



BARRIERS TO VACCINATION COMPLIANCE AMONG MOTHERS OF 0–5-YEAR-OLD CHILDREN IN CABATUAN EAST DISTRICT

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ABSTRACT

This study, conducted from May to June 2025, aimed to identify the vaccination compliance among mothers of 0-5 Year-Old Children in Cabatuan East District Childhood vaccination remains one of the most effective public health interventions. However, *vaccination compliance* continues to be affected by various personal, social, and contextual factors. This study determined the primary barriers to *vaccination compliance* among mothers of children aged 0-5 years in *Cabatuan East District*. Specifically, it described the respondents' demographic profile in terms of highest *educational attainment*, employment status, and number of children; identified the primary barriers to *vaccination compliance* in terms of personal and family-related barriers, health system and provider barriers, and belief, cultural, and religious barriers; and determined whether significant differences in perceived barriers existed when respondents were grouped according to their demographic profile. The study employed a quantitative descriptive-comparative research design involving 153 mothers of children aged 0-5 years selected through purposive sampling. Data were collected using a validated researcher-adapted questionnaire and analyzed using frequency, percentage, weighted mean, and the Kruskal–Wallis H test. Findings revealed that most respondents were high school graduates, unemployed, or housewives, and had two children. Overall, the respondents perceived *vaccination barriers* as moderate, with personal-and-family-related barriers emerging as the most prominent, followed by belief, cultural, and religious barriers, while health system-and provider-barriers were perceived as slight. Significant differences in perceived barriers were found when respondents were grouped according to *educational attainment* and number of children. However no significant difference was observed based on employment status. The findings suggest that mothers with lower *educational attainment* and larger families are more likely to experience challenges in *vaccination*

compliance. The study concludes that strengthening family-centered health education, improving vaccine communication, and implementing targeted interventions for mothers with lower *educational attainment* and larger households may enhance childhood *vaccination compliance* in the community.

Keywords: *vaccination compliance, childhood immunization, vaccination barriers, mothers of preschool children, educational attainment, family size, Cabatuan East District*

INTRODUCTION

Vaccination is a cornerstone of public health and one of the most effective ways to prevent infectious diseases and reduce child mortality. This study focuses on identifying barriers to vaccination among children aged 0-5 years, particularly in the Philippines, where immunization challenges persist. Key variables include access to healthcare, socioeconomic factors, vaccine hesitancy, and the impact of public health campaigns. Understanding these factors is vital to improving immunization programs, strengthening healthcare systems, and ensuring equitable access to vaccines. The findings will contribute to the field of public health by addressing systemic gaps and informing strategies that healthcare professionals can implement in practice (Boulton et al, 2021).

Globally, vaccination efforts have faced significant challenges, particularly during the COVID-19 pandemic, which disrupted routine immunization services. The World Health Organization (WHO, 2021) reported that more than 23 million children missed essential vaccinations in 2020 alone, the highest number recorded in a decade. Locally, the Philippines has experienced declining immunization rates, exacerbated by logistical barriers, socioeconomic inequalities, and vaccine hesitancy fueled by the Dengvaxia controversy (Rosario & Santos, 2021). These trends indicate a growing need for targeted interventions, as under-vaccination has led to outbreaks of vaccine-preventable diseases such as measles and polio. These developments underscore the urgency of addressing barriers to vaccination at both the global and local levels (Mavhandu et al, 2021).

This research aims to examine the multifaceted barriers to vaccination and propose actionable solutions to improve immunization rates. Studies emphasize that addressing these barriers requires a comprehensive understanding of cultural, economic, and systemic factors (Figueroa et al, 2021; Smith et al, 2021). By investigating the specific barriers faced by Filipino families, this study seeks to inform the development of sustainable vaccination strategies. Addressing these issues is critical not only for achieving higher immunization rates but also for protecting public health and reducing the burden of vaccine-preventable diseases.

