [25], [26].

The weak relationship between knowledge and motivation suggests that cognitive enhancement does not always directly impact affective aspects. Cadres who understand the concept of stunting may not necessarily have a strong desire to apply their knowledge without emotional, social, and structural support. Factors such as fatigue, limited incentives, or minimal community recognition can reduce motivation, even if a cadre's knowledge is considered high. Therefore, strategies to increase cadre capacity should not only focus on increasing knowledge but also consider the psychological and social factors that influence their work enthusiasm[27], [28].

These findings confirm that improving cadre motivation is a crucial component in strengthening their role as primary implementers of toddler growth monitoring activities. Motivation-based approaches, such as rewards, social recognition, and participatory coaching systems, have proven effective in increasing cadre engagement in various regions. Furthermore, technical and emotional support from health workers plays a crucial role in maintaining cadre enthusiasm and ensuring consistent performance[29].

The findings of this study are in line with research by Abri et al. (2025), who reported that Posyandu cadres generally have a good level of knowledge regarding growth monitoring and stunting prevention, especially in areas that have received ongoing training interventions[30]. Khair and Hotimah's (2024) research in Dopang Village, Gunung Sari, Indonesia, showed that most cadres had an adequate understanding of toddler growth indicators, but not all of them were able to translate this knowledge into consistent practice in the field[31]. This shows that increasing knowledge alone is not enough to ensure the optimal role of cadres in monitoring toddler growth.

The results of this study are also consistent with the research findings of Gunawan and Ayubi (2023), which stated that motivation is the main determinant of the performance of community health cadres[32]. Another study by Holida et al. (2024) reported that cadres with high motivation tend to be more active in Posyandu activities, more precise in anthropometric measurements, and more consistent in recording and reporting child growth data compared to cadres with low motivation[33]. The similarity of these findings strengthens the evidence that motivation plays a more dominant role than knowledge in influencing the implementation of cadre tasks at the community level.

However, the findings of this study differ from several studies that reported a significant relationship between knowledge and cadre performance[33], [34]. These differences may be influenced by variations in respondent characteristics, supervision intensity, variable measurement methods, and the research area context. In areas with a more structured coaching system, cadre knowledge can be more easily implemented into practice, whereas in the context of this study, limited supervision and operational support are thought to limit the optimal application of cadre knowledge. This study not only confirms previous findings but also expands the understanding that the effectiveness of the role of Posyandu cadres is strongly influenced by the implementation context in the field. This study emphasizes the importance of a cadre-strengthening approach that focuses not only on increasing knowledge but also on motivational aspects and systemic support, so that monitoring toddler growth as an effort to detect stunting early can be more effective.

Overall, the results of this study indicate that the success of early detection of stunting at the community level is largely determined by a combination of adequate knowledge, strong motivation, and a sustainable support system. Capacity building for cadres should be carried out holistically through ongoing training, improved cross-sector communication, and the development of a fair and transparent incentive system. This way, cadres will not only act as technical implementers but also as agents of community behavior change in sustainable stunting prevention efforts.

This study has several strengths that strengthen the validity and relevance of the findings. The research was conducted directly with Posyandu cadres active in the field, so the data obtained reflect the actual conditions of toddler growth monitoring implementation at the community level. The variables measured—knowledge, motivation, and role of cadres—represent cognitive, affective, and behavioral aspects that complement each other in understanding the determinants of cadre success in early stunting detection. The use of a Spearman correlation statistical analysis approach allows for more accurate identification of relationships between variables despite the non-parametric nature of the data. Furthermore, the research results provide a strong empirical basis for policymakers and public health program managers in developing strategies for strengthening cadre capacity in a targeted and sustainable manner. The research context, conducted in the working area of the Graha Indah Community Health Center, North Balikpapan, also provides added value because this area represents urban-peripheral characteristics with diverse socioeconomic challenges, making the research results relevant to be applied in areas with similar characteristics in Indonesia.

However, this study has several limitations that should be considered. The cross-sectional design only describes the relationship between variables at a specific point in time; thus, it cannot confirm the causal relationship between knowledge, motivation, and the role of cadres. Data measurement was conducted using a self-report questionnaire, which has the potential to introduce social bias, where respondents tend to provide answers that are considered favorable by the researcher or the community. Furthermore, other contextual factors such as work environment support, community health center policies, and cadre incentives have not been analyzed in depth, even though these factors likely influence cadre motivation and role. This study was also conducted on a limited population within a single community health center working area, so generalizing the results to other regions requires caution and further research in various regional contexts. However, these limitations do not diminish the validity of the main findings of this study, but rather open up opportunities for future research to develop more comprehensive intervention models to improve the performance of Posyandu cadres as the spearhead of stunting prevention at the community level.

CONCLUSION

The role of Posyandu cadres in monitoring toddler growth is primarily determined by motivational factors, while knowledge serves as a basic prerequisite. These findings underscore the need for a cadre-empowerment approach that emphasizes not only cognitive aspects but also motivational reinforcement and systemic support for effective and sustainable early detection of stunting at the community level.

Future research is recommended to use longitudinal or experimental designs to assess causal relationships and explore the role of supervision, incentives, and policy support. Developing contextual motivation-based intervention models across various regional characteristics is also needed to improve the effectiveness of toddler growth monitoring.

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