

THE RELATIONSHIP BETWEEN MOTHERS' KNOWLEDGE LEVEL ABOUT THE PCV VACCINE AND THE INCIDENCE OF PNEUMONIA IN CHILDREN AGED 12–59 MONTHS AT RSD MANGUSADA IN 2026

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ABSTRACT

Introduction

Pneumonia remains a major cause of morbidity among children under five. Mothers' knowledge of the Pneumococcal Conjugate Vaccine (PCV) is one factor associated with pneumonia prevention. This study aimed to analyze the relationship between mothers' knowledge of the PCV vaccine and pneumonia incidence among children aged 12–59 months at Mangusada Regional Hospital.

Method

This quantitative study used a cross-sectional design. The study included 40 mothers of children aged 12–59 months selected through purposive sampling. Data were collected using a validated questionnaire and analyzed using the Chi-Square test.

Result

The results of the statistical analysis showed that the Chi-Square test of the relationship between mothers' knowledge of the PCV vaccine and pneumonia incidence among children under five yielded a p-value of 0.007 ($p < 0.05$).

Conclusion

So it can be concluded that there is a significant relationship between mothers' knowledge of the PCV vaccine and pneumonia incidence among children aged 12–59 months at Mangusada Regional Hospital.

INTRODUCTION

Pneumonia is one of the leading causes of morbidity and mortality among children under five worldwide. According to the World Health Organization (WHO), pneumonia accounts for approximately 14% of all deaths among children under five years of age (WHO, 2022). In Indonesia, pneumonia remains one of the leading infectious causes of death among infants and children under five. Data from the Indonesian Ministry of Health showed that the case detection rate of childhood pneumonia reached 52.7% in 2024 (Kemenkes, 2024).

In Bali Province, the case detection coverage for pneumonia among children under five increased to 84.94% (Dinkes Prov Bali, 2024), while Badung Regency ranked third with the highest number of reported cases, totaling 961 cases (Dinkes Badung, 2024). A preliminary study conducted at Mangusada Regional Hospital also revealed a high incidence of pneumonia, with 45 cases among children under five recorded over the past three months. The incidence of pneumonia among children under five is influenced by various factors, one of which is mothers' knowledge of immunization, particularly the Pneumococcal Conjugate Vaccine (PCV).

Based on the high incidence of pneumonia and the important role of maternal knowledge in supporting PCV immunization, this study aimed to examine the relationship between mothers' knowledge of the PCV vaccine and the incidence of pneumonia among children aged 12–59 months at Mangusada Regional Hospital.

METHOD

This study employed a quantitative approach with a cross-sectional design. Data were collected using a questionnaire to determine the relationship between mothers' knowledge of the Pneumococcal Conjugate Vaccine (PCV) and the incidence of pneumonia among children under five. The independent variable was mothers' knowledge of the PCV vaccine, while the dependent variable was the incidence of pneumonia.

The study was conducted at Mangusada Regional Hospital, located on Raya Kapal Street,

Mangupura, Mengwi, Badung Regency, Bali, from April to May 2026. The study population consisted of mothers of children aged 12–59 months with pneumonia. The sample size was calculated using the Slovin formula with a 5% anticipated dropout rate, resulting in a total sample of 40 respondents.

RESULTS

Table 1. Respondents Characteristics based on Age

Age	Frequency (n)	Percentage (%)
<20 tahun	0	0.0%
20-35 tahun	19	47.5%
>35 tahun	21	52.5%
Total	40	100%

Based on Table 1, the majority of respondents were aged >35 years, accounting for 21 respondents (52.5%) out of a total of 40 respondents.

Table 2. Respondents Characteristics based on Education Level

Education Level	Frequency (n)	Percentage (%)
No Formal Education	0	0.0%
SD	0	0.0%
SMP	14	35%
SMA	12	30%
College	14	35%
Total	40	100%

Based on Table 2, the majority of respondents had a junior high school or college/university education, with 14 respondents (35%) in each category.

Table 3. Respondents Characteristics based on Occupation

Occupation	Frequency (n)	Percentage (%)
Employed	23	57.5%
Unemployed	17	42.5%
Total	40	100%

Based on Table 3, the majority of respondents were employed, accounting for 23 respondents (57.5%) out of a total of 40 respondents.

Table 4. Mother's Characteristics based on Knowledge Level

Knowledge Level	Frequency (n)	Percentage%
Good	12	30%
Fair	14	35%
Poor	14	35%

Total	40	100%
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Based on Table 4, the majority of respondents had fair and poor levels of knowledge regarding the PCV vaccine, with 14 respondents (35%) in each category.