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sustainable vaccination strategies. Addressing these issues is critical not only for achieving higher immunization rates but also for protecting public health and reducing the burden of vaccine-preventable diseases.

Research Questions

1. What is the demographic profile of the participants in terms of:
 - 1.1 Highest *Educational Attainment*
 - 1.2 Employment Status
 - 1.3 Number of Children
2. What are the primary barriers to *vaccination compliance* among mothers of pre- school children in terms of:
 - 2.1 Personal and Family- Related Barriers
 - 2.2 Health System and Providers Barriers
 - 2.3 Belief, Cultural and Religious Barriers
3. Is there a difference in the barriers to *vaccination compliance* when grouped according to their demographic profile?

METHODOLOGY

This section presents the methods and procedures used in conducting the study. It describes the research design, study site, and participants, sampling method, research instrument, data gathering procedure, data analysis, and ethical considerations observed throughout the research process.

Research Design

This section employed a descriptive quantitative research approach to systematically and comprehensively describe the "what," "where," "when," and "how" of the study's focus on a specific population, situation, issue, or event. As McCombes (2022) explains, this method is particularly effective for studies exploring characteristics, frequencies, trends, and classifications. It is well-suited to scenarios where understanding these factors is crucial, such as in the current investigation.

Surveying is the primary data collection method, enabling researchers to gather and analyze extensive information, particularly on demographic details, performance evaluation, satisfaction assessment, and the effectiveness of strategies or practices. For instance, surveys are instrumental in measuring performance metrics and determining the success of specific practices by systematically collecting and analyzing respondents' feedback (Ashour et al, 2023). This approach ensures the study yields reliable and actionable insights.

