

Personal and Environmental Factors Affecting Compliance with the National Immunization Program in Nabua, Camarines Sur

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Compliance with the National Immunization Program (NIP) remains a significant public health concern as personal and environmental factors continue to influence parents' decisions regarding childhood vaccination. This study aimed to identify the personal and environmental factors affecting compliance with the National Immunization Program in Nabua, Camarines Sur. A descriptive survey research design was employed among mothers of children aged 12–59 months selected through stratified random sampling. Data were gathered using a researcher-developed, expert-validated questionnaire based on the Health Belief Model and Pender's Health Promotion Model and were analyzed using frequency, percentage, and weighted mean. The findings revealed that among the personal factors, perceived benefits (WM = 2.95), perceived susceptibility (WM = 2.71), and perceived severity (WM = 2.58) affected compliance, while personal experiences (WM = 1.49) did not. Perceived barriers moderately affected compliance (WM = 2.01), particularly concerns regarding expected side effects, inadequate knowledge of immunization schedules, and missed vaccination appointments. Among the environmental factors, interpersonal influences did not affect compliance (WM = 1.40), whereas situational influences moderately affected compliance (WM = 1.97), with vaccine shortages and limited access to alternative vaccination services emerging as the most influential concerns. The findings indicate that mothers' positive health beliefs play a greater role in promoting compliance than previous personal experiences or interpersonal influences. Strengthening health education, addressing vaccine misinformation, implementing reminder systems, and ensuring an uninterrupted vaccine supply are recommended to improve compliance with the National Immunization Program.

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Introduction:

Compliance with the National Immunization Program (NIP) is influenced by both personal and environmental factors that shape parents' decisions regarding childhood vaccination. Mothers' health beliefs, perceived barriers, family support, healthcare provider influence, community norms, and access to immunization services all affect whether children receive vaccines according to the recommended schedule. Understanding these factors is essential to improving immunization compliance and protecting children and communities from vaccine-preventable diseases.

Immunization is one of the most effective public health interventions for preventing vaccine-preventable diseases, particularly among young children whose immune systems are still developing. However, children who do not receive vaccines on schedule remain vulnerable to infection and contribute to disease transmission. Globally, an estimated 67 million children missed all or part of their routine immunization between 2019 and 2021 (UNICEF, 2023). In the Philippines, full vaccination coverage among children declined from 77% in 2013 to 70% in 2017, while only about 60% of children receive their scheduled vaccines, far below the national target of 85% (UNICEF, 2023; Santos, 2020).

The decline in immunization coverage has been attributed to factors such as vaccine hesitancy, misinformation, fear of adverse effects, lack of awareness of the recommended schedule, and delayed or missed vaccinations.

In Nabua, Camarines Sur, Fully Immunized Child (FIC) coverage remained low, ranging from 37.27% to 52.63% between 2015 and 2019, despite continuous immunization efforts by local health workers. These findings underscore the need to identify the personal and environmental factors affecting compliance with the National Immunization Program to guide interventions that

will improve vaccine uptake and protect children from vaccine-preventable diseases.

Methodology:

This study employed a descriptive survey research design to identify the personal and environmental factors affecting compliance with the National Immunization Program (NIP) in the Municipality of Nabua, Camarines Sur. The respondents were mothers of children aged 12–59 months who were selected through stratified random sampling, with the sample size determined using Slovin's formula and proportionately allocated across the municipality's barangays. Data were collected using a researcher-developed questionnaire based on the constructs of the Health Belief Model (personal experiences, perceived susceptibility, perceived severity, perceived benefits, and perceived barriers) and Pender's Health Promotion Model (interpersonal and situational influences).

The instrument underwent expert validation, was translated into Filipino to facilitate respondents' understanding, and was pre-tested among mothers from a neighboring municipality to establish clarity and content validity. Ethical clearance and the necessary administrative approvals were obtained prior to data collection. The collected data were analyzed using descriptive statistics, including frequency, percentage, and weighted mean, to determine the extent to which personal and environmental factors affect compliance with the National Immunization Program.

Results:**Personal and Environmental Factors Affecting Compliance with the National Immunization Program in Nabua, Camarines Sur**

Table 1 presents the factors affecting the compliance with the National Immunization Program in Nabua, Camarines Sur such as personal factors and environmental factors.

