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KNOWLEDGE AND ATTITUDE AS PREDICTORS OF MOTHER'S PRACTICES ON EXPANDED PROGRAM ON IMMUNIZATION

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Abstract: Immunization is vital for reducing disease in children, but full coverage remains challenging. This study evaluated how knowledge and attitudes predict mother's practices on Expanded Program on Immunization (EPI) in Barangay Bulakanon, Makilala, North Cotabato. Using a descriptive-predictive design, 109 respondents were selected. Data were collected with a validated questionnaire by Lolos (2019), showing CVI of 1.0 and McDonald's Omega reliability scores of 0.9 for knowledge, 0.8 for attitude, and 0.7 for practices. Results showed that most respondents were 24-35 years old, married, homemakers with 2–3 children, and earning below the minimum wage. Most respondents were 24-35 years old, married, homemakers with 2–3 children, and earning below the minimum wage. Findings showed that participants had high knowledge of EPI service delivery but needed more understanding of its advantages. Attitudes towards trust in institutions and healthcare workers were higher than attitudes towards the need for vaccination. Practices were high in compliance but varied in children's vaccination status. A significant relationship was found between attitude and practices but not between knowledge and practices. Attitude, especially trust in institutions and healthcare workers, predicted practices, while knowledge did not. The study highlighted respondents' need for more awareness of EPI advantages, suggesting targeted educational campaigns emphasizing immunization benefits. Overall, the study found a positive correlation between mothers' trust in healthcare personnel and their immunization practices, indicating that future research should explore the influence of trust on immunization behaviors to inform targeted interventions promoting vaccine uptake among mothers.

Keywords: *Expanded Program on Immunization, Nursing, Descriptive-Predictive, Makilala, Philippines*

INTRODUCTION

Immunization of children against communicable severe diseases is the most cost-effective strategy to decrease overall morbidity and mortality among children. To accomplish this strategy, high vaccination coverage is essential. Vaccination, one of the most potent weapons against vaccine-preventable infectious diseases, saves millions of lives yearly (WHO, 2019). However, despite free health care and readily available vaccines, many children worldwide do not obtain their childhood vaccinations, and the situation worsens in underdeveloped countries (Hadjipanayis, 2020). The number of children who missed routine vaccinations has surged. From 2019 to 2021, a total of 67 million children did not receive their vaccines, and out of those, 48 million did not receive any doses at all, which are referred to as "zero-dose" children. This issue is most prevalent in marginalized communities, including remote rural areas, urban slums, and regions affected by conflict (UNICEF, 2023).

As of 2018, approximately 85 to 90 percent of children worldwide have received all six fundamental vaccines (WHO & UNICEF, 2019). In 2014, the Philippines' vaccination coverage dropped to 65 percent, the lowest since 1990. Over the past three decades, vaccination prevalence has fluctuated between 70% and 80%. Over the past two decades, the Philippine EPI has demonstrated inconsistent performance regarding both coverage and timeliness. The program has never met its goal of immunizing at least 95 percent of children (Ulep & Uy, 2021).

Nevertheless, despite advances, basic vaccine coverage has hovered between 70 and 80 percent over the past three decades. The program has never met its goal of immunizing at least 95 percent of children. The most significant decline in immunization coverage has occurred in the last decade (2008-present). In 2014, the vaccination rate dropped to nearly 65 percent, the lowest level since the early 1990s. Over the past three decades, vaccination prevalence has fluctuated between 70 and 80%. In the previous 20 years, the Philippine EPI has demonstrated inconsistent performance regarding both coverage and timelines. Currently, the country has a lower vaccination rate than most low-income nations (Ulep & Uy, 2019)

In 2019, the immunization coverage for essential vaccines was reported to be approximately 70-80% in Mindanao, approximately 75% in the Province of North Cotabato, and approximately 60-70% in the Municipality of Makilala, which are below the national target of 95% (WHO & UNICEF, 2019). In Barangay Bulakanon's most recent annual report (2022) on EPI immunization coverage, only 37% of the 2,509 population were immunized. The goal of 95 percent has never been met (Bulakanon, 2022)

Research in Rwanda emphasized that despite high levels of knowledge and trust in vaccinations among mothers, there still needs to be a gap in understanding how these factors translate into actual vaccination practices (BMC Public Health, 2023). When the findings of this study are highlighted, it is anticipated to improve knowledge, attitudes, and practices regarding access to the expanded program on immunization to improve childhood immunization coverage.

Theoretical Framework

The Attitude–Normative Behavior Model (ANBM) is a theoretical framework rooted in social psychology that seeks to understand and predict human behavior, particularly regarding health-related decisions and actions. According to this paradigm, an individual's behavior is influenced by their attitudes towards the behavior, the social pressure they feel to engage in or refrain from it (subjective norms), and their self-efficacy in performing the behavior (perceived behavioral control) (Ajzen, 2019). According to the ANBM, attitudes towards a behavior are shaped by beliefs about the outcomes of performing the behavior, subjective norms are determined by perceptions of social expectations and approval, and perceived behavioral control is influenced by perceived barriers and facilitators to performing the behavior (Glanz et al., 2021). This model is extensively utilized to investigate and elucidate diverse health behaviors, offering a systematic way to discover the pivotal aspects that impact individual actions and choices (Champion & Skinner, 2020; Sallis et al., 2019).

