



The Relationship of Maternal Knowledge and Husband's Support with the Utilization of Complete Basic Immunization Services in Padangsidempuan City

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Abstract

Complete basic immunization is an effective preventive measure to reduce morbidity and mortality among infants and children caused by vaccine-preventable diseases. Although the government provides free immunization programs, their utilization in several regions, including Padangsidempuan City, has not yet reached the national target. This study aims to analyze the determinants associated with maternal behavior in utilizing complete

basic immunization services for children. A quantitative approach with a cross-sectional design was used. A total of 255 respondents were selected using a purposive sampling technique. Data were collected through a structured questionnaire and analyzed using the chi-square test and binary logistic regression. The independent variables in this study were maternal knowledge and husband's support. The results showed a significant relationship between maternal knowledge ($p = 0.001$) and husband's support ($p = 0.001$) with the utilization of complete basic immunization services. These findings indicate that a mother's understanding of the importance of immunization, along with support from the family environment, plays a crucial role in promoting optimal immunization coverage. Therefore, immunization program interventions should address broader educational and social factors, rather than focusing solely on service provision.

keywords: Basic immunization, husband's support, maternal knowledge, immunization coverage

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Introduction

Complete basic immunization is a key strategy in supporting the achievement of the Sustainable Development Goals (SDGs), particularly in improving the overall health and well-being of communities. Immunization reduces infant mortality by preventing potentially fatal infectious diseases. As a proven and cost-effective public health intervention, it contributes to reducing morbidity and mortality from vaccine-preventable diseases (VPDs), which globally cause approximately two to three million deaths annually (WHO, 2024).

Immunization works by stimulating immunity, either naturally or artificially, through active or passive mechanisms. When coverage is widespread, equitable, and well-targeted, herd immunity can be achieved. Although not all age groups are directly protected, high coverage helps slow the transmission of VPDs in the community, thereby reducing the likelihood of outbreaks.

Global data from 2023 show that 14.5 million children remain unvaccinated (zero-dose children). Coverage for the DTP3 vaccine has reached only 84%, while first-dose measles vaccination declined to 83%, down from 86% in 2019. In high-risk countries, hepatitis B vaccine coverage remains low—around 50%—well below the global target of 80%. Indonesia is among the six countries with the highest number of zero-dose children, with an estimated 1.3 million children not yet receiving their first DPT dose (WHO, 2024).

Although Indonesia was declared free of wild poliovirus in 2014, the country remains under surveillance per the Global Polio Surveillance Action Plan 2025–2026 due to the risk of circulating vaccine-derived poliovirus (cVDPV), especially in areas with low coverage. Intensive monitoring is therefore still needed to prevent re-emergence (WHO, 2024). National immunization coverage increased to 94.6% in 2022, but distribution remains uneven. Some areas still experience low VPD coverage. Recent resurgences—such as polio in Aceh and Papua and over 3,300 measles cases across 31 provinces—highlight the vulnerability of areas with insufficient coverage (P2P Ministry of Health, 2022).

In 2024, national coverage for complete basic immunization stood at 76.5%, with North Sumatra Province at just 69.7%. These figures fall short of the Ministry of Health's national targets: 90% overall, and 80% in Universal Child Immunization (UCI) areas. This gap reflects ongoing disparities in access to and acceptance of immunization services.

Data from the Padangsidempuan City Health Office in 2024 reported that of 4,598 infants aged 0–12 months, only 3,487 (75.84%) received complete basic immunizations—well below the 90% target. Despite the availability of free services, maternal utilization remains low. In 2024, the city recorded one measles case and one diphtheria case, both declared as outbreaks and requiring hospital referral. These events highlight continued challenges in immunization uptake at the community level.



According to the Regulation of the Minister of Health No. 12 of 2017, complete basic immunization is a shared responsibility of central and regional governments. It includes BCG, DPT-HB-Hib, polio, and measles vaccines, all provided free of charge on a set schedule (Permenkes, 2017). A study by Khomariah et al. (2018) at Kedungmundu and Candilama Community Health Centers showed that financial barriers were minimal due to government support, underscoring a strong commitment to expanding access through health centers and *posyandu* (integrated service posts).