Table 1. Personal and Environmental Factors Affecting Compliance with the National Immunization Program in Nabua, Camarines Sur

Indicators	WM	Verbal Interpretation	Rank
1. a. Personal Factor			
a.1. Personal Experiences			
1. Any personal experience of a child's disability after immunization.	1.17	Not at All	7
2. Any personal experience of a child's death after immunization.	1.12	Not at All	8
3. Experience with expected side effects like fever after vaccination.	2.01	Moderately Affect	1
4. Experience with redness at the injection site after vaccination.	1.62	Moderately Affect	4
5. Experience with swelling at the injection site after vaccination.	1.64	Moderately Affect	3
6. Experience of pus formation at the injection site days after vaccination.	1.25	Not at All	6
7. Experience with adverse effects like allergies or rashes after vaccination.	1.30	Not at All	5
8. Experience of child becoming very irritable after vaccination, affecting caregiver's sleep.	1.83	Moderately Affect	2
Average Weighted Mean	1.49	Not at All	
a.2. Perceived Susceptibility			
1. My child can get diseases despite no family history; vaccines protect them.	2.65	Affect	5
2. Nutrition isn't enough; timely vaccination is necessary.	2.83	Affect	2.5
3. Vaccination shouldn't be delayed even without local cases.	2.78	Affect	4
4. Faith is important, but vaccines are still needed for protection.	2.83	Affect	2.5
5. Outdoor play exposes my child to diseases; vaccines are essential.	2.55	Affect	6
6. Socializing with neighbors increases risk; vaccination is needed.	2.51	Affect	8
7. Travel raises disease risk; vaccines are important.	2.52	Affect	7
8. Children's weaker immune systems require early, timely vaccination.	2.97	Affect	1
Average Weighted Mean	2.71	Affect	

a.3. Perceived Severity

1. Without vaccination, my child could suffer permanent disabilities like paralysis or blindness.	2.62	Affect	4
2. My child could die young if not vaccinated.	2.30	Moderately Affect	8
3. Treating diseases is costly and time-consuming compared to vaccination.	2.94	Affect	1
4. Illness may cause my child future difficulties in school.	2.63	Affect	3
5. My child could spread diseases to vulnerable family members and others.	2.42	Moderately Affect	6.5
6. Unvaccinated children are more prone to serious illnesses.	2.86	Affect	2
7. My child could contribute to disease outbreaks in the community.	2.45	Moderately Affect	5
8. Lack of vaccination can cause travel and school enrollment issues.	2.42	Moderately Affect	6.5
Average Weighted Mean	2.58	Affect	

a.4. Perceived Benefits

1. Immunization is the only way to prevent vaccine-preventable diseases.	2.72	Affect	8
2. Vaccination is safe, effective, and causes no harm.	3.04	Affect	3.5
3. Timely vaccination helps prevent outbreaks.	3.04	Affect	3.5
4. Immunization saves time and money for families.	3.05	Affect	2
5. Vaccines improve health throughout life.	2.92	Affect	5
6. Routine immunization reduces child mortality.	2.90	Affect	6
7. Immunization protects future generations by eradicating diseases.	2.74	Affect	7
8. Vaccination gives parents peace of mind.	3.16	Affect	1
Average Weighted Mean	2.95	Affect	

a.5. Perceived Barriers

1. Anxiety about side effects like fever, pain, swelling, and redness.	2.47	Moderately Affect	1
2. Belief that vaccines are too early at 1½ months.	1.81	Moderately Affect	6
3. Lack of knowledge about vaccines and schedule.	2.28	Moderately Affect	2

4. Belief that unvaccinated family members stayed healthy.	1.72	Moderately Affect	8
5. Unaware of the need for 2nd or 3rd doses.	1.76	Moderately Affect	7
6. Forgetting the immunization schedule.	2.14	Moderately Affect	3
7. Inconvenience of multiple health center visits.	2.04	Moderately Affect	4
8. Prioritizing work or daily life over immunization.	1.88	Moderately Affect	5
Average Weighted Mean	2.01	Moderately Affect	

b. Environmental Factor

b.1. Interpersonal Influences

1. Lack of trust in the healthcare provider administering vaccines.	1.29	Not At All	7
2. Partner opposes child's immunization.	1.33	Not At All	5
3. Relatives oppose child's immunization.	1.36	Not At All	4
4. Heard of adverse experiences from relatives or community.	1.53	Moderately Affect	2
5. Family problems or caretaker illness.	1.32	Not At All	6
6. Religious beliefs influence vaccination decisions.	1.39	Not At All	3
7. Superstitions, rumors, and misconceptions affect decisions.	1.67	Moderately Affect	1
8. Lack of support and encouragement from local healthcare providers.	1.28	Not At All	8
Average Weighted Mean	1.40	Not At All	

b.2. Situational Influences

1. Vaccine shortage or unavailability.	2.23	Moderately Affect	2
2. Negative media about vaccines.	1.92	Moderately Affect	4
3. Disease outbreaks.	2.21	Moderately Affect	3
4. No private vaccination option if health center lacks vaccines.	3.05	Affect	1

5. Health facility is too far.	1.52	Moderately Affect	7
6. Child was denied vaccination at health center before, causing discouragement.	1.77	Moderately Affect	5
7. Long wait times and uncondusive vaccination environment.	1.50	Moderately Affect	8
8. Vaccination cost is unaffordable.	1.54	Moderately Affect	6
Average Weighted Mean		1.97	Moderately Affect

Scale	Range Value	Verbal Interpretation
4	3.50-4.00	Greatly Affect
3	2.50-3.49	Affect
2	1.50-2.49	Moderately Affect
1	1.00-1.49	Not at All

The table presents various factors influencing compliance with the National Immunization Program in Nabua, Camarines Sur. The factor 'personal experiences' received an average weighted mean of 1.49, interpreted as 'not at all'. The average weighted means for 'perceived susceptibility' and 'perceived severity' were 2.71 and 2.58, respectively, both interpreted as 'affect'. 'Perceived benefits' had an overall average weighted mean of 2.95, also interpreted as 'affect'. The 'perceived barriers' factor had an average weighted mean of 2.01, indicating it 'moderately affects' compliance. 'Interpersonal influences' had an average weighted mean of 1.40, interpreted as 'not at all', while 'situational influences' showed an average weighted mean of 1.97, interpreted as 'moderately affect'.

