



## Mother's Compliance in Providing Basic Immunization for Infants Aged 0–12 Months

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### Abstract

Basic immunization is an important health intervention to prevent dangerous infectious diseases in infants. However, the coverage of basic immunization in Sungai Raya Village, Pinoh Utara Sub-District, Melawi Regency, West Kalimantan Province is still low, at only 67.8%, far below the national target of 95%. The low compliance of mothers in providing basic immunization is influenced by various internal and external factors. This study aims to explore mothers' experiences in complying with basic immunization for infants aged 0–12 months, as well as to identify the supporting and inhibiting factors of such compliance. This research used a qualitative method with a phenomenological approach. Informants were selected using purposive sampling, namely mothers who have infants aged 0–12 months and who reside in Sungai Raya Village. Data were collected through in-depth interviews using an interview guide, and were then analyzed thematically. The study revealed several main themes, namely: Mothers' Perceptions of Disease Risk and Immunization Benefits; Level of Compliance and Mothers' Experience in Immunization; Barriers in Fulfilling Basic Immunization; Supporting Factors for Mother's Compliance; and the Influence of Social Environment and Information. Compliance with basic immunization is influenced by a complex interaction between internal factors (knowledge, attitude, beliefs) and external factors (family support, access to health services, culture). Community-based interventions are needed to strengthen health education, improve service access, and involve community leaders to overcome cultural barriers.

### Introduction

A preliminary study conducted in Sungai Raya Village, Pinoh Utara District, Melawi Regency, involving direct interviews with 10 mothers, showed that most mothers are aware of the importance of immunization for their babies' health. They also acknowledged that immunization can help their babies grow healthily and prevent dangerous diseases. However, side effects of immunization, such as fever or allergic reactions, still make some mothers hesitant to proceed. Mothers' decisions to vaccinate their children are also influenced by social and cultural factors (Mendel-Van Alstyne et al., 2018; Luthy et al., 2009; Osa-eloka, 2009). One such culture, the Tolak Bala (ritual) ritual, is considered a way to protect themselves and their families from disease. People in this culture may not feel the need to vaccinate because they believe Tolak Bala is sufficient to protect their babies and families from disease. As a result, compliance rates are low.

Furthermore, mothers' decisions are influenced by their husbands, extended family, and their community. Some mothers reported that neighbors or community health post (Posyandu) cadres encouraged them to take their babies to health facilities frequently (Oktafia et al., 2023; Kusuma, 2022; Sultan, 2025). However, problems frequently cited by mothers included lack of access to health facilities, fear of side effects, and lack of information about the correct immunization schedule. The low compliance, as measured by basic immunization coverage in Sungai Raya Village, is influenced by various interrelated factors. The primary factor identified in a preliminary study was the absence of health workers (midwives), who were rarely present at the service location. This resulted in mothers who had visited the integrated health post (Posyandu) often having to return home without receiving immunizations for their children. This situation not only wasted mothers' time and energy but also reduced their motivation to return to the Posyandu at the next scheduled appointment (Nazri et al., 2015; Alfiyah & Vernicia, 2019).

Geographical factors also posed a significant obstacle in Sungai Raya Village. Difficult access to health facilities, especially for families living in remote areas, limited access to immunization services (Ali et al., 2024; Ekezie et al., 2022; Krokeide, 2022). Poor road conditions, particularly during the rainy season, and limited public transportation made it even more difficult for mothers to take their children to the nearest Posyandu or community health center. High transportation costs also placed an additional burden on families from low incomes.

Furthermore, low knowledge about immunization and a lack of support from family members also contributed to low immunization coverage. Several studies have shown that parents, especially mothers, often lack an adequate understanding of the importance of immunization. This situation is exacerbated by a lack of support from fathers or other family members, which impacts compliance with timely immunizations (Wawomeo et al., 2019; Falagas & Zarkadoulia, 2008; Olusanya et al., 2021).

Negative beliefs and perceptions of vaccines also play a significant role in lowering immunization coverage in Sungai Raya Village. In some communities, religious or cultural beliefs discourage parents from vaccinating their children, citing concerns that vaccine ingredients are not halal or have harmful side effects (Putri et al., 2022).

Communication between health workers and parents also significantly impacts immunization compliance (Trifunović et al., 2022; Hobani & Alhalal, 2022). Lack of reminders for immunization schedules and unclear information about the importance of vaccination have led to declining coverage rates. Studies show that reminders via telephone or text message (SMS) have proven effective in increasing immunization compliance, but implementation of this method remains suboptimal in many developing countries (Hasanah and Tampubolon, 2022).

Sungai Raya Village, located in North Pinoh District, Melawi Regency, is one of the areas with very low basic immunization coverage. According to a 2023 report from the Melawi Regency Health Office, complete basic immunization coverage in Sungai Raya Village only reached 67.8 percent. This figure is still far from the 95 percent target for Melawi Regency. This significant gap highlights the need for special attention and appropriate interventions to increase community participation in the basic immunization program in the region.

Based on the 2023 West Kalimantan Provincial Health Office Profile, infant healthcare coverage in 2022 for West Kalimantan Province was 85.3 percent. The district/city with the highest coverage was Landak Regency at 108.8 percent, followed by Mempawah Regency at 98.6 percent, and Sekadau Regency at 94.8 percent. The district/city with the lowest coverage was Singkawang City at 52.1 percent, and Melawi Regency was the third lowest at 81.7 percent.

West Kalimantan is one of the provinces with immunization coverage that still falls short of the national target. According to a 2023 BPS survey, West Kalimantan only achieved 53.78 percent of children aged 12-23 months who received complete basic immunizations. Of this coverage, 70.26 percent received the measles vaccine, 81.08 percent received the hepatitis B vaccine, 86.22 percent received the BCG vaccine, 82.64 percent received the DPT vaccine, and 83.87 percent received the polio vaccine. The data shows that many children in West Kalimantan still do not receive complete basic immunizations.

In Indonesia, the government's target for basic immunization coverage is 95 percent, but many regions still fall short of this figure. Based on a 2023 survey by the Central Statistics Agency (BPS), the percentage of children aged 12-32 months who received complete basic immunizations reached 61.09 percent in 2021, 63.17 percent in 2022, and 63.58 percent in 2023. These figures indicate the low overall coverage of basic immunizations in Indonesia.