The ANBM is particularly apt for the study titled "Knowledge and Attitude as Predictors of Mothers' Practices on the Expanded Program on Immunization" due to its comprehensive framework for understanding the predictors of behavior. The study explores how mothers' knowledge and attitudes toward the expanded Immunization program influence their children's vaccination practices. The model provides a structured approach to examine the interplay between knowledge, attitudes, and practices, offering insights into the factors driving maternal behavior regarding Immunization (Montano & Kasprzyk, 2019).

The ANBM provides a framework for understanding how mothers' knowledge, attitudes, and social influences affect their vaccination practices, facilitating targeted interventions to improve immunization rates and allowing for comparisons across populations (Ajzen, 2019; Glanz et al., 2021; Champion & Skinner, 2020; Sallis et al., 2019).

Conceptual Framework

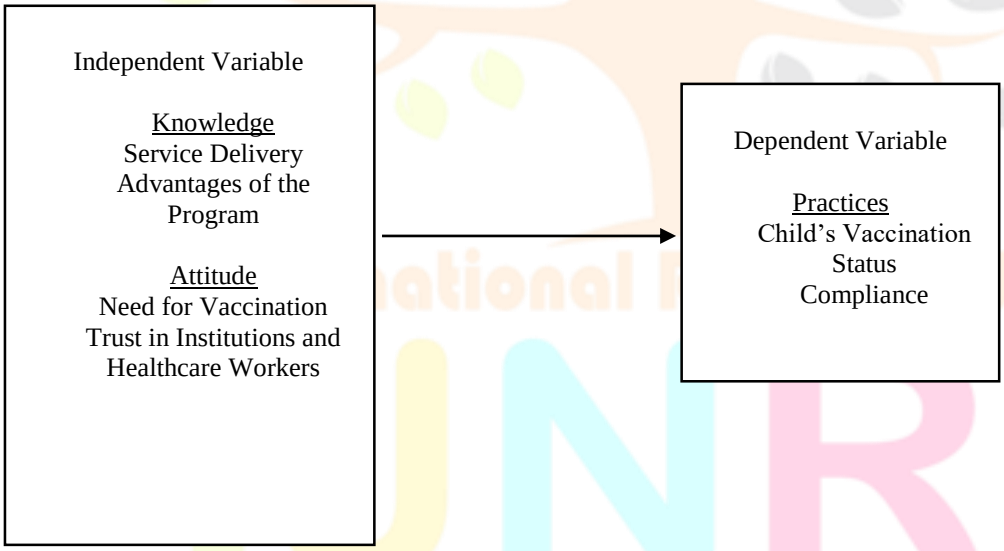

Figure 1. Research Paradigm

The research paradigm depicted in Figure 1 illustrates the relationship between key variables in the study. The independent variables, namely knowledge and attitude, are represented by arrows pointing toward the dependent variable, practices.

Knowledge is operationalized through two parameters: understanding of service delivery within the program and awareness of its advantages. The perceived need for vaccination and the level of trust in institutions and healthcare workers measures attitude. These independent variables influence the dependent variable, practices, which encompasses the child's vaccination status and compliance with immunization schedules. Both knowledge and attitude play crucial roles in shaping these practices.

Additionally, the demographic profile is modified, influencing the relationship between the independent and dependent variables. It includes various socio-demographic factors such as age, religion, tribe, marital status, educational level, job status, monthly income, and the number of children. These factors provide context and further insights into the individuals' behaviors and decisions regarding childhood immunization.

Statement of the Problem

This study identifies the factors influencing the Expanded Program on Immunization participation in Barangay Bulakanon, Makilala, North Cotabato. More precisely, it aims to tackle the subsequent concerns:

1. What is the demographic profile of the respondents in terms of:
    1.1 Age;

1.2 Religion;
1.3 Tribe;
1.4 Marital Status;
1.3 Educational level;
1.4 Job Status;
1.5 Monthly Income;
1.6 Number of Children?

2. What is the level of knowledge on the expanded program on immunization among respondents in terms of:
   2.1 Service Delivery and
   2.2 Advantages of the Program?
3. What is the level of attitude toward the expanded program on immunization among respondents in terms of:
   3.1 Need for vaccination; and
   3.2 Trust in institutions and healthcare workers?
4. What is the level of practice on the expanded program on immunization among respondents in terms of:
   4.1 Child's Vaccination Status; and
   4.2 Compliance?
5. Is there a significant relationship bet
   5.1 Knowledge and Practices, and
   5.2 Attitudes and Practices?
6. Do knowledge and attitude significantly predict the practice level of expanded immunization programs among mothers?

Hypotheses

The following are the null hypotheses of the study:

H_{o1}. There is no significant relationship between knowledge and practices and attitude and practices.

H_{o2}. Knowledge and attitude do not predict the practices of EPI among mothers.