Study Site and Participants

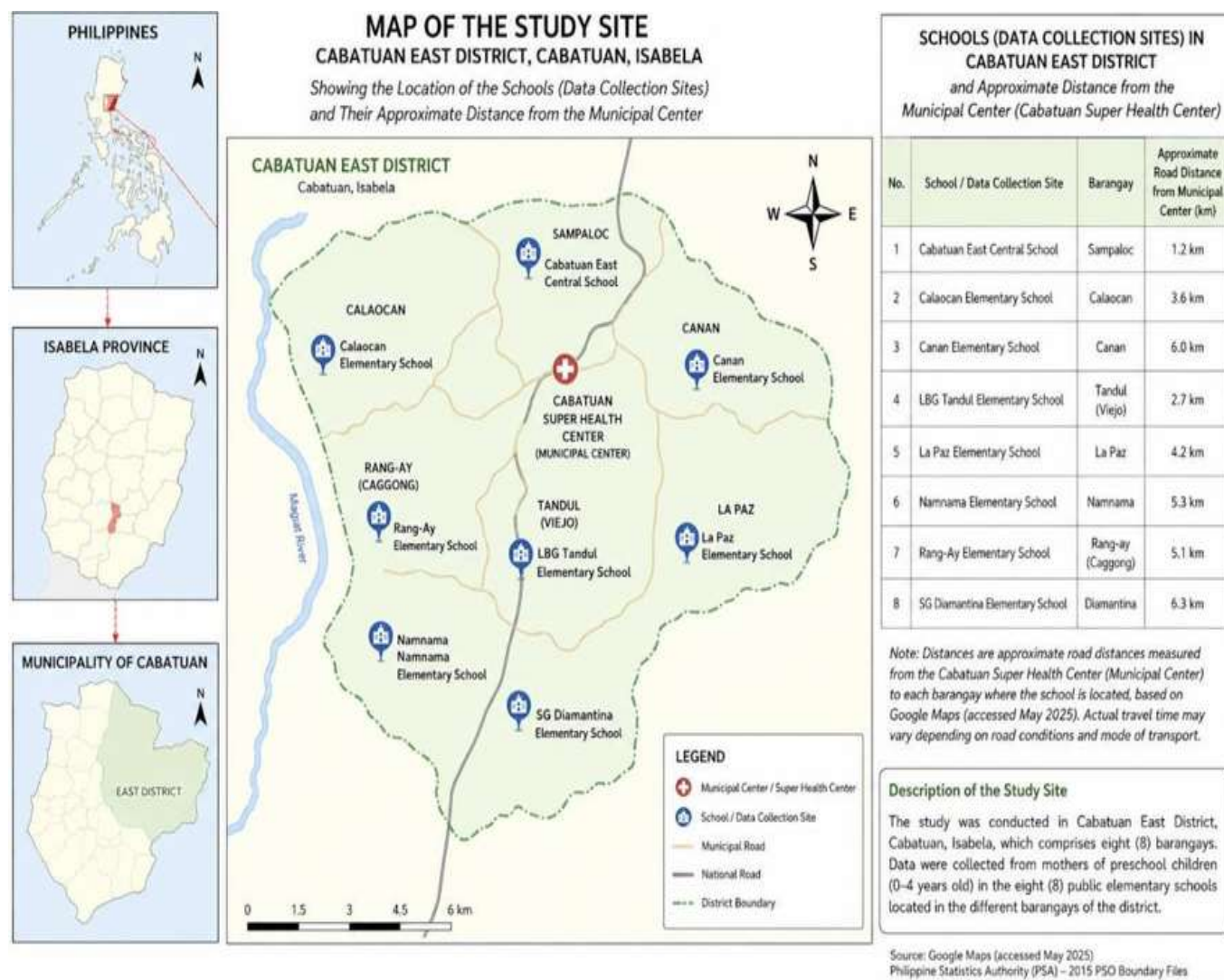


Figure 2. The Map of the Study Site

The study was conducted in *Cabatuan East District*, Municipality of Cabatuan, Province of Isabela, Philippines. The district is composed of eight (8) barangays, namely Sampaloc, Calaocan, Canan, Tandul (Viejo), La Paz, Namnama, Rang-ay (Caggong), and Diamantina. Data were collected from *mothers of preschool children* through the eight (8) public elementary schools located in these barangays: Cabatuan East Central School, Calaocan Elementary School, Canan Elementary School, LBG Tandul Elementary School, La Paz Elementary School, Namnama Elementary School, Rang-Ay Elementary School, and SG Diamantina Elementary School.

As shown in Figure 2, the participating schools are distributed across the eastern,

northern, and northeastern portions of Cabatuan. The Cabatuan Super Health Center, located in Barangay San Andres, serves as the municipality's primary government health facility, providing comprehensive maternal and child healthcare services, including routine immunization. The participating barangays are located approximately 5 to 12 kilometers from the Super Health Center, with estimated travel times ranging from 8 to 25 minutes, depending on road conditions and available transportation. Although each barangay has a Barangay Health Station that provides basic primary healthcare services, many residents seek consultations and other maternal and child health services at the Super Health Center because of its wider range of healthcare personnel, diagnostic facilities, and comprehensive medical services.

The respondents of the study were mothers aged 18 years and above who had one or more children aged 1 to 5 years and whose children were enrolled in any of the eight participating public elementary schools. The list of eligible participants was verified through records obtained from the Municipal Health Office (MHO) and coordinated with the respective schools to facilitate data collection.

To ensure that the respondents could provide relevant information regarding childhood *vaccination compliance*, the following inclusion criteria were applied:

- mothers aged 18 years and above;
- mothers with at least one child aged 1 to 5 years;
- residents of any of the eight barangays comprising *Cabatuan East District*;
- mothers whose children were identified through Municipal Health Office records and were enrolled in the participating schools; and
- mothers who voluntarily agreed to participate by signing the informed consent form.

The following exclusion criteria were likewise observed:

- mothers below 18 years of age;
- mothers without children aged 1 to 5 years;
- mothers who were not residents of the identified study barangays;
- mothers who declined or withdrew their consent to participate; and
- respondents who were unavailable during the scheduled data collection period or submitted incomplete questionnaires.

