Indonesian Journal of Global Health Research
Volume 8 Number 1, February 2026
e-ISSN 2715-1972; p-ISSN 2714-9749
http://jurnal.globalhealthsciencegroup.com/index.php/IJGHR

THE RELATIONSHIP BETWEEN POSYANDU CADRE KNOWLEDGE LEVEL WITH ANTHROPOMETRIC MEASUREMENTS AND FILLING IN CHILD DEVELOPMENT CARD (KKA)

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ABSTRACT
Anthropometric measurements and completing the Child development cardat integrated health posts (Posyandu) are essential components of monitoring toddler growth and development. In the Fakfak Tengah Community Health Center (Puskesmas) work area, measurement coverage only reached 47.13%, and most KKA completions were still carried out by nutrition workers, with errors being found among the cadres. This situation indicates the need to improve cadre capacity. This study aimed to analyze the relationship between Posyandu cadres' knowledge level and their skills in anthropometric measurement and KKA completion. The study used a quantitative, observational design with a cross-sectional approach. A sample of 76 cadres was purposively selected from 19 Posyandus in the Fakfak Tengah Community Health Center work area from July to August 2025. The independent variable was the cadres' knowledge level regarding Posyandu services, while the dependent variables were their skills in anthropometric measurement and KKA completion. The research instruments consisted of a knowledge questionnaire and a skills observation sheet. Data analysis was performed using univariate analysis to describe respondent characteristics, and bivariate analysis using the Chi-square test to test relationships between variables at a 95% significance level ($p<0.05$). The results showed that Posyandu cadre knowledge was associated with anthropometric measurements (OR = 3.26; 95% CI: 1.11–9.57; p = 0.028), and completion of the Child development card (7.17 (95% CI: 1.41–36.50); p = 0.014). Posyandu cadre knowledge was associated with anthropometric measurements and completion of the child development card.

Keywords: anthropometric measurements; cadre knowledge; child development card; integrated health posts

How to cite (in APA style)
Fonika, W., Islami, I., & Septiani, S. (2026). The Relationship between Posyandu Cadre Knowledge Level with Anthropometric Measurements and Filling in Child Development Card (KKA). *Indonesian Journal of Global Health Research*, *8*(1), 1147–1154. https://doi.org/10.37287/ijghr.v8i1.213.

INTRODUCTION

Toddlers are a vulnerable group to health problems. Toddler health is essentially a public health issue that cannot be addressed solely through medical and health services. Health problems in toddlers affect growth and development both during infancy and beyond. One way to monitor toddler growth and development is through the Integrated Health Post (Posyandu). Toddlers are one of the targets of health services at Posyandu. Health problems in toddlers affect growth and development both during infancy and beyond, thus requiring attention (Andri et al. 2023).

Growth monitoring in infants and toddlers is conducted using anthropometric measurements, which are often performed at Posyandu. The main personnel implementing Posyandu are Posyandu cadres. Their knowledge and skills in conducting anthropometric measurements are crucial, as they relate to toddler growth. Inadequate cadre skills can lead to misinterpretation of nutritional status and, in turn, errors in decision-making and treatment. Anthropometry (body measurements) is a direct way to assess nutritional status, particularly a person's energy and protein intake (Aritonang, 2013).

Based on the research results of Mimi et al. (2021), the knowledge of cadres who are not able to place the measuring tool correctly is 16.7%, the Posyandu cadres who do not know how to lay the child's position is 33.3%, the knowledge of cadres who use microtoice measuring tools is 16.7%, the Posyandu cadres who do not ensure the child removes shoes when taking measurements is 20%.

It was concluded that the cadres with the highest level of knowledge were 53.3%, the level of knowledge was moderate at 26.7% and the level of knowledge was low at 20%. According to research by Fitriani and Purwaningtyas (2021), it shows that 53.3% of cadres still lack skills in measuring anthropometry. The results of a similar study conducted by Gandaasri (2017) showed that only 51.9% had precision in measuring anthropometry and none of the cadres had accuracy in measuring anthropometry.