RESEARCH METHODOLOGY

This chapter discusses how this study will be conducted, including details about the research design, setting, respondents, measures, ethical considerations, procedures, data analysis, and the scope and limitations of the study.

Design

This study used a descriptive-predictive research design to describe maternal knowledge and attitudes about immunization and predict future vaccination practices. This approach involves detailing relevant variables and using statistical analyses to forecast behaviors. The goal is to understand mothers' perceptions of the expanded immunization program and identify factors influencing their children's vaccination practices (Neuman, 2019; Creswell & Creswell, 2019).

This study employed a descriptive-predictive research design to systematically collect and analyze data on the target population's knowledge, attitudes, and practices regarding childhood immunization (Trochim & Donnelly, 2021). The descriptive component aims to understand current levels and identify key predictors of maternal vaccination practices (Kaur, 2021), while the predictive component uses statistical methods to forecast future behaviors and identify factors influencing maternal immunization decisions (Rutberg & Bouikidis, 2019). By combining these approaches, the study offers a comprehensive understanding of maternal influences on immunization uptake, aiding the development of targeted interventions to improve vaccination rates.

Setting

The actual data gathering took place in Bulakanon, a barangay situated in the municipality of Makilala, North Cotabato Province, which comprises nine puroks: Bagong Lipunan, Maligaya, Masagana, Gumasak, Pag-asa, Pagkakaisa, Pag-big, Paraiso, and Saranay. These parks are all served by a single Barangay Health facility in the center of Barangay Bulakanon. However, some parks, such as Maligaya and Saranay, are pretty distant from the health center, requiring approximately 15 minutes of travel by motorcycle or "habal-habal." The landscape is characterized by mostly flat terrain and rice fields. Below is the site map depicting the location for this study.

Participants

A total of one hundred-nine respondents were selected through purposive sampling. Purposive sampling involves selecting participants based on specific criteria relevant to the research objectives, ensuring that the sample represents the population of interest regarding characteristics or experiences (Palinkas et al., 2019). This sampling was chosen to deliberately allow for selecting participants who could provide rich and detailed information relevant to the research questions, thus enhancing the depth and validity of the study findings (Palinkas et al., 2019). The participants were chosen according to the specified criteria: they were residents of Barangay Bulakanon, Makilala, North Cotabato, who had been living in the area for more than six months at the time of the study; they were mothers of children with incomplete or delayed childhood immunization; and they were 18 years old or older.

Measures

Four sections of an adapted research questionnaire by Lolos (2019) were utilized to collect participant data. The initial part was focused on determining the demographic characteristics of the individuals involved, such as their age, level of education, employment status, monthly earnings, number of children, and the ages of their children. The second section assessed the mother's level of knowledge regarding service delivery and the program's advantages. The third section evaluated the mothers' attitudes concerning the need for vaccination and their trust in institutions and healthcare workers. The fourth section examined the mothers'

practices regarding their child's vaccination status and compliance. Reliability and validity testing were conducted using McDonald's Omega with a sample size of thirty, yielding results ranging from 0.721 to 0.904. Most of the composites surpassed the accepted standard of ≥ 0.70. The knowledge, attitude, and practice levels were measured using a five-point Likert scale with specific scaling parameters.

Table 1: Assessment of the Knowledge, Attitude, and Practices of Mothers

Scale	Description	Interpretation
5	Strongly Agree	Always Manifested
4	Agree	Often Manifested
3	Not Sure	Sometimes Manifested
2	Disagree	Seldomly Manifested
1	Strongly Disagree	Never Manifested

Procedure

Firstly, a formal request was made through a letter to the Program Chair of the Master of Arts in Nursing, seeking permission to proceed with the research. Following approval, a questionnaire was meticulously prepared and subjected to validation by three experts in the field. Once the validation process was completed, a reliability test was conducted, after which the researcher moved forward with data gathering.

During the data gathering, participants were provided with a printed copy of the questionnaire, encompassing four sections: demographic profile, level of knowledge, level of attitude, and level of practice. Before answering the survey questions, participants were required to affix their signature within the informed consent section, thus signifying their voluntary engagement.

The researcher meticulously collated, analyzed, and interpreted all collected data. Based on the findings, conclusions and recommendations were drawn, serving as valuable insights for future research endeavors and informing practices within the field of nursing.

Ethical Consideration

Social Value: The study aimed to explore how knowledge and attitude influence mothers' practices regarding the expanded program of Immunization (EPI). By examining these factors, the research sought to provide insights into mothers' understanding and behaviors related to childhood vaccination. The findings were intended to be shared with the community, particularly those who could benefit from a better understanding of vaccination practices.

Risks and Benefits: Participants may have been asked to share personal experiences related to their children's vaccination status, which could be sensitive. However, strict measures were in place to ensure the confidentiality and anonymity of participants' responses. The study's benefits were significant, as it aimed to uncover insights into factors influencing mothers' practices regarding childhood vaccination. This could lead to targeted interventions to improve vaccination uptake and compliance, ultimately promoting public health and children's well-being.

