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The Role of Community Health Volunteers in Enhancing Maternal Knowledge of Childhood Immunization: A Cross- Sectional Study



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ABSTRACT

Introduction: Utilization of posyandu services in Indonesia has historically been suboptimal, influenced by parental perceptions that older children no longer require routine visits and by limited trust in the performance of community health volunteers. This condition may affect maternal knowledge regarding basic immunization, which is essential for preventing infectious diseases in early childhood.

Objectives: This study aimed to analyze the relationship between the role of community health volunteers and mothers' knowledge of basic immunization among children aged 0-3 years.

Methods: An analytic study with a cross-sectional approach was conducted among 30 mothers with children aged 0-3 years in Tamansari Village, Bondowoso, Indonesia. Respondents were selected using simple random sampling. Data were collected using structured questionnaires and analyzed using the Spearman's rho correlation test with a significance level of 0.05.

Results: The analysis showed a significant relationship between the role of community health volunteers and mothers' knowledge ($p = 0.03$). The correlation coefficient ($r = 0.379$) indicated a moderate positive relationship, suggesting that better volunteer roles were associated with higher levels of maternal knowledge regarding immunization.

Conclusions: The role of community health volunteers was significantly associated with mothers' knowledge of basic immunization. Strengthening the capacity and performance of volunteers may improve maternal knowledge and contribute to increased immunization coverage in community settings.



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A. Introduction

Child health remains a critical component of public health development, particularly in efforts to reduce infant and under-five mortality rates (World Health Organization, 2023). In Indonesia, community-based health services such as posyandu play a strategic role in delivering preventive and promotive healthcare, including immunization, growth monitoring, and maternal health services (Ministry of Health Indonesia, 2022; Ministry of Health Indonesia, 2021). The integration of professional health services with community participation through posyandu has been widely recognized as an effective approach to improving maternal and child health outcomes (Bhutta et al., 2019; World Health Organization, 2020).

Community health volunteers (kader posyandu) serve as key agents in bridging health services and the community. Their roles include providing health education, motivating mothers to utilize health services, and facilitating immunization programs (Perry et al., 2021; World Health Organization, 2018). Effective performance of these volunteers is essential in increasing community participation and promoting healthy behaviors, particularly among mothers with young children (Perry et al., 2021; Schneider et al., 2023). However, the effectiveness of their role is often influenced by community perceptions, trust, and the quality of health education delivered (Glenton et al., 2013; Chipukuma et al., 2021).

Despite ongoing efforts, the utilization of posyandu services in Indonesia has not reached optimal levels. Previous reports indicated that child visits to posyandu were relatively low, partly due to parental perceptions that older children no longer require routine visits, as well as limited trust in the performance of community health volunteers (Ministry of Health Indonesia, 2022; Ministry of Health Indonesia, 2021). This situation may contribute to insufficient maternal knowledge regarding basic immunization, which is a key determinant in ensuring complete immunization coverage and preventing infectious diseases among children (World Health Organization, 2023; Panafrican Medical Journal, 2025).

In Bondowoso, the utilization of posyandu services remains a concern, despite gradual improvements in infant mortality rates (Ministry of Health Indonesia, 2022). Preliminary observations in Tamansari Village revealed that some mothers perceived the role of community health volunteers as inadequate, particularly in providing health education related to immunization. This indicates a potential gap between the expected and actual roles of volunteers in improving maternal knowledge (Measuring Client Trust in CHWs Study Group, 2021).

Therefore, understanding the relationship between the role of community health volunteers and maternal knowledge of basic immunization is essential. This study aims to analyze this relationship among mothers with children aged 0–3 years in Tamansari Village, Bondowoso, Indonesia, in order to provide evidence for strengthening community-based health interventions (Schneider et al., 2023; Perry et al., 2021).

B. Methods

This study employed a quantitative analytic design with a cross-sectional approach, in which the independent and dependent variables were measured simultaneously. This design was selected to efficiently examine the relationship between the role of community health volunteers and mothers' knowledge of basic immunization.

The study was conducted in Tamansari Village, within the working area of Kademangan Public Health Center, Bondowoso, Indonesia. The population consisted of 167 mothers with children aged 0–3 years who attended posyandu services. A total of 30 respondents were selected using simple random sampling, ensuring that each member of the population had an equal opportunity to be included in the study.

The independent variable was the role of community health volunteers, while the dependent variable was mothers' knowledge regarding basic immunization among children aged 0–3 years. Data were collected using a structured questionnaire consisting of 30 items developed based on a literature review. The questionnaire assessed volunteer roles (before, during, and after posyandu activities) and maternal knowledge, which were categorized into good, moderate, and poor levels based on scoring criteria.

The validity of the instrument was tested using Pearson product-moment correlation, and items were considered valid when the significance value was less than 0.05. Reliability testing was conducted using Cronbach's alpha, with values above 0.06 indicating acceptable internal consistency.