These eligibility criteria ensured that the respondents had recent and relevant experiences with childhood vaccination and were capable of providing reliable information regarding the barriers to *vaccination compliance* among preschool children in *Cabatuan East District*.

Population, Sample Size, and Sampling Method

The total population of this study was 252, divided into different schools of Cabatuan District. Using a Sampling Calculator, the computed sample size is 153, following the 95% level of confidence and 5% margin of error.

Barangay	Total Population	Sample Size
Cabatuan East Central School	23	14
Calaocan Elementary School	26	16
Canan	22	13
LBG Tandul	27	17
La Paz	69	42
Namnama	22	13
Rang-Ay	28	17
SG Diamantina	35	21
Total	252	153

To ensure data reliability, the study utilized proportionate stratified random sampling to divide the respondents in the eight (8) schools.

RESULTS

This section presents the methods and procedures used in conducting the study. It describes the research design, study site and participants, sampling method, research instrument, data gathering procedure, data analysis, and ethical considerations observed throughout the research process.

Part 1. Demographic Profile of the Respondents

Table 1

Distribution of the Respondents According to their Demographic Profile

Highest Educational Attainment	f	%
Elementary Graduate	28	18.3
High school Graduate	64	41.8
College Graduate	52	34.0
Post Graduate	9	5.9
TOTAL	153	100.0
Employment Status	f	%
Government Employee	13	8.5
Private Employee	60	39.2
Unemployed (Housewife)	80	52.3
TOTAL	153	100.0
Number of Children	f	%
1	31	20.3
2	54	35.3
3	30	19.6

More than 3	38	24.8
TOTAL	153	100.0

Table 1 shows the distribution of the respondents according to their demographic profile. It reveals that most of the respondents were high school graduates (41.8%), unemployed (52.3%), and most of them had 2 children (35.3%).

Part 2. The Primary Barriers to *Vaccination Compliance* Among Mothers of Pre-School Children.

Table 2: Mean Distribution of Primary Barriers to *Vaccination Compliance* among Mothers of Preschool Children as of Personal and Family-Related Barriers

Particulars	M	Interpretation
1. I am afraid of the possible side effects of vaccines	3.06	Moderately a Barrier
2. I don't understand the importance of vaccines	2.24	Slightly a Barrier
3. I usually forget vaccination schedules	2.59	Moderately a Barrier
4. I don't feel confident giving permission for vaccines without my husband's input.	3.14	Moderately a Barrier
5. Other family members discourage me from having my child vaccinated.	2.45	Slightly a Barrier
Category Mean	2.69	Moderately a Barrier

As shown in Table 2, the respondents' personal and family-related barriers had a categorical mean of 2.69, interpreted as a moderate barrier. Among the five indicators, the statement, "I don't feel confident giving permission for vaccines without my husband's input," had the highest mean of 3.14, indicating that it was the most prominent personal and family-related barrier. In contrast, the statement, "I don't understand the importance of vaccines," had the lowest mean of 2.24, suggesting that lack of understanding of the importance of vaccines was the least perceived barrier among the respondents.

Table 3: Mean Distribution of Primary Barriers to *Vaccination Compliance* among Mothers of Preschool Children as to Belief, Cultural, and Religious Barriers

Particulars	M	Interpretation
1. The health center is far or hard to reach.	2.49	Slightly a Barrier
2. I can't afford the transportation cost to visit the health center	2.39	Slightly a Barrier
3. Health workers don't clearly explain the vaccines or their schedule.	2.19	Slightly a Barrier

4. I've had a bad experience with health personnel.	2.09	Slightly a Barrier
5. Some vaccines were not available when I went to the center.	2.44	Slightly a Barrier
Category Mean	2.32	Slightly a Barrier

Table 3 presents the mean distribution of the primary barriers to *vaccination compliance* among *mothers of preschool children*, categorized by health system and provider barriers. The results yielded a categorical mean of 2.32, interpreted as a slight barrier. This indicates that, overall, health system and provider-related factors posed only minimal challenges to respondents' *vaccination compliance*. Nevertheless, the individual indicators suggest that these factors still influenced mothers' decisions to varying degrees.