However, despite free services, maternal participation remains suboptimal. This suggests that service availability is not fully matched by maternal behavior in seeking timely immunization for their children. Husband's support has been identified as a key determinant in ensuring children complete immunizations. Barrow et al. (2023) found that the presence of family members during immunization visits increased completion rates by 23% (OR = 1.23; 95% CI: 1.03–1.46; $p = 0.021$). Similarly, Adedokun and Yaya (2020) reported that husband or household involvement in child health decisions can raise immunization completion by 15–40%, providing emotional support and reinforcing mothers' willingness to access health services.

A preliminary survey conducted on December 2, 2024, involving 30 mothers, identified several barriers to immunization service utilization: Patriarchal decision-making: Twelve mothers (40%) said they did not receive permission from their husbands for follow-up immunizations after their children experienced mild side effects, such as fever. Many husbands perceived immunization as unnecessary or risky, reflecting gender inequality in healthcare access. Work constraints and scheduling issues: Fifteen mothers (50%) worked in agriculture or plantations and cited rigid weekday immunization schedules as a barrier. Additionally, nine mothers (30%) had previously encountered vaccine stockouts, making them reluctant to return due to lost work time. Misperceptions and low health literacy: Five mothers (25%) believed immunization was unnecessary if the child appeared healthy. Cultural beliefs further reinforced this view. Eleven mothers (35%) also reported unfriendly behavior from health staff, while the lack of a proactive outreach approach particularly affected mothers with low education and limited access to information.

This study is important because immunization coverage in Padangsidempuan City remains below target. The research aims to explore key factors influencing low service utilization, despite the free and accessible nature of services. By identifying these determinants, immunization programs can be designed to be more adaptive and responsive to community needs, ultimately encouraging more mothers to complete their children's basic immunizations.

Methods



This research is an analytical study employing a cross-sectional approach. The study was conducted in six sub-districts of Padangsidempuan City: North, South, Southeast, Hutaimbaru, Batunadua, and Angkola Julu. The data collection took place from August 2024 to July 2025.

The study population comprised all mothers with infants aged 0–24 months in Padangsidempuan City, totaling 4,650 individuals. The sample size was determined using the Isaac and Michael table, based on a 10 percent margin of error. For calculation purposes, the population size was adjusted to 4,500, as listed in the table, resulting in a sample size of 255 respondents.

A purposive sampling technique was used, which is a non-probability method where respondents are deliberately selected based on specific criteria. The dependent variable in this study was the utilization of complete basic immunization services. The independent variables were maternal knowledge and husband's support.

Data were collected using a structured questionnaire administered to mothers of infants aged 9–24 months to identify factors influencing the utilization of complete basic immunization services. The data analysis began with univariate analysis to describe the frequency distribution of each variable. This was followed by bivariate analysis using the Chi-square test to determine the relationship between the independent and dependent variables.

Results

Characteristics of Research Respondents in Padangsidempuan City

The majority of respondents in this study were in the ideal reproductive age group, with 234 (91.8%) falling into this category, while 21 (8.2%) were in the high-risk age group. This indicates that most mothers were of an age generally considered emotionally and physically mature enough to care for children and to access health services, including immunizations.

Based on educational attainment, respondents with lower educational backgrounds dominated the sample, totaling 140 (54.9%), while 115 (45.1%) had higher education. This suggests persistent disparities in access to formal education, which may affect mothers' understanding of the importance of complete basic immunizations for their children.

Regarding employment status, more than half of the respondents—138 (54.1%)—were working mothers, while the remaining 117 (45.9%) were housewives or unemployed. Employment may influence a mother's flexibility in bringing her child to health facilities for immunization.

In terms of family economic conditions, the majority of respondents—219 (85.9%)—had incomes below the City Minimum Wage (UMK), while only 36 (14.1%) earned above it. This reflects that most respondents came from lower-middle socioeconomic backgrounds, which may



present barriers such as limited access to information, transportation, or time needed to utilize immunization services effectively.

Overall, the sociodemographic characteristics of the respondents provide an initial overview of several factors that may influence the utilization of complete basic immunization services for children. The combination of ideal reproductive age, educational background, employment status, and predominantly low economic conditions offers important context for understanding mothers' behaviors and decisions regarding immunization in Padangsidempuan City.