Voluntary Participation: Participation in the research was completely optional, and individuals could refuse or pull out of the research at any point without experiencing any adverse outcomes. Their decision to participate or withdraw would not affect their access to services or programs.

Privacy and Confidentiality: The research adhered to strict privacy and confidentiality measures, ensuring that participants' identities remained anonymous. Personal data collected during the study was kept confidential and accessible only to the researchers. After the survey, all raw data was disposed of appropriately, and participants could request a copy of the results if desired.

Data Analysis

This section discusses the detailed description of the process the researcher utilized
To analyze the collected data.

Frequency and Percentage. The statistical tools were employed to ascertain the demographic characteristics of the participants, including age, religion, tribe, marital status, educational attainment, employment status, monthly income, and number of children.
Mean. This statistical tool determined the participants' knowledge, attitudes, and practices regarding the expanded immunization program.
Nonparametric correlation (Spearman Rho) was utilized to explore the correlations between variables such as maternal knowledge, attitude, and practices regarding the expanded immunization program. This provided insights into their interrelationships without relying on distributional assumptions.
Standard Deviation. This was used to determine the homogeneity and heterogeneity of the participants' responses.

Scope and Limitations of the Study

The study's main objective was to assess the level of knowledge and attitudes among mothers of children with incomplete or delayed childhood immunization and their relationship to practices on the expanded immunization program. A descriptive-predictive research design was employed for this purpose. Participants were selected through purposive sampling, with 1one of nine respondents meeting the criteria of residing in Barangay Bulakanon, Makilala, North Cotabato, for at least six months and having children with incomplete or delayed childhood immunization.

The study occurred in Barangay Bulakanon of Makilala, North Cotabato, with data collection from October 2023 to November 2023. Exclusion criteria included mothers of children with complete childhood immunization, non-residents of Barangay Bulakanon, Makilala, and North Cotabato, and unwillingness to participate. Additionally, individuals under 18 years old, those with mental illness, and those with illiteracy were also excluded from the study.

RESULTS AND DISCUSSION

This chapter presents the data collected, collated, statistically treated, and presented into tables for presentation, interpretation, and analysis.

1: What is the demographic profile of the respondents in terms of age, religion, tribe, marital status, educational level, job status, monthly income, and number of children?

Table 1. The Demographic Profile of Respondents.

Demographic Profile	Frequency (n=109)	Percentage
Age:		
18-20 yo	11	10.1%
21-23 yo	10	9.2%
24-26 yo	**22**	**20.2%**
27-29 yo	20	18.3%
30-32 yo	15	13.8%
33-35 yo	**22**	**20.2%**
36-38 yo	8	7.3%
39-41 yo	1	0.9%
Total	109	100%
Religion:		
Roman Catholic	**49**	**45.0%**
Baptist	20	18.3%
Apostolic	6	5.5%
Four Square	1	0.9%
Alliance	2	1.8%
Iglesia	7	6.4%
Methodist	13	11.9%
Sda	6	5.5%
Jehovas Witnesses	3	2.8%
Church Of Christ	1	0.9%
Islam	1	0.9%
Total	109	100%
Tribe:		
Manobo	8	7.3%
Cebuano	28	25.7%
Bagobo	5	4.6%
Biangan	1	0.9%
Bawa	7	6.4%
Ilocano	**41**	**37.6%**
Ilonggo	10	9.2%
Mandaya	3	2.8%
Blaan	3	2.8%
Tagalog	2	1.8%
Bicolano	1	0.9%
Total	109	100%
Marital Status:		
Single	14	12.8%
Married	**85**	**78.0%**
Widowed	5	4.6%
Separated	5	4.6%
Total	109	100%
Educational Level:		
College Graduate	34	31.2%
College Undergraduate	3	2.8%
High School Graduate	**47**	**43.1%**
High School Undergraduate	5	4.6%
Elementary Graduate	17	15.6%
Elementary Undergraduate	3	2.8%
Total	109	100%
Job Status:		
Student	4	3.7%
Employed	17	15.6%
Housewife	**88**	**80.7%**

Total	109	100%
Monthly Income:		
1,500-5,687 PHP	**67**	**61.5%**
5,688-9,875 PHP	16	14.7%
9,876-14,063 PHP	8	7.3%
14,064-18,251 PHP	7	6.4%
18,252-22,439 PHP	5	4.6%
22,628-30,815 PHP	5	4.6%
30,816-35,003 PHP	1	0.9%
Total	109	100%
Number of Children:		
One	28	25.7%
Two to Three	**46**	**42.2%**
More than three	35	32.1%
Total	109	100%

The demographic profile of the respondents in Table 1 provides valuable insights into the features of the study population and their potential impact on maternal practices for children immunization. Firstly, the predominance of participants in the 24-26 and 33-35 age groups suggests that the majority are in their Early Adulthood Stage, a pivotal period marked by career establishment, family formation, and household management. This demographic trend aligns with existing literature indicating that individuals in this stage may exhibit heightened awareness and responsibility toward their children's health, potentially influencing their vaccination practices (Johnson et al., 2021).