Table 4: Mean Distribution of the Primary Barriers to *Vaccination Compliance* among *Mothers of Preschool Children* in terms of Belief, Cultural, and Religious Barriers.

Particulars	M	Interpretation
1. I believe my child doesn't need vaccines if they are not sick.	2.72	Moderately a Barrier
2. I delay or avoid vaccination because I rely on traditional or herbal remedies for my child's health	2.44	Slightly a Barrier
3. I am concerned vaccines can cause infertility or other unknown effects	2.33	Slightly a Barrier
4. My religion discourages or does not support vaccination.	2.25	Slightly a Barrier
5. I believe that vaccines may be harmful because they come from foreign sources.	2.93	Moderately a Barrier
Category Mean	2.53	Moderately a Barrier

Table 4 presents the mean distribution of the primary barriers to *vaccination compliance* among *mothers of preschool children* in terms of belief, cultural, and religious barriers. The findings yielded a categorical mean of 2.53, interpreted as a moderate barrier. Among the five indicators, the statements “I believe that vaccines may be harmful because they come from foreign sources” and “I believe my child doesn't need vaccines if they are not sick” obtained the highest mean scores of 2.93 and 2.72, respectively, indicating that these were the most prominent belief-, cultural-, and religion-related barriers perceived by the respondents.

Table 5: Summary of the Primary Barriers to Vaccination Compliance among Mothers of Preschool Children

Category	M	Interpretation
Personal and Family-Related Barriers	2.69	Moderately a Barrier
Health System and Providers Barriers	2.32	Slightly a Barrier
Belief, Cultural and Religious Barriers	2.53	Moderately a Barrier
Overall Mean	2.52	Moderately a Barrier

Table 5 presents the summary of the primary barriers to *vaccination compliance* among *mothers of preschool children*. The results yielded an overall mean of 2.52, interpreted as a moderate barrier. Among the three categories, personal and family-related barriers obtained the highest mean, indicating that they were the most prominent barriers to *vaccination compliance*. In contrast, health system and provider barriers recorded the lowest mean of 2.32, interpreted as a slight barrier, suggesting that these factors were the least perceived barriers among the respondents.

Part 3: Difference in the Barriers to Vaccination Compliance When Grouped According to their Demographic Profile

Table 6

Differences in the Barriers to Vaccination Compliance among Mothers of Preschool Children when grouped according to Highest Educational Attainment

Highest Educational Attainment					
Personal and Family-Related Barriers	N	Mean Rank	H Test	df	p-value
Elementary	28	105.54	27.712	3	<0.001
High School	64	84.04			
College	52	54.17			
Post Graduate	9	70.06			
Highest Educational Attainment					
Health System and Providers Barriers	N	Mean Rank	H Test	df	p-value
Elementary	28	89.13	14.451	3	0.002
High School	64	77.13			
College	52	63.47			
Post Graduate	9	116.50			
Highest Educational Attainment					
Belief, Cultural and Religious Barriers	N	Mean Rank	H Test	df	p-value

Elementary	28	86.27	7.665	3	0.063
High School	64	84.37			
College	52	64.85			
Post Graduate	9	66.00			

Table 6 presents the differences in the barriers to *vaccination compliance* among *mothers of preschool children* when grouped according to highest *educational attainment*.