Over the past five decades, immunization has become one of the most significant health interventions globally. According to a 2024 WHO report, an estimated 154 million lives, mostly infants, have been saved through immunization programs (Simas et al., 2021). Through immunization, infants are protected against 14 preventable diseases, including measles, polio, and diphtheria, which have collectively reduced infant mortality by 40 percent worldwide and by more than 50 percent in the African region (World Health Organization & World Bank Group, 2023).

However, despite these significant benefits, challenges in immunization coverage remain. In 2023, approximately 14.5 million children worldwide still had not received any vaccinations, known as "zero-dose children." Furthermore, highly contagious diseases such as measles remain a serious threat. In the same year, a record 22.2 million children did not receive their first dose of the measles vaccine, with global coverage reaching only 83 percent, far below the 2019 level of 86 percent. The World Health Organization (2008) noted that global immunity challenges have fueled increased measles outbreaks in many countries, underscoring the need for greater efforts to increase immunization coverage.

The Expanded Programme on Immunization (EPI), launched by the WHO in 1974, is one of the most important programs related to immunization. Before the launch of the EPI, less than 5% of infants had access to routine immunizations. Thanks to the implementation of this program, by 2023, global coverage for the DTP (diphtheria, tetanus, pertussis) vaccine reached 84% (World Health Organization, 2024). Furthermore, the WHO, along with countries around the world, launched the Immunization Agenda 2030 (WHO, 2023), an initiative aimed at ensuring that everyone can fully benefit from immunization programs.

According to Regulation of the Minister of Health of the Republic of Indonesia Number 12 of 2017 concerning Immunization, immunization is defined as "an effort to actively induce or increase a person's immunity against a disease so that if they are exposed to the disease, they will not become ill or will only experience a mild illness." Basic immunization is one of the most effective primary prevention efforts in protecting children from various potentially fatal infectious diseases.

Maternal compliance in the context of basic immunization refers to the extent to which a mother follows the vaccination schedule prescribed for her child according to the recommendations of health workers (Konwea et al., 2018; Kassahun et al., 2015). This compliance includes the mother's awareness of the importance of immunization, readiness to take her child to a health facility on time, and consistency in completing the entire series of basic immunizations. Maternal compliance is crucial because its success not only affects the health of individual children but also impacts the overall immunization coverage of the community, which contributes to the formation of herd immunity.

Based on this situation, this study will focus on two main objectives: describing maternal compliance with basic immunizations and identifying internal and external factors that support or hinder maternal compliance with basic infant immunizations in Sungai Raya Village, Pinoh Utara District, Melawi Regency. To achieve these objectives, this study will employ a strong theoretical approach by adopting the Health Belief Model (HBM) theory (Brooks et al., 2022). This theory is expected to strengthen the findings and provide a comprehensive overview of the factors influencing maternal compliance with basic immunizations.

## Methods

This study used a qualitative method with a phenomenological approach (Sugiyono, 2013). This phenomenological study specifically aimed to identify and explore maternal compliance experiences with basic infant immunizations. This study will describe the phenomenon and identify internal and external factors that support or hinder maternal compliance with basic infant immunizations.

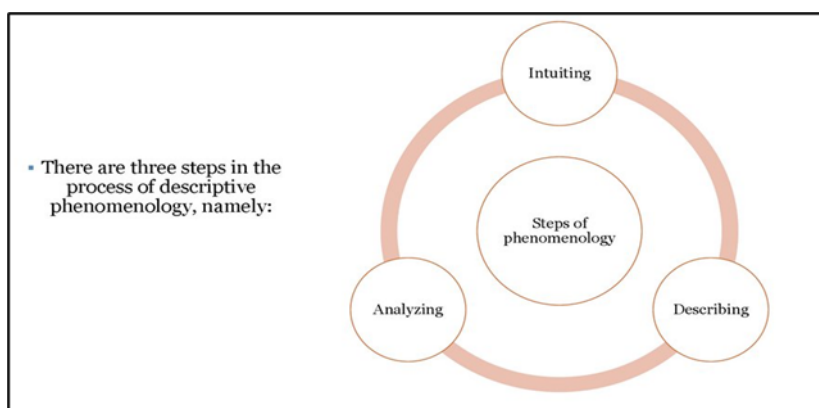


Figure 1. Skema Phenomenology Research

This research was conducted in Sungai Raya Village, Pinoh Utara District, Melawi Regency. The research will be conducted in June 2025. Qualitative research does not use the term population, but rather Spradley calls it a "social situation," consisting of three elements: place, actors, and activities that interact synergistically (Sugiyono, 2020). Informants or respondents in qualitative studies are called participants. The number of participants in qualitative research cannot be precisely planned because one of the goals is to obtain as much varied data as possible. Informant selection ends when repetition occurs or when the information obtained is saturated (Moleong, 2017).

The selection of participants in this study used a purposive sampling technique, where data sources are sampled with certain considerations (Creswell, 2018), based on predetermined objectives or criteria, with planning deemed appropriate to the research objectives. This study used a purposive sampling technique, where samples are selected based on specific criteria relevant to the research. The sample criteria included: (1) Mothers with infants aged 0-12 months; (2) Mothers who have undergone or are currently undergoing a basic immunization program for their babies; (3) Mothers who are willing to be interviewed in-depth; (4) Mothers residing in Sungai Raya Village, Pinoh Utara District, Melawi Regency.

Sungai Raya Village has approximately 30 mothers with toddlers aged 0-12 months, and to obtain participants for this study, the recruitment process will begin with a purposive sampling approach. First, researchers will conduct outreach within the village to explain the purpose of the study and the importance of mothers' participation in providing valuable information. Next, researchers will identify mothers willing to participate, taking into account variations in their educational background, immunization experience, and the age of their babies. From the total of 30 mothers, researchers will select approximately 8-15 mothers who represent these characteristics to be interviewed in-depth. The interviews will be conducted in a comfortable

setting for the participants, so they feel safe sharing their experiences and perspectives. During the recruitment process, researchers will also ensure that all participants understand the purpose of the study and provide written consent before participating. With this approach, it is hoped that rich and comprehensive data will be obtained regarding mothers' compliance with basic immunization.