Moreover, as highlighted in the study findings, the high proportion of married participants underscores the association between marital status and maternal knowledge, attitudes, and practices regarding childhood immunization. Previous research has consistently shown that married mothers possess more excellent knowledge about immunization, hold more positive attitudes toward vaccination, and demonstrate higher adherence to recommended vaccination schedules for their children than unmarried mothers (Jones et al., 2019). This suggests that marital status is a significant determinant of maternal engagement in immunization practices, emphasizing the importance of considering family dynamics in public health interventions to improve vaccination coverage.

Furthermore, the representation of high school graduates among the study participants points to the influence of educational attainment on maternal perceptions and behaviors related to childhood immunization. Research indicates that mothers with higher levels of education, exceptionally high school graduates, exhibit enhanced knowledge about immunization, display more favorable attitudes towards vaccination, and are more likely to adhere to recommended vaccination schedules for their children (Garcia et al., 2020). This underscores the role of education as a critical factor in shaping maternal attitudes and practices towards immunization, highlighting the need for targeted educational interventions to address knowledge gaps and promote vaccination acceptance among diverse demographic groups.

2. What is the level of knowledge on the expanded immunization program among respondents regarding service delivery, and what are the program's advantages?

Table 2. The Respondent's Level of Knowledge on Expanded Program on Immunization.

Indicators	M	SD	Interpretation
Service Delivery.	3.80	0.56	**High**
Advantages of the Program.	3.50	0.70	**High**
Overall	**3.65**	**0.63**	**High**

Note: *4.21-5.00---Very High ;3.41-4.20---High; 2.61-3.40---Moderate; 1.81-2.60---Low; 1.00-1.80---Very Low; SD- Standard Deviation, M-Mean*

The disparities observed in Table 2 regarding mothers' knowledge levels regarding the expanded program on Immunization (EPI) offer valuable insights into potential areas for intervention and improvement. While participants demonstrated relatively high levels of knowledge about the service delivery aspects of the EPI, indicating a solid understanding of the services provided by their local health centers, their awareness of the program's advantages needs to be higher. This highlights a crucial gap in understanding among mothers, suggesting a need to enhance their awareness of the broader benefits and significance of the EPI beyond its essential services.

A study by Wang (2020) provides compelling evidence supporting the effectiveness of community-based interventions in addressing knowledge gaps and improving perceptions of the EPI. Participants who received such interventions showed significantly higher levels of knowledge about vaccination schedules, vaccine safety, and the importance of immunization. Additionally, they reported greater satisfaction with the accessibility and quality of vaccination services. These findings emphasize the possibility of using focused interventions to enhance the understanding and beliefs of mothers, which can help improve the delivery of services and increase the use of immunization programs.

Moreover, as highlighted by Hu (2023), identifying key obstacles hindering high coverage of childhood immunization, such as lack of knowledge, low awareness, and safety misconceptions, reinforces the importance of addressing knowledge deficits among mothers. By promoting the advantages and benefits of immunization through comprehensive education and awareness campaigns, health authorities can effectively counter misinformation and increase public acceptance and uptake of vaccines.

This aligns with existing research emphasizing the pivotal role of knowledge enhancement in bolstering immunization efforts and ultimately contributing to the success of public health initiatives (Smith et al., 2020).

3: What is the attitude toward the expanded program on immunization among respondents regarding the need for vaccination and trust in institutions and healthcare workers?

Table 3. The Respondent's Level of Attitude on Expanded Program on Immunization.

Indicators	M	SD	Interpretation
Need for Vaccination.	3.70	0.65	**High**
Trust in Institutions and Healthcare Workers.	3.81	0.63	**High**
Overall	**3.76**	**0.64**	**High**

Note: *4.21-5.00---Very High ;3.41-4.20---High; 2.61-3.40---Moderate; 1.81-2.60---Low; 1.00-1.80---Very Low; SD- Standard Deviation., M-Mean*

Table 3 sheds light on participants' attitudes toward accessing the expanded program on Immunization (EPI), revealing distinct trends in their perceptions. Participants exhibited robust trust in institutions and healthcare workers involved in the EPI, reflecting confidence in the healthcare system's ability to deliver vaccination services effectively. Conversely, attitudes towards the perceived need for vaccination were comparatively lower, suggesting potential areas of skepticism or uncertainty among participants regarding the necessity of immunization.

Research by Nguyen (2019) underscores the significant impact of trust in healthcare institutions and workers on parental attitudes toward childhood immunization. Factors such as perceived transparency, accountability, and responsiveness of healthcare systems, alongside healthcare workers' competence and communication skills, were found to influence trust levels. These findings highlight the importance of trust-building efforts within healthcare systems to foster positive attitudes towards immunization and enhance vaccination uptake among parents and caregivers.

Conversely, studies have identified misconceptions, doubts about vaccine efficacy, and concerns about safety as key factors contributing to a low perceived need for vaccination among individuals, as Smith (2021) noted.