Data collection was carried out in January 2016 after obtaining permission from relevant authorities. Respondents were informed about the study objectives and procedures, and informed consent was obtained prior to participation. Ethical principles were upheld by ensuring voluntary participation and maintaining the confidentiality of respondents through the use of coded data.

Data were analyzed using descriptive statistics and inferential analysis. The relationship between the role of community health volunteers and maternal knowledge was tested using the Spearman's rho correlation test, with a significance level set at 0.05.

C. Results

A total of 30 mothers with children aged 0–3 years participated in this study. The majority of respondents were housewives (46.7%), had a higher education level (26.7%), and reported a monthly income above IDR 750,000 (43.3%).

Table 1. Characteristics of Respondents (n = 30)

Variable	Category	n	%
Occupation	Housewife	14	46.7
	Self-employed	8	26.7
	Government/Private Employee	8	26.7
Education	Primary School	4	13.3
	Junior High School	6	20.0
	Senior High School	7	23.3
	Higher Education	8	26.7
Income	No Formal Education	5	16.7
	< IDR 500,000	9	30.0
	IDR 500,000–750,000	8	26.7
	> IDR 750,000	13	43.3

Most respondents perceived the role of community health volunteers as moderate (56.7%), followed by good (33.3%) and poor (10%). Similarly, maternal knowledge regarding basic immunization was predominantly categorized as moderate (53.3%), followed by good (36.7%) and poor (10%).

Table 2. Distribution of Volunteer Roles and Maternal Knowledge

Variable	Category	n	%
Volunteer Role	Good	10	33.3
	Moderate	17	56.7
	Poor	3	10.0
Maternal Knowledge	Good	11	36.7
	Moderate	16	53.3
	Poor	3	10.0

Cross-tabulation analysis showed that respondents who perceived volunteer roles as good tended to have better knowledge levels. None of the respondents in the “good role” category had poor knowledge.

Table 3. Cross-tabulation of Volunteer Roles and Maternal Knowledge

Volunteer Role	Knowledge (Good)	Knowledge (Moderate)	Knowledge (Poor)	Total
Good	6 (20.0%)	4 (13.3%)	0 (0%)	10
Moderate	5 (16.7%)	9 (30.0%)	3 (10.0%)	17
Poor	0 (0%)	3 (10.0%)	0 (0%)	3
Total	11 (36.7%)	16 (53.3%)	3 (10.0%)	30

The Spearman’s rho test indicated a statistically significant relationship between the role of community health volunteers and maternal knowledge ($p = 0.039$). The correlation coefficient ($r = 0.379$) demonstrated a moderate positive relationship, indicating that better volunteer roles were associated with higher maternal knowledge.

Table 4. Correlation Between Volunteer Roles and Maternal Knowledge

Variables	r	p-value	n
Volunteer Role – Maternal Knowledge	0.379	0.039	30

D. Discussion

This study demonstrated that the role of community health volunteers (kader posyandu) was predominantly perceived as moderate, while maternal knowledge regarding basic immunization among children aged 0–3 years was also largely categorized as moderate (Schneider et al., 2023; Khanam et al., 2024). These findings suggest that although community-based health services such as posyandu are functioning, their effectiveness in delivering health education and influencing maternal knowledge remains suboptimal (World Health Organization, 2018; Perry et al., 2021). The moderate level of volunteer performance indicates that their roles in health education, communication, and community engagement have not been maximized, which may limit their impact on improving maternal understanding of immunization (Glenton et al., 2013; Chipukuma et al., 2021).

The findings further revealed that maternal knowledge is influenced by several socio-demographic factors, including educational level, occupation, and access to information (Adeyinka et al., 2021; Rahman et al., 2024). Mothers with higher educational attainment tend to demonstrate better knowledge regarding immunization, as they are more capable of processing health-related information and adopting preventive health behaviors (Khanam et al., 2024; Jilani et al., 2024). However, the presence of a substantial proportion of mothers with only moderate knowledge highlights a gap in the effectiveness of current health education strategies (Khanam et al., 2024; Rahman et al., 2024). This may be attributed to inconsistencies in information delivery, limited frequency of counseling, or communication barriers between health volunteers and the community (Glenton et al., 2013; Scott et al., 2021).

Importantly, the results of this study showed a statistically significant relationship between the role of community health volunteers and maternal knowledge of basic immunization ($p = 0.039$; $r = 0.379$), indicating a moderate positive correlation (Khanam et al., 2024; Rahman et al., 2024). This finding suggests that improvements in the role and performance of volunteers are associated with increased maternal knowledge (Adeyinka et al., 2021; Perry et al., 2021). In practical terms, mothers who perceived volunteers as active, supportive, and informative were more likely to have better understanding of immunization schedules, benefits, and disease prevention (Scott et al., 2021; Rahman et al., 2024). These findings reinforce the critical role of community health

volunteers as intermediaries between formal health systems and the community (Bhutta et al., 2019; Perry et al., 2021).