### **Research Instruments**

The researcher is the key instrument in this qualitative research. The researcher collects data by observing behavior and conducting in-depth interviews with participants. The in-depth interviews will be conducted using an interview guide designed by the researcher, using open-ended questions. The mother's experience in fulfilling basic immunizations for infants, which will be explored in the in-depth interviews, is related to the mother's experience in fulfilling basic immunizations for infants.

### **Method of Collecting Data**

Data for this study were collected through two primary methods: in-depth interviews and field observations. In-depth interviews were conducted directly with each respondent using a pre-developed questionnaire. These interviews were conducted face-to-face and recorded with the respondents' consent to ensure that all information provided was documented in detail and accurately. This method was designed to explore mothers' experiences, perspectives, and factors influencing their infants' compliance with basic immunizations. Field observations were also conducted to understand the social and environmental context in which mothers received immunizations. These observations included direct observation of mothers' interactions with health workers, access to health facilities, and potential obstacles encountered in the field. Through these observations, researchers were able to obtain more in-depth contextual data, which may not always be presented in interviews but are crucial for understanding the realities mothers face in meeting their immunization schedules.

### **Data Analysis**

Data analysis in this study was conducted descriptively, referring to the opinions of Sugiyono (2020; 2023) and Miles & Huberman. Data analysis is understood as a systematic process for organizing, grouping, reducing, and presenting data to obtain easily understood conclusions. Analysis activities were carried out interactively and continuously through the stages of data collection (observation, in-depth interviews, and documentation), data reduction to summarize and focus on important things, data presentation in narrative form, and drawing conclusions that yield new findings. Furthermore, this study also used the Colaizzi method in qualitative data analysis, which consists of seven steps. Interview and observation data were transcribed verbatim, read repeatedly to understand participants' experiences, then identified significant statements, analyzed for meaning, and categorized into key themes based on the Health Belief Model (HBM) and the Theory of Planned Behavior (TPB). Emerging themes included perceived risks, benefits, barriers, social norms, and perceived behavioral control. The results of the analysis were then summarized into a comprehensive description of mothers' experiences regarding basic infant immunization, which was then validated through member checking to increase the credibility and validity of the research findings.

### **Research Ethics**

This research will receive approval from the research ethics committee at the relevant university or institution. In principle, there are four principles that must be adhered to when conducting research:

### ***Respect for Human Dignity***

This research, in its implementation, took into account the rights of respondents. Respondents were first given an explanation regarding the research objectives, procedures, and benefits. The researcher respected respondents' decisions and gave them autonomy in whether to provide information. Before respondents completed the questionnaire, a nurse provided informed consent and an explanation of the research objectives. Participants were then given the freedom to choose whether or not to participate.

### ***Respect for Privacy and Confidentiality***

Researchers maintain the confidentiality of information related to the identities of the subjects in the study. Respondents' names in this study are written in initials to protect their privacy. Audio recordings of the interviews will be used only for analysis and the preparation of the research report, so participants need not worry about confidential and personal data being disclosed.

### ***Respect for Justice and Inclusiveness***

The researchers upheld the principles of openness, honesty, and prudence in conducting the research. Respondents were fully informed about the research procedures. All respondents received the same intervention regardless of gender, religion, ethnicity, or race. Potential respondents were not coerced by the researchers.

### ***Balancing Harms and Benefits***

Researchers adhere to the principle of providing benefits and goodness, with the aim of minimizing any consequences that could harm respondents. Researchers optimize benefits that can still be carried out by respondents after the research is completed. To prevent potential losses for respondents related to data leaks, researchers maintain the confidentiality of respondent data so that they do not need to worry about confidential and personal data being discovered by others..

## **Result and Discussion**

### **Mothers' Perceptions of Disease Risks and Benefits of Immunization**

Mothers' perceptions of the risks of preventable diseases through immunization, as well as their understanding and beliefs about the benefits of basic immunization for infants aged 0–12 months. Interviews with several participants (P1–P9) revealed that although the majority of mothers demonstrated awareness of the importance of immunization, their level of understanding and beliefs about the benefits and preventable risks varied.

#### ***Mothers' Knowledge Level about Preventable Diseases***

The majority of mothers have basic knowledge about diseases that can be prevented by immunization, but not all are able to specifically name the types of diseases or immunizations. Generally, they know that immunizations can prevent serious diseases such as polio, measles, and diphtheria. Fear of these diseases is quite high due to the perception that they can cause disability or death.

As one participant stated:

*(P1) "I'm afraid my child will get a disease like polio, which can cause paralysis, Ma'am."*

This statement illustrates that mothers do have knowledge about disease risks, although it tends to be limited and based on fear. The response from the participant (P1) highlights a significant aspect of mothers' knowledge regarding immunization: while they have an awareness of the risks associated with preventable diseases, their understanding tends to be driven by fear rather

than a comprehensive knowledge of the specific diseases and vaccines. This limited knowledge may stem from various factors, including a general understanding of the importance of immunization but not necessarily an in-depth awareness of which diseases are targeted by specific vaccines.

Mothers often perceive diseases like polio, measles, and diphtheria as severe and life-threatening, which aligns with the high levels of fear expressed. However, the fear-driven understanding may also contribute to misconceptions or confusion about the range of diseases that immunization can prevent. For instance, while many are aware that polio can lead to paralysis, they may not be able to name other diseases like pertussis or hepatitis that are also preventable through immunization. This underscores the need for more targeted health education campaigns that go beyond simply highlighting the severity of diseases, to providing clear, specific, and accessible information about the diseases covered by vaccines and the role of immunization in protecting children from these risks.

Furthermore, the limited scope of knowledge may also influence decision-making regarding vaccination schedules or reluctance toward certain vaccines. When fear is the primary driver of health behavior, there is potential for misinformation or reluctance to seek further information, which can undermine efforts to achieve full immunization coverage. Therefore, addressing both the knowledge gaps and the emotional perceptions surrounding immunization could improve vaccine uptake and better protect children from preventable diseases.

This is also supported by P6, who stated:

*(P6) "I see it as very serious, Ma'am. Many diseases like polio, hepatitis, and measles can actually be prevented by immunization."*

However, not all mothers could accurately describe the disease. Most only remembered it as "a serious illness" or "one that causes paralysis." The statement from participant (P6) reflects a common theme among many mothers: while they recognize the seriousness of diseases like polio, hepatitis, and measles, their understanding tends to be generalized and often lacks specific details about each disease. This indicates that mothers are aware of the gravity of preventable diseases, but their knowledge is often based on broad concepts or societal perceptions rather than a thorough understanding of the diseases' symptoms, long-term effects, or the specific vaccines that can prevent them.