Based on the research results of Nurlisis and Handana (2017), the proportion of cadres who incorrectly filled out the Child Child development card was 65.5%. The Child development card is a card containing a child's growth chart measured by gender, weight, and age. Cadre errors in plotting the KKA curve can lead to errors in KKA readings and errors in determining the nutritional status of toddlers, resulting in undernourished or overnourished toddlers going undetected, ultimately leading to delays in further treatment. Toddlers with malnutrition who should have been detected early cannot be treated, and ultimately there is a delay in intervention and management, which ultimately leads to malnutrition (Nurlisis and Handana, 2017). Based on the results of the Indonesian Nutritional Status Study (SSGI) at the national level (2022), the prevalence of stunting in toddlers according to national height/age was 21.6% lower than the previous year (2021) which was 24.4%, the prevalence of wasting in toddlers according to national weight/age was 7.8%, an increase from the previous year which was 7.1%, the prevalence of underweight toddlers according to national weight/age was 17.1% and the prevalence of overweight toddlers according to weight/age was 3.5% lower than the previous year which was 3.8%.

Several studies have shown that the role of cadres and health workers in providing friendly and informative services also influences mothers' decisions to attend integrated health posts (Posyandu) (Nurhayani et al., 2023; Kurniavie et al., (2020; Heri et al. (2025). Posyandu is a form of basic health service that plays a crucial role in monitoring toddler growth and development, including through anthropometric measurements and completing the Health Card (KKA).

The Fakfak Tengah Community Health Center (Puskesmas) is one of the community health centers in Fakfak Regency, West Papua, which consists of 19 Posyandus. A preliminary study showed that the implementation of these activities in the Fakfak Tengah Community Health Center's work area has not been optimal. Data from January to May 2025 showed that the number of toddlers who underwent anthropometric measurements was 414 (January), 448 (February), 419 (March), 377 (April), and 439 (May), out of a total target of 715 toddlers. The total coverage was only reached 47.13%. In addition, the implementation of KKA filling is still mostly carried out by nutrition officers, not by Posyandu cadres. Based on initial observations that have been conducted, it was found that one or two Posyandus that filled out the KKA themselves still found errors in filling it out. This reflects the still low level of knowledge and skills of cadres in providing Posyandu services independently, especially in terms of anthropometric measurements and filling out the KKA. This condition provides an important background for examining the relationship between the level of knowledge of cadres and the quality of Posyandu services, especially in the aspects of anthropometric measurements and filling out the KKA in the work area of the Central Fakfak Community Health Center.

METHOD

Research Design

This study is a quantitative study with a cross-sectional observational design that aims to determine the relationship between the level of knowledge of Posyandu cadres with anthropometric measurement skills and filling out the Child development card The study was conducted in the working area of the Fakfak Tengah Community Health Center, Fakfak Regency in July–August 2025. The independent variable in this study is the level of knowledge of Posyandu cadres, while the dependent variable is the cadres' skills in anthropometric measurement and filling out the KKA.
Subject

The study population was all 95 Posyandu cadres in the working area of the Central Fakfak Community Health Center, with a sample size of 76 cadres determined using the Slovin formula (e = 0.05). The sampling technique used was purposive sampling with inclusion criteria being cadres who had been active for at least 6 months, had taken anthropometric measurements or filled out the Community Child development card at least once in the last 3 months, and were willing to be respondents. Exclusion criteria were cadres who were on leave or inactive in the last 3 months and who were not present during data collection.

Instruments Research

The research instruments consisted of a questionnaire and observation sheet adapted from Fitriana's (2024) research. The questionnaire consisted of three sections: respondent identity, 20 true/false questions regarding cadres' knowledge of integrated health service delivery (Posyandu), and a skills observation sheet covering weighing using a baby scale and a foot scale, measuring length or height using an infantometer and a stadiometer, and filling out and plotting results on the Community Child development card Data were collected through interviews using a questionnaire and direct observation of cadres' skills. The operational definition of the study included cadres' knowledge, which was categorized as good if the score was ≥ the mean and poor if < the mean; anthropometric measurement skills, which were considered good if they followed standard procedures; and KKA filling skills, which were considered good if recording and mapping were done correctly. The tools and media used included a questionnaire, observation sheet, baby scale, foot scale, infantometer, and stadiometer.