Table 1. Frequency Distribution of Mothers' Characteristics in Utilizing Complete Basic Immunization

Characteristics	Category	Frequency (n)	Percentage (%)
Age	Ideal Reproductive Age	234	91.8
	High-Risk Reproductive Age	21	8.2
Last education	Low Education	140	54.9
	higher education	115	45.1
Work	Unemployed Mother	117	45.9
	Working Mother	138	54.1
Family Income	Below minimum wage	219	85.9
	Above minimum wage	36	14.1

Frequency Distribution of Independent Variables

The results showed that, in terms of knowledge about immunization, the majority of respondents—171 individuals (67.1%)—had a high level of knowledge, while 84 individuals (32.9%) were classified as having low knowledge. Regarding husband's support, 170 respondents (66.7%) reported receiving high support from their husbands, whereas 85 respondents (33.3%) reported receiving low support.

Table 2. Frequency Distribution of Independent Variables

Variables	Category	Frequency (n)	Percentage (%)
Knowledge of Immunization	High	171	67.1
	Low	84	32.9
Husband's Support	High	170	66.7
	Low	85	33.3



Frequency Distribution of Complete Basic Immunization Service Utilization Variables

Based on the frequency distribution of the 255 respondents, the variable of complete basic immunization service utilization was classified into two categories: mothers who utilized the service and those who did not. The analysis showed that 160 respondents (62.7%) belonged to the group that utilized the service, while 95 respondents (37.3%) were classified as not utilizing it. This difference in proportion indicates that although the majority of mothers have accessed complete basic immunization services, more than one-third have not yet brought their children to receive full immunization in Padangsidempuan City.

Table 3. Frequency Distribution of Complete Basic Immunization Service Utilization

Variables				Frequency (n)	Percentage (%)
Utilized Services	Complete	Basic	Immunization		
Utilized				95	37.3%
Did not utilize				160	62.7%



Cross-Tabulation Between Independent and Dependent Variables

The cross-tabulation analysis in this study examined two independent variables: maternal knowledge of immunization and husband's support. The analysis was conducted on 255 respondents in Padangsidempuan City. Each variable was analyzed using the Chi-square test and measured using the prevalence ratio (PR), 95% confidence interval (CI), and p-value. The results are presented as follows:

Table 4. Cross-Tabulation of Determinants of Complete Basic Immunization Service Utilization in Padangsidempuan City

Variables	Did not utilized		Utilized		<i>P</i>	PR	95% CI	
	N	%	N	%			Lower	Upper
Knowledge								
High	91	53.2	80	46.8	<0.001	11,875	4,495	31,375
Low	4	4.8	80	95.2				
Husband's Support								
High	93	97.6	77	2.4	<0.001	24,641	6,203	97,879
Low	2	2.4	83	97.6				



The analysis results showed that mothers with low knowledge of complete basic immunization were 11.87 times less likely to utilize complete basic immunization services compared to mothers with high knowledge ($p < 0.001$; PR = 11.875; 95% CI: 4.495–31.375). This indicates that understanding the benefits, schedule, and risks of immunization significantly influences mothers' behavior in seeking immunization services for their children.

Similarly, mothers with low husband support were 24.64 times less likely to utilize complete basic immunization services compared to mothers with high husband support ($p < 0.001$; PR = 24.641; 95% CI: 6.203–97.879). Emotional, logistical, and informational support from husbands significantly contribute to maternal participation in child immunization.

Discussion

The Relationship Between Maternal Knowledge and the Utilization of Complete Basic Immunization Services

Maternal knowledge about immunization was found to have a significant relationship with the utilization of complete basic immunization services in Padangsidempuan City. Based on the bivariate analysis, the results showed a statistically significant association ($p < 0.001$; PR = 11.875; 95% CI: 4.495–31.375). This means that mothers with low knowledge were 11.87 times more likely not to utilize complete basic immunization services compared to mothers with high knowledge. This finding suggests that limited understanding of immunization benefits, schedules, and potential side effects can act as a barrier in the decision-making process regarding the completion of child immunization.

These findings are consistent with research conducted by Machmud et al. (2022), which used data from the 2017 Indonesian Demographic and Health Survey. The study showed that mothers who regularly accessed health information through media were 2.41 times more likely to complete their children's immunizations than those who did not access media at all (aOR = 2.41; 95% CI: 1.64–3.53). Even mothers who occasionally accessed media had increased odds (aOR = 1.86; 95% CI: 1.12–3.08). This confirms that access to accurate information contributes to increased maternal knowledge and, consequently, more complete immunization coverage.