Correcting these misunderstandings and offering precise information about the significance of vaccination is vital to enhancing attitudes towards EPI and encouraging more people to get immunized. Furthermore, understanding the perceived need for vaccination plays a vital role in shaping individuals' vaccination decisions and behaviors, emphasizing the significance of targeted interventions to address concerns and enhance vaccine acceptance (Brewer et al., 2017; Brown et al., 2019).

4: What is the level of practice regarding the child's vaccination status and compliance with the expanded immunization program among respondents?

Table 4. The Respondent's Level of Practices on Expanded Program on Immunization.

Indicators	M	SD	Interpretation
Child's Vaccination Status.	3.61	0.84	**High**
Compliance.	3.86	0.69	**High**
Overall	**3.74**	**0.77**	**High**

Note: *4.21-5.00---Very High ;3.41-4.20---High; 2.61-3.40---Moderate; 1.81-2.60---Low; 1.00-1.80---Very Low; SD- Standard Deviation, M-Mean*

Table 4 provides insights into the participants' practices regarding the expanded program on Immunization (EPI), revealing a commendable level of compliance (M=3.86). This suggests that participants strongly adhere to vaccination protocols outlined by the EPI. However, vaccine hesitancy remains a significant concern, fueled by doubts about vaccine safety and exacerbated by media influences (Dubé, 2023).

The research underscores the influential role of healthcare provider recommendations in shaping parental vaccination decisions, with solid recommendations correlating with higher vaccination rates among children (Johnson, 2019). Positive interactions with healthcare providers, characterized by clear communication and empathy, further enhance trust and confidence in vaccination recommendations, emphasizing the importance of patient-centered care in promoting vaccination compliance.

Conversely, suboptimal vaccination coverage among children is attributed to socioeconomic disparities, limited access to healthcare services, and parental vaccine hesitancy (Kim, 2021). Marginalized communities and low-income households face barriers such as transportation challenges and a need for awareness about vaccination schedules, leading to incomplete vaccination status. Addressing these barriers and fostering trust in vaccines is crucial for improving immunization rates and mitigating the impact of vaccine-preventable diseases.

Moreover, cultural beliefs and misconceptions about vaccines contribute to low vaccination status, highlighting the need for culturally sensitive approaches to vaccination promotion (Brown, 2020). Addressing these factors through targeted interventions, including community engagement and education campaigns, is essential for enhancing vaccination uptake and ensuring comprehensive immunization coverage.

5: Is there a significant relationship between Knowledge and Practices and Attitude and Practices?

Table 5: The Test of Relationship between Respondent's Level of Knowledge, Attitude, and Practices on Expanded Program on Immunization.

Independent Variables	Practices			
	r_s	p-value	Decision	Remarks
Knowledge:				
Service delivery	.000	.997	Accept $H_{01.1}$	NS
Advantages of the program	.107	.267	Accept $H_{01.1}$	NS
Attitude:				
Need for vaccination	.256	.007	Reject $H_{01.2}$	S
Trust in Institution and Healthcare workers	.406	<.001	Reject $H_{01.2}$	S

Table 5 unveils a significant correlation between attitude and practices, suggesting that mothers with favorable attitudes towards the expanded program on immunization exhibit enhanced vaccination practices. However, the study did not find a significant relationship between knowledge and practices, indicating that knowledge alone may not directly influence vaccination behaviors. These findings align with vaccination acceptance and hesitancy research, emphasizing the pivotal role of attitudes, beliefs, and trust in shaping vaccination behaviors (Dubé et al., 2019; Larson et al., 2020).

Research indicates that while maternal knowledge plays a role in vaccination practices, certain attitudes and external factors may also influence behavior. For instance, despite adequate knowledge levels, maternal attitudes may still hinder optimal vaccination practices, highlighting the need for targeted interventions to address misconceptions and promote positive attitudes toward Immunization (Alamri, 2022). Moreover, external factors such as media exposure and societal perceptions may impact vaccination practices, underscoring the complex interplay between knowledge and behavior in vaccine decision-making processes (Dube, 2023; Ramadan et al., 2022).

Furthermore, parental attitudes towards immunization strongly influence vaccination practices for children, with positive attitudes correlating with adherence to recommended vaccination schedules. Conversely, negative attitudes driven by misconceptions or safety concerns may lead to vaccination delay or refusal, highlighting the importance of addressing misconceptions and promoting positive attitudes to improve vaccination coverage rates (Smith et al., 2021; Brown et al., 2020).

Synthesizing findings from various studies reinforces the consistent relationship between positive attitudes towards immunization and adherence to vaccination practices, emphasizing trust in vaccine safety and efficacy in promoting vaccination uptake (Nguyen, 2020).

6: Do knowledge and attitude significantly predict the practice level of an expanded immunization program?

Table 6. The Test of Prediction of the Level of Knowledge and Attitude on the Practices on Expanded Program on Immunization.