Data Analysis

The data obtained were analyzed univariately to describe the distribution of variables, and bivariately using the Chi-square test to determine the relationship between variables with a 95% confidence level ($p<0.05$). If the test requirements were not met, the Fisher Exact test was used. The analysis results were also calculated using the Odds Ratio (OR) to determine the magnitude of the risk. This study began with obtaining permits at the Papua Provincial Health Office and Fakfak Regency and was carried out with due regard to research ethics. Respondents were given an explanation of the research objectives and asked to provide informed consent.

RESULT

Dichotomous Data Characteristics Results

Table 1.
Characteristics of Mothers Based on Dichotomous Data

Variable	f	%
Education Level		
No Education	1	1.3
Elementary School	3	3.9
Junior High School	22	28.6
Senior High School	41	53.2
Higher Education	10	13.0
Occupation		
Housewife	70	90.9
Private Employee	2	2.6
Civil Servant	4	5.2
Others	1	1.3
Cadre Training		
Never	19	24.7
Ever	58	75.3
Duration as a Cadre		
< 1 year	6	7.8
> 1 year	5	6.5
1–2 years	66	85.7
Knowledge		
Poor	31	41.6
Good	45	58.4

Variable	f	%
Anthropometric Measurement		
Poor	10	13.0
Good	67	87.0
KKA Recording		
Poor	19	24.7
Good	58	75.3

Based on Table 1, the majority of Posyandu cadres have a high school education (53.2%). In terms of occupation, the majority are housewives (90.9%). Regarding training, 75.3% of cadres have attended training. The longest tenure as a cadre is 1–2 years (85.7%). In terms of knowledge, 58.4% of cadres are categorized as good. In terms of skills, 87.0% of cadres have good abilities in anthropometric measurements and 75.3% in completing the Health Card (KKA).

Continuous Data Characteristics Results

Based on Table 2, it shows that the average age of Posyandu cadres is 42 years, with an age range of 20 to 63 years.

Table 2.
Characteristics of Mothers Based on Continuous Data

Variabel	N	Mean	SD	Min	Maks
Age	77	42.03	10.85	20	63

Analysis Bivariate

Based on Table 3 Chi-Square test results, there is a significant relationship between the level of knowledge of Posyandu cadres and anthropometric measurement skills ($p = 0.028 < 0.05$). Cadres with good knowledge were more likely to have good anthropometric measurement skills (38 people; 33.9%) compared to cadres with poor knowledge (20 people; 24.1%). The Odds Ratio (OR) value = 3.26 (CI 95%: 1.11–9.57) indicates that cadres with good knowledge have a 3.26 times greater chance of performing anthropometric measurements correctly compared to cadres with poor knowledge. Thus, cadre knowledge plays an important role in improving cadre skills in performing anthropometric measurements at Posyandu.

Table 3.
Results of the Chi-Square Test of the Relationship between the Knowledge Level of Posyandu Cadres and Anthropometric Measurements

Variable	Anthropometric Measurements				Total		OR (95% CI)	*p-value*
	Poor		Good					
Knowledge	f	%	f	%	f	%		
Poor	12	7.9	20	24.1	32	32.0	3.26 (1.11 – 9.57)	0.028
Good	7	11.1	38	33.9	45	35.0		

Table 4.
Results of the Chi-Square Test of the Relationship between the Knowledge Level of Posyandu Cadres and the Completion of the KKA

Variable	Anthropometric Measurements				Total		OR (95% CI)	*p-value*
	Poor		Good					
Knowledge	N	%	N	%	N	%		
Poor	8	4.2	24	27.8	32	32.0	7.17 (1.41 – 36.50)	0.014
Good	2	5.8	43	39.2	45	45.0		

Based on the Chi-Square test results in Table 4, there is a significant relationship between the knowledge level of Posyandu cadres and their skills in filling out the Child development card ($p = 0.014 < 0.05$). Cadres with good knowledge were more likely to have good KKA filling out skills (43 people; 39.2%) compared to cadres with poor knowledge (24 people; 27.8%). The Odds Ratio (OR) value = 7.17 (CI 95%: 1.41–36.50) indicates that cadres with good knowledge were 7.17 times more likely to fill out the KKA correctly compared to cadres with poor knowledge. Thus, the better the cadres' knowledge, the greater the likelihood of them being able to fill out the KKA correctly at Posyandu.