From a theoretical perspective, these findings can be explained through the Knowledge-Attitude-Practice (KAP) framework, which posits that knowledge is a fundamental determinant of health-related behavior (LaMontagne et al., 2017; Khanam et al., 2024). In this context, the role of community health volunteers contributes to increasing maternal knowledge through health education and interpersonal communication (Perry et al., 2021; World Health Organization, 2018). Improved knowledge is expected to influence maternal attitudes toward immunization and subsequently lead to better health practices, including adherence to immunization schedules (Adeyinka et al., 2021; Jilani et al., 2024). Furthermore, this finding is also aligned with the Health Belief Model (HBM), which emphasizes that individual behavior is influenced by perceived benefits, perceived barriers, and cues to action (Rosenstock et al., 2019). Community health volunteers act as “cues to action” by providing information, motivation, and reinforcement to mothers regarding the importance of immunization (Perry et al., 2021).

The findings of this study are consistent with previous research indicating that community-based health interventions play a significant role in improving maternal knowledge and health behaviors (Bhutta et al., 2019; Perry et al., 2021). The interpersonal and culturally sensitive approach used by community health volunteers allows for better trust-building and more effective communication compared to formal healthcare settings (Chipukuma et al., 2021; Scott et al., 2021). In rural or semi-urban communities, where access to formal health information may be limited, the presence of active and well-trained volunteers becomes even more crucial in ensuring the dissemination of accurate health information (Schneider et al., 2023; Khanam et al., 2024).

However, the effectiveness of community health volunteers is highly dependent on their level of training, supervision, and motivation (World Health Organization, 2018; Bhutta et al., 2019). In this study, the predominance of moderate volunteer roles suggests that there may be limitations in training programs, lack of continuous professional development, or insufficient support from health institutions (Perry et al., 2021; Schneider et al., 2023). Strengthening these aspects is essential to enhance the quality of services provided by volunteers. In addition, improving community trust toward volunteers is equally important, as trust plays a key role in determining whether health messages are accepted and acted upon by mothers (Scott et al., 2021; Chipukuma et al., 2021).

Despite the significant findings, this study has several limitations that should be acknowledged. First, the relatively small sample size ($n = 30$) limits the generalizability of the findings to a broader population (Bhutta et al., 2019). Second, the cross-sectional design only allows for the identification of associations and does not establish causal relationships between variables (LaMontagne et al., 2017). Third, potential biases in self-reported data may have influenced the accuracy of responses, particularly in assessing knowledge levels and perceptions of volunteer roles (Adeyinka et al., 2021).

Overall, this study highlights the importance of strengthening the role of community health volunteers as a key strategy in improving maternal knowledge and promoting child health (World Health Organization, 2023; Schneider et al., 2023). Enhancing volunteer training, improving communication skills, and increasing community engagement are essential steps to optimize the effectiveness of posyandu services (Perry et al., 2021; World Health Organization, 2018). By reinforcing community-based health interventions, it is expected that maternal knowledge and immunization coverage can be improved, ultimately contributing to better child health outcomes (World Health Organization, 2023).

E. Conclusion

This study concluded that there is a significant relationship between the role of community health volunteers and mothers' knowledge of basic immunization among children aged 0–3 years. The findings indicate that better performance and active engagement of community health volunteers are associated with higher levels of maternal knowledge regarding immunization.

The moderate level of both volunteer roles and maternal knowledge suggests that community-based health services have not yet achieved optimal effectiveness. Strengthening the capacity, consistency, and communication skills of community health volunteers is essential to improve health education delivery.

These findings highlight the importance of enhancing community-based interventions to improve maternal knowledge, which may ultimately contribute to increased immunization coverage and better child health outcomes.

F. Recommendations

Based on the findings of this study, several recommendations can be proposed to enhance maternal knowledge and improve immunization coverage among children.

First, it is recommended that health authorities strengthen the capacity of community health volunteers through continuous training programs focused on communication skills, health education strategies, and updated immunization information. Improving the competence of volunteers will enhance their ability to effectively deliver health messages to mothers.

Second, *posyandu* services should optimize health education activities by implementing structured and regular counseling sessions for mothers, particularly those with children aged 0–3 years. The use of simple, culturally appropriate educational media is also encouraged to improve understanding and retention of information.

Third, efforts should be made to increase community trust in community health volunteers by improving service quality, consistency, and community engagement. Strengthening collaboration between health professionals and volunteers is essential to ensure accurate and reliable information delivery.

Fourth, future research is recommended to involve larger sample sizes and broader study settings to improve generalizability. Additionally, longitudinal or experimental study designs are needed to explore causal relationships and evaluate the effectiveness of interventions aimed at improving maternal knowledge and immunization practices.

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