PRAC	Observed Estimate	Bootstrap SE	Z	P-value	Decision	Remarks
Mean						
PRAC	3.733	0.041	91.48	0.000		
Effect						
Service Delivery	-0.023	0.121	-0.19	0.847	Accept $H_{02.1}$	Not Significant
Advantages of Program	0.074	0.095	0.78	0.436	Accept $H_{02.1}$	Not Significant
Need for Vaccination	0.344	0.131	2.63	0.009	Reject $H_{02.2}$	Significant
Trust in Institutions and Healthcare Workers	0.502	0.104	4.81	0.000	Reject $H_{02.2}$	Significant

Note: Significant if p-value <.05; R^2= 0.2971; IV-Knowledge (SD, AOP); Attitude (NFV, TIHW); DV- Practices.

Table 6 findings underscore the differential roles of knowledge and attitude as predictors of mothers' practices towards the expanded program on immunization. While knowledge levels regarding service delivery and program advantages did not significantly predict practices, attitudes towards the need for vaccination and trust in institutions and healthcare workers emerged as significant predictors. This suggests that while knowledge alone may not directly influence practices, attitudes, particularly trust in institutions and healthcare workers, significantly predict mothers' engagement with the immunization program.

A study found that maternal knowledge and attitude significantly predicted vaccination practices for their children. Mothers with a precise understanding of immunization and maintained favorable attitudes towards vaccination were more inclined to follow prescribed immunization schedules and guarantee that their children received all essential vaccines. Conversely, mothers with limited knowledge or negative attitudes toward immunization were more likely to delay or refuse vaccinations for their children (Alamri, 2022).

A review synthesized findings from various studies and revealed consistent evidence that both knowledge and attitude significantly predict vaccination practices. Individuals with accurate knowledge about immunization and positive attitudes towards vaccination were likely to comply with recommended vaccination schedules for themselves and their children. Conversely, individuals with limited knowledge or negative attitudes toward immunization were likelier to refuse or delay vaccinations. These findings emphasize the necessity of implementing comprehensive treatments that focus on improving both knowledge and attitudes to boost vaccination behaviors and increase immunization coverage rates among communities (Nguyen, 2020)

A study revealed that knowledge and attitude significantly predicted vaccination practices for children. Caregivers who possessed accurate knowledge about immunization and held positive attitudes towards vaccination were more likely to ensure their children received all recommended vaccines according to schedule. Conversely, caregivers with limited expertise or negative attitudes toward immunization were likelier to delay or refuse vaccinations for their children. These findings emphasize the importance of addressing knowledge gaps and promoting positive attitudes toward immunization among caregivers to enhance vaccination practices and improve immunization coverage rates among children (Brown, 2021)

Aligning with this study's findings, Birhanu et al. (2023) concluded that the participating mothers' knowledge and attitudes toward child vaccination were not enough, and they recommended further health education for mothers to promote knowledge. These findings underscore the importance of comprehensive interventions targeting knowledge enhancement and attitude promotion to improve vaccination practices and enhance immunization coverage rates. To guarantee efficient vaccination procedures and safeguard public health, it is essential to fill in knowledge gaps and encourage positive views on immunization among caregivers.

SUMMARY, CONCLUSION, AND RECOMMENDATION

This section provides a brief overview of the research study, encompassing the results, recommendations, and inferences drawn from them.

Summary

Despite the government's efforts to increase compliance with comprehensive childhood vaccination under the Expanded Program on Immunization, certain areas have yet to comply fully. Consequently, this study employed a descriptive-predictive research design to assess the knowledge and attitude levels as predictors of mothers' practices regarding the expanded immunization program in Barangay Bulakanon, Makilala, North Cotabato. An adapted questionnaire was administered to 109 purposively selected respondents who met the following criteria: they were 18 years old or older, residing in Barangay Bulakanon during the study period, had lived there for at least six months, and were mothers of children with incomplete or delayed childhood immunization.

Data collection took place from October 2023 to December 2023. The collected data were examined utilizing statistical techniques like Frequency and Percentage, Mean and Standard Deviation, Spearman Rho, and Nonparametric Regression (Kernel). The following sections present a concise overview of the discoveries made throughout this study project.

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Summary of Findings

Listed below is the summary of the findings of this study:

1. The majority of the respondents were aged between 24 and 35 (44 out of 109 respondents; 40.4%), married (85 out of 109; 78%), Roman Catholic (49 out of 109; 45%), Ilocano (41 out of 109; 37.6%), high school graduates (47 out of 109; 43.1%), homemakers (88 out of 109; 80.7%), had two to three children (46 out of 109; 42.2%), and earned Php1500-5687 a month (67 out of 109; 61.5%).
2. Regarding knowledge of the expanded immunization program, the respondents had a mean value of 3.80 (High) on service delivery and 3.50 (High) on the program's advantages. Overall, the respondents had a mean value of 3.65 (High) regarding their knowledge of these programs.
3. Regarding attitude toward the expanded immunization program, the respondents had the highest mean on trust in institutions and healthcare workers (M=3.81; high) and the need for vaccination (M=3.70; high). The respondents had a mean value of 3.76 (Positive) concerning their attitude toward these programs.
4. Regarding practices regarding the expanded vaccination program, the respondents had the highest mean on compliance (M=3.86; high) and (M=3.61) for the child's vaccination status. Overall, the respondents had a mean value of 3.74 (High) regarding their practices toward the expanded vaccination program.
5. Concerning the relationship between knowledge and practices and attitude and practices toward the expanded program on immunization, there is a positive correlation between attitude (rs=.256, p=<.007), particularly regarding their trust in healthcare personnel (rs =.406, p=<.001), and expanded immunization practices. These results reject the null hypothesis (H01.2) since their p-values were less than the 0.05 alpha level of significance. Thus, there is no significant relationship between the level of practice and the amount of knowledge about service delivery (rs =.000, p =.997) or the advantages of the program (rs =.107, p =.267).
6. Regarding the prediction of knowledge and attitude on practices on the expanded program on immunization, knowledge in terms of service delivery (OE= -0.023, p=.847) and advantages of programs (OE= 0.074, p=.436) do not predict the practices on the expanded program on immunization. These results led to accepting the null hypothesis (H02.1) since their p-values were more significant than the 0.05 alpha significance level. On the other hand, respondents' attitudes on the need for vaccination (OE= 0.344, p=.009) and trust in institutions and healthcare workers (OE=0.502, p=.000) predict practice on the expanded program on immunization among mothers.