For instance, while many mothers identify polio as a disease that causes paralysis, they may not have clear knowledge about the other symptoms or the importance of the vaccine in preventing lifelong disability. Similarly, the reference to hepatitis as a "serious illness" highlights an awareness of its severity but does not provide an understanding of its transmission or potential liver complications. This gap in knowledge is not uncommon and may be influenced by limited access to detailed health education or a lack of emphasis on the specific benefits of vaccination during public health campaigns.

The general perception of these diseases as "serious" or "paralyzing" can be useful in motivating some mothers to seek vaccination, but it also underscores the need for more specific, targeted information that explains the full range of preventable diseases and the benefits of immunization. Improving awareness by providing clear, detailed information about how vaccines work, their safety, and their role in preventing not only severe but also more common illnesses can enhance mothers' ability to make informed decisions about vaccinating their children.

### ***Perception of the Benefits of Immunization***

Almost all mothers stated that immunization is beneficial, but their understanding of these benefits focused more on general statements such as "so the child doesn't get sick easily" or "so they stay healthy." This is evident in the following statements:

(P1) *"Immunizations keep children from getting sick easily."*

(P3) *"So that children don't get sick easily, Mom."*

Words like "not getting sick easily," "to be strong," and "to be healthy" are common phrases, indicating that mothers' perceptions are still simplistic and not based on scientific understanding. However, some mothers, like P6, have demonstrated a better understanding:

(P6) *"Immunization increases children's immunity against dangerous infectious diseases."*

However, perceptions of immunization are also influenced by negative public stories, particularly regarding side effects such as fever. Some mothers become hesitant after hearing these stories, but still trust health workers:

(P9) *"Yes, so that your child doesn't get sick easily, ma'am. If you have been immunized, your body will become stronger."*

This indicates that educational interventions from health workers are very important to strengthen mothers' positive perceptions of the benefits of immunization. The statement from participant (P9) reflects a positive perception of immunization, linking it to the idea of strengthening the child's immune system and preventing illness. This perception highlights the importance of health education and the role of health workers in shaping mothers' understanding of the benefits of immunization. The participant's response suggests that the message of immunization as a means of boosting immunity and protecting children from diseases is effective in fostering a positive attitude toward vaccines.

This view is consistent with research showing that well-informed mothers are more likely to ensure their children receive vaccinations. When health workers provide clear, accessible, and supportive information about how vaccines work to enhance immunity and prevent sickness, they can effectively counter any misconceptions or fears that may exist. The positive reinforcement of the immune-strengthening benefits of vaccination can help shift the focus from fear-based reasoning to a more informed, protective approach.

Therefore, this response underscores the critical role of health workers in delivering educational interventions that not only increase awareness but also build trust in the vaccination process. Strengthening the perception of immunization as an empowering tool for protecting children's health is essential in increasing vaccination rates and improving overall public health outcomes. By continuing to promote such messages, health workers can play a pivotal role in encouraging vaccination and dispelling myths about its safety and effectiveness.

## **Mothers' Compliance and Experience with Immunization**

### ***Compliance with the Immunization Schedule***

In-depth interviews with participants revealed that most mothers had a basic understanding of the importance of immunization, but their level of compliance with the immunization schedule varied. Some mothers demonstrated a strong commitment to following the immunization schedule on time, as expressed by P2:

(P2) *"I know there's a schedule, but I often forget, Ma'am. I have to go to the fields early in the morning, so I often miss it."*

Reminders also influenced compliance. Mothers who didn't receive information from cadres or weren't members of the integrated health post (Posyandu) WhatsApp group tended to forget the schedule. As P7 stated:

(P7) *"I'm not sure, Ma'am. I often forget. If no one reminds me, I don't think about it."*

*Compliance was also influenced by psychological and social factors, such as fear of side effects (fever) and family members who were against immunization. P3 stated:*

*(P3) "I know immunization is important, but my mother-in-law says not to, she says it gives the child a high fever."*

Some mothers stated that they were aware of the benefits of immunization but remained apprehensive due to previous experiences. P4, for example, experienced trauma because her child had a high fever after immunization:

*(P4) "My child was so hot that he was shivering, Ma'am. He didn't sleep all night, I was confused."*

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### ***How to Handle When Your Child is Sick, Vaccine is Out of Date, or Schedule Conflicts***

The majority of mothers choose to delay immunization when their child is sick. They wait until their child is healthy before returning to the integrated health post (posyandu). This was conveyed by P1:

*(P1) "I wait until my child is healthy, Ma'am, then I take him to the posyandu."*

This delay often leads to delays, especially when accompanied by forgetfulness or a lack of reminders. Furthermore, mothers also experience situations where the vaccine is out of stock, which leads to delays. As P9 explained:

*(P9) "I want to be on time, Ma'am, but sometimes the vaccine is out of stock, so it's late."*

Several mothers stated that they received information to return when the vaccine is available. P6 said:

*(P6) "Yes, the staff told me when to come again."*

Schedule conflicts with work also affect compliance. Mothers who work or have heavy activities at home feel exhausted and don't have time to take their children. P4 said:

*(P4) "I have, Ma'am. After a hard day's work, taking the child for a walk is tiring."*

However, a strong motivation to continue immunization stems from an understanding of the long-term benefits and a supportive community. P9 said:

*(P9) "My child, ma'am. I want him to grow up healthy."*

The statement from participant (P9) reveals that a key motivator for continued immunization is the desire to ensure long-term health for their children. This reflects a fundamental understanding among some mothers that immunization is not just a one-time intervention, but a preventive measure that contributes to their child's overall well-being and development. The emphasis on wanting the child to "grow up healthy" suggests that the motivation to vaccinate extends beyond short-term concerns about disease prevention to a broader, long-term goal of maintaining health and protecting the child from future health risks.

This understanding aligns with research showing that when parents grasp the long-term benefits of immunization, such as preventing chronic diseases, hospitalizations, and even death, they are more likely to adhere to vaccination schedules. In addition, this desire for long-term health benefits can be further reinforced by a supportive community. When parents are surrounded by others who share similar values about the importance of immunization, they may feel more confident in their decision to vaccinate and be less susceptible to negative influences or misinformation.