DISCUSSION

Characteristics of Cadres

The majority of Posyandu cadres have a high school education (53.2%). A similar study conducted by Juniarti et al. (2021) showed that the majority of respondents were aged 40–49, 36.7% of whom were in the productive age group. Those aged 31–39, 20% of whom were adults. Adulthood is a time of commitment, beginning with responsibility, and it is easier to socialize than adolescence. Therefore, cadres of this age group are expected to be highly socially engaged with the community and responsible for leading Posyandus and providing health information to the community. Furthermore, a more mature person will be more confident in the community than a younger person (Juniarti et al. (2021). The oldest cadres are those over 60 years old, which is still considered productive. However, with increasing age, productivity decreases due to a decline in physical abilities.

In terms of occupation, the majority are housewives (90.9%). A similar study conducted by Juniarti et al. (2021) showed that the majority of cadres have a high school education, at 50%. Education level is related to the ability to receive health information, both from the mass media and from health workers to the community. The higher the level of education, the easier it is to receive information that can increase knowledge about the integrated health service post (Posyandu) (Purba et al., 2019). Regarding the training variable, 75.3% of cadres have attended training. Research by Juniarti et al. (2021) showed that 24 people (80%) reported having attended previous training. This study indicates that the most common length of service as a cadre is 1–2 years, at 85.7%. Cadres who participate in training should have better knowledge and performance than those who have not (Vaozia et al., 2016).

In terms of knowledge, 58.4% of cadres categorized as good. Regarding skills, 87.0% of cadres categorized as good in anthropometric measurements and 75.3% in completing the Child Child development card Research by Fitriana (2024) showed that 97.9% of Posyandu cadres' knowledge was good and 2.1% were adequate. Cadres' skills in weighing using baby scales were categorized as skilled by 59.6% and unskilled by 40.4%. Cadres' skills in weighing using a foot scale were categorized as skilled by 27.7% and unskilled by 72.3%. Cadres' skills in measuring infant length were categorized as skilled by 80.9% and unskilled by 19.1%. Cadres' skills in measuring height were categorized as skilled by 34.0% and unskilled by 34.0%. Cadres' skills in completing the Child Child development card were categorized as skilled by 6.4% and unskilled by 93.6%. Based on the research results, the recommendation is that skilled cadres should guide and instruct other cadres on the correct weighing and measuring steps. Community health centers should also provide guidance to cadres on the accuracy of completing the KKA, guided by KKA experts.

The Relationship Between Posyandu Cadre Knowledge Level and Anthropometric Measurements

The results of this study indicate that mothers with good knowledge were more likely to perform anthropometric measurements correctly (33.9%) compared to mothers with less knowledge (24.1%). Although a small percentage of mothers with good knowledge still performed measurements incorrectly (11.1%), overall, the quality of anthropometric measurements tended to improve with increasing knowledge. This indicates that knowledge is an important factor influencing anthropometric measurement practices in toddlers.

The chi-square test results showed a significant relationship between Posyandu cadre knowledge level and anthropometric measurement skills ($p = 0.028 < 0.05$). Cadres with good knowledge were more likely to have good anthropometric measurement skills (38 people; 33.9%) than cadres with less knowledge (20 people; 24.1%). The Odds Ratio (OR) value of 3.26 (95% CI: 1.11–9.57) indicates that cadres with good knowledge were 3.26 times more likely to perform anthropometric measurements correctly compared to cadres with less knowledge. Therefore, cadre knowledge plays a crucial role in improving their skills in conducting anthropometric measurements at integrated health posts (Posyandu).

A cadre's knowledge can be enhanced through cadre training. Through additional education, cadres will gain a broader perspective than those without additional education, especially regarding their duties. Executives with additional knowledge will have a higher level of knowledge, which will serve as a foundation for implementing a participatory attitude. Conversely, executives who have not or have never received additional education will have limited knowledge. Consequently, within these limitations, the cadre's role is not optimal (Wijaya et al., 2016).

Knowledge of integrated health service post (Posyandu) cadres is crucial because good knowledge tends to improve the quality of their work. In general, these cadres are familiar with Posyandu, including its definition, goals, and objectives, as well as its activities. Posyandu cadres with good knowledge will have more confidence than those with less knowledge. Therefore, they are expected to provide good service during Posyandu activities (Wellina et al., 2016).