Table 5. Frequency Distribution of Pneumonia Incidence

Pneumonia Incidence	Frequency (n)	Percentage (%)
Yes	21	52.5%
No	19	47.5%
Total	40	100%

Based on Table 5, the majority of children under five had pneumonia, accounting for 21 respondents (52.5%) out of a total of 40 respondents.

Table 6. Univariate Analysis

Variable		Pneumonia Incidence						P
Knowledge Level	Yes		No		Total			
	N	%	N	%	N	%		
Good	2	5.0	10	25.0	12	30	0.007	
Fair	8	20.0	6	15.0	14	35		
Poor	11	27.5	3	7.5	14	35		
Total	21	52.5	19	47.5	40	100		

Based on Table 6, the results of the bivariate analysis using the Chi-Square test showed a p-value of 0.007 ($p < 0.05$). Therefore, it can be concluded that there is a significant relationship between mothers' knowledge of the PCV vaccine and pneumonia incidence among children aged 12–59 months at Mangusada Regional Hospital in 2026.

DISCUSSION

Knowledge Level

The results showed that respondents with fair and poor levels of knowledge were equally represented, with 14 respondents (35%) in each category. These findings are consistent with a study by (Ambar, 2024) which reported a significant association between parents', particularly mothers', level of knowledge and PCV immunization uptake ($p = 0.026$). The study indicated that better parental knowledge was associated with a higher likelihood of PCV immunization as a preventive measure against pneumonia in children under five.

Furthermore, a study by (Luh *et al.*, 2025) also found a significant relationship between mothers' knowledge and the PCV immunization

status of children under five ($p = 0.001$). These findings suggest that maternal knowledge plays an important role in the successful implementation of PCV immunization, as mothers with better knowledge are more likely to ensure that their children receive PCV immunization according to the recommended schedule.

The researchers assume that mothers' knowledge of the PCV vaccine influences their decision to vaccinate their children. Mothers with better knowledge are more likely to understand the importance of the PCV vaccine and comply with the recommended immunization schedule. Conversely, inadequate knowledge may reduce mothers' understanding of the benefits of the PCV vaccine, potentially affecting their adherence to the recommended vaccination schedule important role in determining the quality of human life information or indirectly.

Pneumonia Incidence

The results showed that the majority of children under five had pneumonia, accounting for 21 respondents (52.5%). These findings are consistent with a study by (Rizky *et al.*, 2022), which reported that pneumonia incidence among children under five is influenced by several risk factors, including immunization status, history of exclusive breastfeeding, exposure to cigarette smoke, and environmental conditions ($p = 0.001$). The study found that children who did not receive complete immunization and exclusive breastfeeding were at a higher risk of developing pneumonia.

Furthermore, a study by (Nurmalita *et al.*, 2024) also reported that pneumonia prevention practices were significantly associated with mothers' knowledge, physical environmental conditions, and the role of healthcare providers ($p = 0.021$).

The researchers assume that the high incidence of pneumonia observed in this study indicates that pneumonia is not only associated with mothers' knowledge of the PCV vaccine but may also be influenced by other factors that were not examined in this study. In addition, mothers' knowledge regarding pneumonia prevention and PCV immunization plays an important role in reducing the risk of pneumonia among children under five. Mothers with better knowledge are more likely to ensure complete immunization, provide adequate nutrition, and maintain a healthy living environment, thereby reducing the risk of pneumonia. Conversely,

inadequate maternal knowledge may limit the effectiveness of pneumonia prevention efforts.

CONCLUSIONS

Based on the results of the study entitled "The Relationship Between Mothers' Knowledge of the Pneumococcal Conjugate Vaccine (PCV) and Pneumonia Incidence Among Children Aged 12–59 Months at Mangusada Regional Hospital," it was found that, among 40 respondents, the majority had fair and poor levels of knowledge regarding the PCV vaccine, with 14 respondents (35.0%) in each category. Pneumonia was identified in 21 children under five (52.5%). The analysis showed a significant relationship between mothers' knowledge of the PCV vaccine and pneumonia incidence among children under five ($p = 0.007$).

Based on these findings, the results of this study are expected to serve as a reference for healthcare facilities in strengthening health education on pneumonia and the importance of PCV vaccination for mothers of children under five as an effort to prevent pneumonia. Future researchers are encouraged to investigate other factors associated with pneumonia incidence among children under five and to use larger sample sizes to obtain more comprehensive findings.

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