Therefore, the role of community support is crucial in fostering sustained motivation for immunization. Educational initiatives that highlight both immediate and long-term benefits, combined with social reinforcement from family, friends, and peers, can strengthen mothers' commitment to ensuring their children receive timely and complete immunizations.

### **Obstacles in Fulfilling Basic Immunization**

This study found that mothers experienced three main barriers to meeting basic immunization requirements for infants aged 0–12 months: time constraints, social constraints, and logistical constraints. Each barrier has different root causes and impacts, depending on the respondents' socioeconomic status and family environment.

#### ***Time Barriers (Work, Fatigue)***

Several respondents stated that time constraints were a major obstacle to meeting immunization schedules. Posyandu (Integrated Health Post) services overlapped with daily activities such as working in the fields or teaching, often preventing mothers from taking their children for immunizations.

As stated by P2:

*(P2) "Time, Ma'am. I often have to work in the fields early in the morning. Posyandu (Integrated Health Post) schedules are also early in the morning, so sometimes I don't have time to go."*

A similar sentiment was expressed by P6, a teacher:

*(P6) "Time, Ma'am. Posyandu schedules often clash with my teaching hours."*

Not only work, but exhaustion after doing housework also becomes a hindrance. As stated by P1:

*(P1) "Dawn is late, and I come home late after cleaning the house, washing, and cooking. So if the Posyandu schedule is early in the morning, sometimes I don't feel like going out."*

Despite this, most mothers still try to find time to take their children for immunizations. This demonstrates a strong commitment and concern for their children's health, even though external circumstances often hinder them. The statement from participant (P1) illustrates a common challenge faced by many mothers: the exhaustion from fulfilling household responsibilities, such as cleaning, washing, and cooking, which can interfere with their ability to attend scheduled health services like immunization appointments. The reference to "dawn being late"

and "coming home late" highlights the demanding nature of housework, which, in turn, can cause fatigue and make it difficult for mothers to prioritize or find the energy to take their children to the Posyandu (integrated health post) for immunization, especially when appointments are early in the morning.

However, despite these challenges, the majority of mothers still make an effort to ensure their children receive immunizations, which reflects a strong sense of commitment and concern for their children's health. This indicates that, while external factors such as time constraints and physical exhaustion pose significant barriers, the perceived importance of immunization and the desire to protect their children's health motivate mothers to overcome these obstacles.

This pattern is consistent with findings in public health research, which suggest that mothers are highly motivated to ensure their children are immunized, even in the face of practical difficulties. The commitment to children's health often transcends other daily responsibilities, underscoring the critical role that education, support, and flexible scheduling can play in making immunization more accessible to families. Acknowledging these practical barriers and addressing them through strategies such as offering more convenient times for immunization or providing support for mothers can help improve immunization rates and alleviate the burden on families.

### ***Social Barriers (Husband)***

Some mothers face social pressure from their families, especially their husbands or in-laws, who do not support immunization. This resistance is usually based on concerns about side effects of immunization, such as fever or seizures.

As expressed by P8:

*(P8) "I know, Ma'am, immunizations are important. But I can't just take my child for immunizations. I have to ask my husband first."*

This refusal generally stems from negative experiences or stories from the surrounding environment. Ignorance or lack of education are the main triggers for this social barrier.

### ***Logistical Obstacles (Out of Vaccine, Forgotten Schedule)***

Logistical issues are also a frequent obstacle for mothers in Sungai Raya Village. Out-of-stock vaccines, unannounced schedule changes, and forgetting immunization schedules are all real-life examples of these obstacles.

P1 explained:

*(P1) "When I was going to get my child immunized, they said the vaccine was empty... more than once, ma'am, that's why my child's immunization was late."*

P9 also shared a similar sentiment:

*(P9) "When my child was scheduled for the injection, they said the vaccine was empty, ma'am."*

Forgetting the schedule is also common, as expressed by P7:

*(P7) "I'm not sure, ma'am. I often forget. If no one reminds me, I don't think about it."*

This demonstrates the importance of a schedule reminder system and guaranteed vaccine availability as concrete measures to improve compliance with basic immunizations. Barriers to meeting basic immunization requirements are not isolated but often overlap. A mother may face both time and logistical constraints, or experience social pressure that makes her hesitant to take her child to a community health post (Posyandu). Therefore, comprehensive interventions are needed, including education, family support, and improvements to the health care system.

## **Factors Supporting Maternal Compliance**

Maternal compliance in bringing her child for immunization is influenced by various supporting factors. Based on interviews with participants, it was found that compliance is significantly influenced by support from those closest to her, particularly husbands, family, and health workers, as well as by easy access to free immunization services provided by the government.

### ***Support from Husband, Family, and Health Workers***

Most participants stated that they received support from their husbands and family in immunizing their children. This support came not only from encouragement but also from accompanying them during immunizations. This strengthened mothers' commitment to remain compliant with their children's immunizations.

As one participant stated:

*(P5) "My husband also said immunizations are important."*

This statement demonstrates that a husband's direct involvement can increase mothers' compliance with their children's immunization schedules. In addition to husbands, extended families also play a role in encouraging mothers to adhere to immunization schedules. Health workers also play a role in actively providing education and reminders about the immunization schedule.

*(P2) "The cadres often inform us about the schedule."*

Responsive and informative health workers create a conducive environment for mothers to adhere to the immunization schedule. The information provided by the workers often influences mothers' decisions about immunizations. Based on the interview excerpt (P2) "The cadres often inform us about the schedule," it is evident that the role of health workers, particularly community health workers (or cadres), plays a significant part in influencing the decision-making process of mothers regarding immunizations. Responsive and informative health workers create a supportive and trustworthy environment, which encourages mothers to adhere to vaccination schedules. This is in line with previous studies that emphasize the importance of community health workers in delivering timely and accurate information about immunization schedules.