Conclusion

In summary, this study provides insight into the demographic characteristics and awareness among mothers in Barangay Bulakanon, Makilala, North Cotabato, regarding the extended immunization program. Most polled moms fell within a defined age range, marital status, religious affiliation, educational background, occupation, family size, and income bracket.

While the study revealed a commendable level of knowledge among mothers regarding the service delivery aspect of the immunization program, there appears to be a gap in their understanding of the program's benefits. This suggests a need for targeted educational interventions to enhance mothers' awareness of the advantages of immunization programs.

On a positive note, mothers generally exhibited a favorable attitude towards the expanded immunization program, with a notable level of trust in healthcare institutions and workers. This positive attitude was associated with better compliance with immunization practices, indicating the importance of fostering trust and confidence in healthcare providers to promote vaccine uptake.

However, despite the favorable attitude observed, there is still a discrepancy between attitude and actual vaccination practices, highlighting the need for strategies to bridge this gap. While knowledge alone may not be a strong predictor of vaccination practices, the study underscores the significant influence of attitude, mainly trust in healthcare providers, on immunization behaviors.

Overall, the implications of this study emphasize the importance of targeted interventions aimed at improving mothers' understanding of the benefits of immunization programs, as well as fostering trust and confidence in healthcare providers. By addressing these factors, efforts can be made to enhance vaccine uptake and ultimately contribute to achieving optimal immunization coverage in Barangay Bulakanon and similar communities.

Recommendations

1. Develop Tailored Education and Outreach Initiatives: Given the diverse demographic profile of the respondents, tailored educational campaigns should be developed to address specific demographic characteristics such as age, academic level, and income status. These campaigns should utilize various channels, including community outreach programs, informative sessions, and multimedia campaigns, to effectively disseminate information about the expanded program on immunization and its benefits.
2. Enhance Knowledge Dissemination on Service Delivery and Program Advantages: Efforts should be made to enhance knowledge dissemination regarding service delivery and the advantages of the immunization program. This could involve targeted educational interventions focused on improving understanding and awareness among respondents about the procedures and benefits of accessing immunization services, ultimately leading to informed decision-making and increased uptake of vaccination services.
3. Foster Positive Attitudes Through Trust-Building Measures: To further enhance positive attitudes towards the expanded program on immunization, trust-building measures should be implemented, mainly focusing on reinforcing trust in institutions and healthcare workers. Collaborating with trusted community leaders, healthcare professionals, and religious institutions can help convey accurate information and promote confidence in vaccination programs, thus fostering positive attitudes and increasing willingness to participate.
4. Strengthen Practices Through Supportive Interventions: Efforts should be directed towards strengthening practices related to the expanded immunization program, mainly focusing on improving compliance with vaccination schedules and enhancing the child's vaccination status. This could involve implementing supportive interventions such as reminder systems, mobile vaccination clinics, and community-based outreach programs to ensure timely and complete vaccination coverage among mothers and their children.
5. Monitor and Evaluate the Relationship Between Knowledge, Attitude, and Practices: It is crucial to regularly monitor and evaluate the correlation between knowledge, attitude, and practices related to the expanded immunization program. This is necessary to identify areas that need improvement and measure treatments' success. This data-driven approach can inform targeted strategies to address specific gaps and enhance immunization outcomes.
6. Empower Communities for Sustainable Engagement: Promoting active community involvement and participation in decision-making processes surrounding immunization helps cultivate a feeling of ownership and responsibility. Involving community members in planning, implementing, and evaluating immunization initiatives can lead to more effective and sustainable vaccination programs tailored to the community's specific needs and preferences.
7. Future research could investigate how trust in healthcare workers influences immunization behaviors and practices. Gaining a deep understanding of the subtle aspects of this relationship could help create specific treatments that attempt to improve trust and confidence in healthcare practitioners to increase vaccine uptake effectively. Moreover, conducting additional research on alternative factors that may influence immunization practices, in addition to knowledge and attitude, could offer a more thorough insight into the factors that impact vaccination habits among women in similar situations.

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