A cross-sectional study conducted by Astriana and Evrianasari (2019) showed that the frequency distribution of cadres' knowledge regarding weighing infants and toddlers in the Natar Community Health Center (Puskesmas) work area in South Lampung was categorized as "poor" (26 people, 19.70%), and "good" (106, 80.30%). The frequency distribution of cadre skill levels in weighing infants and toddlers in the Natar Community Health Center (Puskesmas) work area in South Lampung included 31 unskilled (23.48%), while 101 skilled (76.52%). Research by Astriana and Evrianasari (2019) showed a relationship between knowledge and cadre skills in weighing infants and toddlers in the Natar Community Health Center (Puskesmas) work area in South Lampung, with a p-value of 0.000 < α of 0.05.

The Relationship Between Posyandu Cadre Knowledge Level and Child Child development card Completion

This study indicates that mothers' knowledge levels are related to the quality of their KKA completion. The majority of mothers with good knowledge tended to complete the KKA correctly (39.2%). Conversely, mothers with less knowledge also completed the KKA correctly, but the proportion was lower (27.8%). Therefore, the better the knowledge, the more likely the mother is to complete the KKA correctly. The results of this study align with Hasan's (2015) study at the Mandala Medan Community Health Center, which found that 85.7% of cadres with good knowledge performed poorly in monitoring toddler growth. However, this is in line with Rosphita's (2007) study, which concluded that if cadres have good knowledge of assessing weighing results, they will be more skilled in interpreting the weighing results and drawing child growth charts in the Child Child development card as a basis for early detection of growth disorders in toddlers. This knowledge is expected to also be reflected in the cadres' actions in monitoring infant and toddler growth at the integrated health post (posyandu).

The results also showed a significant relationship between the level of knowledge of Posyandu cadres and their skills in filling out the Child development card (p = 0.014 < 0.05). Cadres with good knowledge were more likely to have good KKA filling skills (43 people; 39.2%) compared to cadres with poor knowledge (24 people; 27.8%). The Odds Ratio (OR) value of 7.17 (95% CI: 1.41–36.50) indicates that cadres with good knowledge are 7.17 times more likely to fill out the Child Child development card correctly compared to cadres with less knowledge. Therefore, the better the cadre's knowledge, the more likely they are to fill out the KKA correctly at the integrated health post (Posyandu).

A similar study conducted by Nurlisis and Handana (2017) showed a causal relationship between knowledge and cadres' accuracy in filling out the KKA for toddlers. Cadres with less knowledge are 3.4 times more likely to fill out the KKA incorrectly for toddlers. Knowledge is a crucial domain for shaping one's actions. If behavior is based on knowledge, awareness, and a positive attitude, it will be long-lasting. Conversely, if behavior is not based on knowledge and awareness, it will not last long (Notoatmodjo, 2005). Good knowledge and experience are required to fill out the KKA correctly. Good knowledge of the KKA will make it easier for cadres to fill out the KKA. The better

the cadres' knowledge of how to complete the Child Health Card (KKA), the more accurate their completion will be. This study aligns with research conducted by Sutiani et al. (2014), which found a significant relationship between knowledge and cadre skills in monitoring infant and toddler growth. This means that cadres with good knowledge tend to be more skilled than those with less knowledge in implementing infant and toddler growth monitoring at Integrated Health Posts (Posyandu). Therefore, to ensure accurate completion of the KKA, it is recommended that cadres improve their knowledge of the toddler KKA and how to complete it. Based on this recommendation, Harapan Raya Community Health Center (Puskesmas) recommends providing more intensive mentoring and supervision to improve cadres' knowledge of how to complete the KKA.

Research Limitations

First, the cross-sectional study design can only describe the relationship between variables at a specific point in time and therefore cannot directly explain cause-and-effect relationships. and anthropometric measurements and completion of the KKA are highly dependent on the skills of the respondents, so there is the possibility of variation in results influenced by the subjectivity or accuracy of the cadres.

CONCLUSION

The results showed that Posyandu cadre knowledge was associated with anthropometric measurements (OR = 3.26; 95% CI: 1.11–9.57; p = 0.028), and completion of the Child development card (7.17 (95% CI: 1.41–36.50); p = 0.014). Posyandu cadre knowledge was associated with anthropometric measurements and completion of the child development card.

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