According to research by Ngcobo et al. (2022), community-based health workers serve as vital intermediaries in healthcare delivery, particularly in resource-limited settings. Their ability to provide accurate information, address concerns, and remind mothers of vaccination appointments significantly improves vaccination coverage. In a similar vein, studies by Sanou et al. (2009) found that regular reminders and education from health workers significantly increased the likelihood of mothers bringing their children for immunizations, especially when this information is provided in a culturally sensitive and accessible manner. Additionally, the quality of communication between health workers and mothers has been shown to foster trust and motivate adherence to health protocols. As highlighted by Lo Moro et al. (2023), frequent and consistent communication from health workers leads to increased awareness and acceptance of immunization programs, thereby reducing vaccine hesitancy. Thus, the findings from the interview with P2 align with existing literature, reinforcing the critical role of community health workers in facilitating immunization uptake by ensuring that mothers are well-informed, reminded of vaccination schedules, and feel supported throughout the process.

### ***Easy Access and Free Government Immunization Program***

Another factor that significantly supports maternal compliance is the availability of free immunization services through government programs. Affordable costs, even without fees, serve as an additional motivation for mothers to take their children to health facilities.

*(P3) "Immunizations are free here, so I regularly take my child to the Integrated Health Post (Posyandu). It's not far to walk."*

Easy access to health facilities, such as Posyandu or Community Health Centers (Puskesmas), also makes it easier for mothers to access immunization services. There are no high transportation costs, and the short travel time to the service location makes it easier for mothers to delay immunizations.

*(P6) "It's close, Ma'am. It's just a short walk. So access isn't a problem. Time is the only constraint."*

From the quote above, it's clear that geographic and economic accessibility significantly influence mothers' decisions to take their children to immunization sites. The quote from P6, "It's close, Ma'am. It's just a short walk. So access isn't a problem. Time is the only constraint," highlights the importance of geographic accessibility in the decision-making process of mothers regarding immunization. While the proximity of immunization centers may reduce barriers to access, time constraints emerge as a significant obstacle. This finding underscores the complexity of factors influencing immunization uptake, where physical accessibility might not be the only consideration.

Research by Johns et al. (2022) confirms that proximity to healthcare services is a key determinant in improving vaccine coverage. Studies show that when immunization centers are located within walking distance or are easily accessible, mothers are more likely to attend vaccination appointments. Geographic accessibility is often cited as one of the main facilitators of health service utilization, particularly in rural and underserved areas where transportation costs and travel time can be prohibitive (Arcury et al., 2005).

However, as indicated by P6, the issue of time becomes a significant constraint. A study by Zewdie et al. (2016) highlighted that even when healthcare facilities are easily accessible, working mothers or those with busy household responsibilities may struggle to find the time to attend scheduled immunization appointments. This aligns with research by World Health Organization (2020), which suggests that flexible appointment scheduling or alternative immunization delivery models (such as mobile vaccination units or weekend clinics) could be effective in overcoming the time barrier. Thus, while geographic accessibility plays an essential role in facilitating access to immunization services, addressing time-related constraints such as offering flexible scheduling or reducing wait times could further improve vaccine coverage, as emphasized by both P6's statement and previous studies.

### **Influence of Social and Information Environment**

The social environment and information flow play a crucial role in shaping individual decisions, including regarding vaccination. This study found that negative stories about vaccine side effects, along with information dissemination channels such as social media, WhatsApp groups, and interventions from health workers, significantly influence people's attitudes and actions.

#### ***Negative Stories about Side Effects***

Negative stories about vaccine side effects are widespread and are a dominant factor contributing to hesitancy or refusal to vaccinate. These stories typically circulate by word of mouth or through digital media and are often not supported by clear medical evidence. Nevertheless, their influence on public psychology is significant.

As stated by participants:

*(P1) "The neighbors, ma'am. Some of them said their children had high fevers after immunizations, so they're afraid to get the next one."*

*(P2) "My family is fine, ma'am. But some of the neighbors said the immunizations gave their children fevers."*

Stories like these create excessive worry and fear, especially among people with limited access to reliable medical information. In this context, risk perceptions are shaped more by informal narratives than by scientific facts. The statements from P1 and P2, where participants mention that their neighbors' children experienced high fevers after immunization, illustrate how informal narratives can create fear and influence decision-making regarding vaccinations. In both instances, the participants refer to the negative experiences of others, which in turn heightens concern and fear about immunization, particularly when reliable medical information is limited. This highlights a common challenge in health communication: individuals' perceptions of health risks are often influenced more by anecdotal stories from their social networks than by scientific data.

Research by Peretti-Watel et al. (2019) indicates that vaccine hesitancy can be strongly influenced by social networks, with people often relying on the experiences of family members, friends, and neighbors when making health decisions. This phenomenon, known as social amplification of risk, suggests that informal narratives can significantly impact public perceptions of health risks, even when the scientific evidence supporting vaccines is clear. Similar findings by Nuwarda et al. (2019) show that misinformation or exaggerated stories about vaccine side effects such as fever or pain often spread more rapidly within communities, leading to heightened fear and, in some cases, vaccine refusal.

Moreover, the role of trust and access to reliable medical information is crucial in mitigating these fears. According to Pulido et al. (2020), a lack of access to credible, science-based health information can lead to the proliferation of myths and misconceptions about vaccines. This underscores the importance of effective health communication strategies that provide accurate, clear, and evidence-based information about the safety and benefits of immunization. Health campaigns that address common concerns, such as fever following vaccination, and provide reassurance based on scientific facts can help reduce vaccine hesitancy.

Therefore, as reflected in the experiences shared by P1 and P2, the influence of informal narratives often shared within local communities can exacerbate fears and impact vaccination uptake. This emphasizes the need for targeted interventions that engage community members, provide accurate health information, and counteract misinformation. Addressing these concerns directly within communities can help shift perceptions and increase trust in vaccines.

### ***The Role of Social Media, WhatsApp Groups, and Health Cadres***

Social media and WhatsApp groups have become primary channels for the dissemination of information, both true and false. Information about vaccines is often unverified and widely shared, creating confusion within the community. Several participants stated that they received information about vaccines from WhatsApp groups or Facebook rather than from health workers.

*(P6) "On social media like TikTok and Instagram, many doctors explain the importance of complete immunizations. I often watch them."*

*(P9) "Cadres also provide information via WhatsApp."*

However, on the other hand, the presence of health cadres also has a positive impact. Those who receive direct explanations from cadres or health workers tend to be calmer and more willing to participate in vaccinations.