Another study by Solomon O. et al. (2023) in Ilorin East, Nigeria, also found that maternal knowledge was significantly associated with children's immunization status ($p = 0.001$). The study reported that mothers over the age of 30 (OR = 10.60; $p = 0.013$), those who attended antenatal care (OR = 8.50; $p < 0.001$), and those with at least a secondary education (OR = 3.98; $p < 0.001$) were more likely to understand the importance of immunization and ensure their children received complete immunizations. These findings reinforce the need for intensive educational efforts, both



through media and primary health services, to improve maternal knowledge and participation in immunization programs.

However, while maternal knowledge significantly affects immunization utilization in Padangsidempuan City, the local context reveals more complex dynamics. Some mothers with a background in health education still chose not to complete their child's immunizations due to personal reasons, such as previous negative experiences or perceptions that vaccines offer little benefit. This shows that immunization decisions are not solely based on knowledge but are also influenced by psychological and emotional factors.

Despite repeated counseling from health workers about mild, manageable side effects such as post-immunization fever, some mothers remain hesitant to proceed with certain vaccines they perceive as risky. Fear of fever or seizures remains a primary concern—even among mothers who theoretically understand the benefits of immunization. This suggests that vaccine hesitancy is often driven more by subjective risk perception and social experience than by a lack of information.

In the post-COVID-19 era, approaches to immunization education have shifted. Materials now emphasize not only vaccine schedules but also detailed explanations about vaccine composition and safety, addressing concerns amplified by pandemic-related misinformation. Thus, barriers to immunization are not limited to low knowledge but also involve trust in health services and social influences that shape maternal attitudes and decisions.

The Relationship Between Husband's Support and the Utilization of Complete Basic Immunization Services

Husband's support also showed a significant relationship with the utilization of complete basic immunization services in Padangsidempuan City. The analysis results ($p < 0.001$; PR = 24.641; 95% CI: 6.203–97.879) indicated that mothers who did not receive support from their husbands were 24.64 times more likely not to utilize immunization services compared to those who did receive such support.

These findings align with a study conducted by Soraya & Santosa (2021) at the Matsum City Community Health Center, which used a cross-sectional design and multiple logistic regression. The study found that husband's support was a key factor in achieving complete immunization for children under two years of age. Children whose fathers were actively involved were 4.135 times more likely to be fully immunized than those who lacked such support ($p = 0.006$). This underscores the importance of paternal involvement in health-related decision-making.

Field observations confirmed that husbands' support went beyond passive consent to active engagement. This included reminding wives about immunization schedules, accompanying them to health facilities, and seeking information about the benefits and potential side effects of



vaccines. In several cases, husbands with higher educational levels were associated with better adherence to immunization schedules. Emotional and logistical support from husbands provided mothers with a greater sense of confidence and security, contributing to timely and complete immunization.

During the data collection process, many mothers stated that their husbands played a key role in facilitating immunization. They not only offered verbal encouragement but also actively participated in ensuring that children received vaccinations. This active role had a direct impact on maternal behavior and motivation to complete immunization schedules.

Supporting evidence from Azubuike & Ardelt (2025) shows that paternal education is positively associated with children's immunization status. Children of highly educated fathers were 4.75 times more likely to be fully immunized compared to those whose fathers had no formal education (95% CI: 2.13–10.56). Conversely, children of fathers with only primary education or none at all tended to have lower immunization rates.

However, the study also identified barriers. Some mothers reported that their husbands expressed doubt or fear regarding vaccine side effects, particularly when fatigued after work. In many households, the husband acts as the primary authority figure. Therefore, if he expresses opposition or uncertainty, this often leads to the entire family avoiding immunization. This highlights the critical need to actively involve fathers in health education and immunization campaigns, especially in programs aimed at achieving complete basic immunization coverage.

Conclusion

Based on the research analyzing factors related to the utilization of complete basic immunization services in Padangsidempuan City, it can be concluded that maternal knowledge has a significant relationship with the level of service utilization. Furthermore, husband's support also plays a crucial role in encouraging mothers to complete their children's basic immunizations.



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