Discussion:

The findings indicate that personal beliefs and perceptions have a greater influence on compliance with the National Immunization Program (NIP) than previous personal experiences or interpersonal influences. Among the personal factors, perceived benefits obtained the highest overall mean (WM = 2.95), followed by perceived susceptibility (WM =

2.71) and perceived severity (WM = 2.58), all interpreted as affect. This suggests that mothers are more likely to comply with childhood immunization when they recognize the benefits of vaccination, understand their children's susceptibility to vaccine-preventable diseases, and appreciate the seriousness of these illnesses. In contrast, personal experiences (WM = 1.49) did not influence compliance, indicating that respondents had limited exposure to serious adverse events following immunization. Mild and expected reactions, such as fever after vaccination, only moderately affected compliance and were generally accepted as normal consequences of immunization. Consistent with the Health Belief Model, perceived benefits emerged as the strongest factor influencing compliance, particularly the belief that vaccination protects children's health, provides peace of mind, and reduces future healthcare costs. Likewise, mothers acknowledged their children's vulnerability to infectious diseases, emphasizing the role of perceived susceptibility in promoting vaccine acceptance. Although perceived barriers (WM = 2.01) moderately affected compliance, these barriers were primarily related to concerns about

expected side effects, limited knowledge of immunization schedules, and forgetting vaccination appointments. These findings suggest that the barriers are largely informational and logistical rather than driven by vaccine refusal, highlighting the importance of sustained health education, reminder systems, and effective communication by healthcare providers. Among the environmental factors, interpersonal influences had the lowest overall mean ($WM = 1.40$), indicating that family members, religious beliefs, and healthcare providers generally did not discourage immunization. However, community rumors and misinformation moderately influenced parental decisions, demonstrating their continued impact on vaccine confidence. Situational influences ($WM = 1.97$) also moderately affected compliance, with vaccine shortages and the lack of alternative vaccination services identified as the most influential concerns. These findings emphasize that compliance depends not only on parental willingness but also on the accessibility and reliability of immunization services. Overall, the findings support the Health Belief Model and Pender's Health Promotion Model, demonstrating that positive health beliefs, particularly perceived benefits, susceptibility, and severity, promote compliance with the National Immunization Program, while perceived barriers and situational constraints may hinder timely vaccination. Strengthening community health education, countering misinformation, improving reminder systems, and ensuring an uninterrupted vaccine supply are essential strategies for improving immunization compliance in Nabua, Camarines Sur.

Conclusion:

This study concludes that compliance with the National Immunization Program in Nabua, Camarines Sur is primarily influenced by mothers' personal health beliefs rather than by previous personal experiences or interpersonal influences. Among the personal factors, perceived benefits, perceived susceptibility, and perceived severity

were identified as the strongest influences on immunization compliance, indicating that mothers are more likely to have their children vaccinated when they recognize the protective value of vaccines and the risks associated with vaccine-preventable diseases. Although perceived barriers and situational influences moderately affected compliance, these were mainly related to concerns about expected side effects, inadequate knowledge of immunization schedules, vaccine availability, and service accessibility. Overall, the findings support the Health Belief Model and Pender's Health Promotion Model, emphasizing that strengthening positive health beliefs while minimizing informational and service-related barriers is essential to improving compliance with the National Immunization Program.

Recommendations:

Based on the findings of the study, the following are recommended:

1. Municipal Health Office (MHO): Strengthen health education campaigns emphasizing the benefits of vaccination, children's susceptibility to vaccine-preventable diseases, and the importance of completing the National Immunization Program.
2. Healthcare Providers: Provide consistent counseling to parents regarding expected post-vaccination reactions, address misconceptions and misinformation, and reinforce the recommended immunization schedule during every client encounter.
3. Barangay Health Workers (BHWs): Intensify house-to-house health education and implement reminder and recall strategies to encourage parents to complete their children's scheduled vaccinations.
4. Local Government Unit (LGU): Ensure adequate vaccine supply, uninterrupted immunization services, and accessible vaccination sites to minimize situational barriers affecting compliance.
5. Community Stakeholders: Support evidence-based information campaigns and collaborate

with health workers in promoting positive attitudes toward childhood immunization and countering vaccine misinformation.

6. Future Researchers: Conduct similar studies in other municipalities or provinces using analytical or mixed-methods designs to further explore psychological, cultural, and health system factors influencing compliance with the National Immunization Program.

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