*(P2) "The cadres often tell us the schedule too..."*

*(P3) "Usually from the KIA book or from the cadre's mother when we meet..."*

It can be concluded that social media and online chat groups have a dual role: they can spread negative information, but they can also be used as educational tools if managed properly. The presence of health cadres who provide information directly and personally is key to neutralizing misinformation circulating in the community. The statements from P2 and P3, which highlight how information about immunization schedules is disseminated through both health cadres and KIA books, point to the importance of direct, personal communication in ensuring that mothers receive accurate health information. The fact that health cadres play a key role in informing community members about vaccination schedules suggests that face-to-face interactions remain crucial in overcoming potential misinformation. However, the growing role of social media and online chat groups also emerges as a double-edged sword, as it can facilitate the spread of both misinformation and helpful, educational content.

Research by Mheidly & Fares (2020) indicates that social media platforms, while often used for spreading rumors and misinformation about vaccines, can also be powerful tools for public health communication when managed properly. When used to disseminate verified information, social media has the potential to reach a broader audience, including those who may not have easy access to traditional healthcare services. According to Johnson (2024), health professionals and community health workers who are well-versed in digital communication can use these platforms to counter misinformation, share evidence-based vaccine information, and engage with the public in real-time.

However, the presence of health cadres, as noted by P2 and P3, remains an essential mechanism in addressing misinformation, particularly in communities with limited access to reliable sources of health information. A study by So et al. (2021) supports this, finding that personal communication, such as face-to-face meetings with trusted individuals (e.g., health cadres), significantly improves the credibility of the information being shared and increases vaccine uptake. Health cadres not only offer personalized support but also serve as community leaders who can address concerns, correct misconceptions, and provide reassurance about immunization.

Thus, while social media and online platforms present opportunities for spreading both positive and negative information, the role of health cadres remains vital in counteracting misinformation and providing a trusted source of accurate, reliable health information. The complementary use of both online and offline channels social media for broad outreach and health cadres for personalized communication can help improve vaccination rates and ensure that the community receives consistent, trustworthy information.

## **Discussion**

### **Mothers' Perceptions of Disease Risks and the Benefits of Immunization**

Interview results showed that the majority of mothers were aware of the importance of immunization, although their understanding of preventable diseases and their benefits varied. Many mothers mentioned diseases such as polio, measles, and diphtheria as dangerous but preventable diseases, but few were able to specifically explain the protective mechanisms of immunization. Perceptions of benefits were generally expressed in simple terms, such as "so that children don't get sick easily" or "so they stay healthy." Some mothers were also influenced by negative stories from the community, yet they still trusted health workers. Some mothers formed their perceptions of their children's vulnerability to disease from stories they heard in their social environment. They often obtained information about cases of diseases such as polio and measles from neighbors or other people around them, rather than from health workers. These stories raised concerns, even though these mothers did not always attend official counseling sessions at the integrated health post (Posyandu).

This fear motivated some mothers to continue taking their children for immunizations. However, because it did not come from official sources, the information they received was

sometimes incomplete or inaccurate. According to the Health Belief Model (HBM), risk perception (perceived susceptibility and perceived severity) and perceived benefits play a significant role in shaping health behavior. Mothers who perceive their children as vulnerable to serious diseases are more likely to be immunized, especially if they believe immunization is effective in preventing the disease. However, perceived barriers, such as fear of side effects, can reduce intention, even if the benefits are recognized. The HBM explains that health decisions are influenced by individual perceptions of the risks and benefits of immunization.

Researchers argue that although the majority of mothers recognize the importance of immunization, their understanding still needs to be improved through more contextual and evidence-based education. Counseling should not only explain the general benefits of immunization but also provide knowledge about the types of diseases that can be prevented and the mechanisms of vaccine action. Overcoming barriers in the form of negative stories in the community can be done through campaigns involving local figures and health cadres, thereby strengthening positive perceptions. Researchers believe that mothers' perceptions are strongly influenced by social and emotional experiences. Therefore, strengthening education must be carried out not only through health workers but also through social narratives in the surrounding environment so that perceptions of risks and benefits are formed more positively and scientifically.

### **Mothers' Compliance Level and Experience in Immunization**

Most mothers understand the importance of immunization, but adherence to the schedule varies. Factors influencing this include forgetting the schedule, lack of reminders from health workers, fear of side effects, and family opposition to immunization. Mothers whose children have had a fever after immunization tend to hesitate or delay. Situations such as a sick child, a missed vaccine, or scheduling conflicts with work can contribute to delays. Nevertheless, the drive to protect their children's health drives some mothers to complete immunizations. Most mothers compliantly take their children to the integrated health post (Posyandu) even if it means leaving their household chores. They are motivated by wanting their children to be healthy. Previous experiences, such as their first child growing up healthy after immunization, strengthen mothers' confidence in immunization.

The Health Belief Model theory explains that health behavior is influenced by perceived benefits, barriers, and cues to action. Factors such as reminders from health workers or text messages serve as cues to action that can increase compliance. Furthermore, the Theory of Planned Behavior (TPB) emphasizes the importance of subjective norms and perceived behavioral control. In this context, family support and the availability of facilities are crucial determinants. Mothers' experiences in complying with basic immunizations can be interpreted through the Health Belief Model (HBM) framework, which places individual subjective perceptions as the starting point for health decision-making.

In this context, mothers' experiences demonstrate that the decision to immunize a child is not a purely technical or mechanical act, but rather a reflection of the construction of meaning formed through social interactions, personal experiences, and access to information. When a mother expresses fear of a disease like polio based on stories from neighbors, this experience reflects the formation of perceived susceptibility, namely an awareness of the potential risks facing her child, even though it is sometimes not based on valid medical information. This means that vulnerability is perceived socially and emotionally, not solely based on epidemiological data. Furthermore, when a mother expresses her belief that immunization makes her child "less likely to get sick" or "stronger," this experience represents the perceived benefits dimension.

Researchers argue that increasing compliance can be achieved through effective reminder strategies, such as repeated announcements via WhatsApp groups and home visits by cadres.

Good vaccine stock management is also necessary to avoid disappointment among mothers when they visit the integrated health post (posyandu). Education about normal side effects and how to manage them will help reduce the fear that leads to delays. Researchers argue that maternal compliance develops gradually and is empirically emotional. Positive experiences need to be incorporated into health promotion so that other mothers experience social confirmation that encourages compliance.

### **Obstacles in Fulfilling Basic Immunization**

The barriers identified included time constraints (conflicting with work or fatigue), social barriers (depending on husbands), and logistical barriers (out-of-date vaccines, changing schedules, forgetting schedules). Some mothers reported being tired after housework; others forgot schedules if not reminded by cadres. Fear of post-immunization fever made them hesitant. These barriers often overlapped and significantly impacted maternal compliance. Some mothers had to delay immunization due to work priorities or family regulations. This study's findings support theory and previous findings that barriers are not only physical, but also social and psychological. Time constraints are often experienced in rural areas where integrated health post (Posyandu) schedules coincide with community work hours. Social barriers stemming from husbands or families demonstrate the need for comprehensive family education, not just for mothers. Logistical barriers, such as out-of-date vaccines, indicate the need for improvements to the vaccine distribution system. These barriers are both psychological and practical. Forgetting schedules indicates a lack of a self-registration system. Fear of side effects indicates the need for more empathetic risk communication.

Lack of knowledge makes mothers rely on the memories of others. Researchers believe that solutions must be comprehensive, including adjusting integrated health post (Posyandu) schedules to avoid conflicts with work hours, involving husbands and families in outreach, and strengthening the vaccine stock information system. The use of technology-based reminders and home visits by cadres can help address the issue of forgetting appointments. Therefore, it can be assumed that improving immunization compliance cannot be achieved solely by strengthening individual factors or providing services. A holistic approach that considers maternal psychosocial resilience, service flexibility, and active involvement of the nuclear family is a more appropriate strategy. Immunization programs need to target structural and cultural factors that have long been hidden barriers behind non-compliance. Researchers concluded that interventions cannot consist solely of one-way education; they also require reminder systems, flexible service hours, and reassuring communication to significantly reduce internal barriers.

### **Supporting Factors for Maternal Compliance**

Key supporting factors include support from husbands, families, and health workers, as well as easy access and free government immunization programs. Support is provided not only in the form of verbal encouragement but also through direct assistance during immunization. Ease of access, both geographically and economically, makes it easier for mothers to adhere to the immunization schedule. From the Health Belief Model perspective, these barriers and supports influence perceptions of risks, benefits, barriers, and cues to action that encourage or inhibit mothers' actions. Meanwhile, the Theory of Planned Behavior explains how attitudes, social norms, and perceived control play a role in shaping immunization intentions and actions. The results of this study indicate that even with strong intentions, family disengagement or an unresponsive service structure can hinder immunization implementation.

Research by Yanti (2023) shows that a supportive social environment improves maternal compliance with immunization. A study in Africa by Datar et al. (2023) also found that easy access to health facilities increases immunization coverage. Research by Grodach (2011) found that cost can be a significant barrier in areas with limited economic resources. Researchers

believe that maintaining and strengthening these supporting factors is crucial for maintaining immunization coverage. Involving husbands and families in educational programs, as well as maintaining accessible, free immunization services, will help maintain maternal motivation. A collaborative approach between cadres, health workers, and the community is key to success. Researchers believe that the synergy between maternal motivation and a conducive environment is key to successful immunization. Health programs need to maintain a personal and relational approach, not just an administrative one.

### **Influence of Social and Information Environment**

The social environment and information flow play a dual role, either supporting or hindering immunization. Negative stories about vaccine side effects often trigger concerns. Social media and WhatsApp groups are the primary channels for information, but circulating content often contains a mix of facts and hoaxes. Health cadres play a crucial role in providing clarification and accurate information. The availability of information on immunization schedules and health education has also been shown to support maternal compliance. Information provided by cadres, KIA books, or community WhatsApp groups allows mothers to stay connected to immunization programs despite busy schedules or limited access to media. Even mothers who tend to be passive in seeking information can still receive reminders from cadres who travel around. This demonstrates that a structured, grassroots information delivery system can bridge the literacy and access gap.

The social environment exerts a powerful influence; stories from neighbors about diseases can both scare and encourage, while prohibitions from husbands can actually make mothers hesitate. Informal information is often the primary source of information because mothers rarely attend formal counseling. Researchers argue that health communication interventions need to strategically utilize social media to disseminate accurate and compelling information. Training cadres as local influencers can help counter hoaxes and strengthen community trust. This approach is expected to transform the social environment to be more conducive to successful immunization. Researchers concluded that educational interventions must involve families and communities, not just target individual mothers. It is crucial to build a social culture that supports collective immunization so that immunization decisions do not rest solely with mothers.

### **Conclusion**

Based on the results of research on maternal compliance in fulfilling basic immunizations for infants aged 0–12 months, it was found that mothers' perceptions of immunization remain diverse. Most mothers recognize the importance of immunization for maintaining their children's health, but their understanding of the types of diseases and how vaccines work is still limited. Social factors, such as stories from neighbors or community experiences, contribute to the perception of immunization susceptibility and benefits, although they often supersede formal medical explanations. Maternal compliance with immunization is relatively good, but is still hampered by technical factors such as forgetting schedules, being busy, and vaccine availability. Empirical experience, family support, and social encouragement have proven to be important drivers, in line with the concept of cues to action in the HBM and subjective norms in the TPB. This study also found that obstacles such as limited time, logistics, psychological factors, and negative social norms reduce immunization compliance. However, support from husbands, families, health workers, and cadres, as well as the availability of free immunization programs and easy access, are key supporting factors. The social environment and the flow of information play a dual role: correct information can strengthen compliance, while misinformation raises doubts. Overall, these findings confirm that immunization compliance is influenced by a combination of cognitive, social, emotional, and structural factors. Therefore, increasing compliance is not sufficient through medical education alone,

but requires a holistic approach that actively involves families and communities to create a social environment that supports immunization as a collective norm.

### Suggestion

The government and health institutions need to broaden public education on the importance of basic immunizations, including understanding the benefits and management of side effects. This information should be delivered in accessible language and through methods appropriate to the local context, such as through community-based outreach programs, social media, and local television programs. Service hours at integrated health posts (Posyandu) or community health centers (Puskesmas) should be adjusted to be more flexible and accessible to working mothers. Service schedules could be expanded to evenings or weekends so that working mothers don't face time constraints in bringing their children for immunizations. The involvement of husbands and extended family members in immunization education activities is crucial. Education provided solely to mothers is often insufficient when family decisions are influenced by others, such as husbands or in-laws. Involving other family members in outreach activities is expected to foster collective understanding and stronger support for mothers.

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