The Kruskal-Wallis H Test was used to determine whether there were any statistically significant Differences in the Barriers to *Vaccination Compliance* among *Mothers of Preschool Children* when grouped according to Highest

Educational Attainment. The results indicated significant Differences in the Barriers to *Vaccination Compliance* among *Mothers of Preschool Children* when grouped according to the Highest *Educational Attainment* in terms of personal and family-related barriers ($H(3) = 27.712$, $p < 0.001$) and health system and provider barriers ($H(3) = 14.451$, $p = 0.002$). Additionally, there are no significant Differences in the Barriers to *Vaccination Compliance* among *Mothers of Preschool Children* when grouped according to Their Highest *Educational Attainment* in terms of belief, cultural, and religious barriers ($H(3) = 7.665$, $p = 0.063$). Thus, the null hypothesis must be rejected at a 0.05 significance level.

According to Dunn's pairwise tests, there was very strong evidence (adjusted using the Bonferroni correction) that there are statistically significant Differences in the Barriers to *Vaccination Compliance* among *Mothers of Preschool Children* when grouped according to the Highest *Educational Attainment* in terms of personal and family-related barriers and health system and providers barriers.

The results demonstrate that *educational attainment* plays a significant role in shaping mothers perceived barriers to *vaccination compliance*. Specifically, differences were observed in personal and family-related barriers as well as in health system and provider-related barriers, indicating that mothers' level of education may influence how they manage family decision-making and how they perceive the accessibility or quality of health services. However, no significant differences were found in belief, cultural, and religious barriers, suggesting that these perceptions cut across all educational levels.

Table 7

Pairwise Comparisons of Highest Educational Attainment in terms of Personal and Family-Related Barriers

Sample 1-Sample 2	Mean Rank Difference	p-value	Decision
College-High School	29.866	0.001	Significant
College-Elementary	51.363	0.008	Significant

Post-Graduate-Elementary	35.480	0.035	Significant
High School - Elementary	21.497	0.031	Significant

Table 7 presents the pairwise comparisons of highest *educational attainment* in terms of personal and family-related barriers.

The post hoc pairwise comparison reveals differences in barriers to *Vaccination Compliance* among *Mothers of Preschool Children* when grouped by highest *educational attainment*, in terms of both personal and family-related barriers.

The results reveal that there are statistically significant differences in the barriers to *vaccination compliance* among *mothers of preschool children* when grouped according to their highest *educational attainment*. Specifically, significant differences were noted in personal and family-related barriers as well as in health system and provider-related barriers, while no significant differences were found in belief, cultural, and religious barriers.

Table 8

Pairwise Comparisons of Highest Educational Attainment in terms of Health System and Providers' Barriers

Sample 1-Sample 2	Mean Rank Difference	p-value	Decision
College-Elementary	25.654	0.012	Significant
College-Post Graduate	-53.029	0.001	Significant

Table 8 presents the pairwise comparisons of highest *educational attainment* in terms of health system and providers' barriers.

The post hoc pairwise comparison reveals differences in the Barriers to *Vaccination Compliance* among *Mothers of Preschool Children* when grouped according to Their Highest *Educational Attainment* in terms of Health System and Provider Barriers.

The post hoc pairwise comparison indicates that *mothers of preschool children* experience differences in health system and provider-related barriers depending on their highest *educational attainment*.

Table 9

Differences in the Barriers to Vaccination Compliance among Mothers of Preschool Children when grouped according to Employment Status

Employment Status	N	Mean Rank	H Test	df	p-value
Personal and Family-Related Barriers					
Government Employee	13	64.58	1.525	2	0.09
Private Employee	60	68.73			
Housewife	80	86.84			
Employment Status	N	Mean Rank	H Test	df	p-value
Health System and Providers Barriers					
Government Employee	13	60.96	1.937	2	0.38
Private Employee	60	77.77			
Housewife	80	79.03			
Employment Status	N	Mean Rank	H Test	df	p-value
Belief, Cultural and Religious Barriers					
Government Employee	13	62.23	2.829	2	0.24
Private Employee	60	73.68			
Housewife	80	81.89			

Table 9 presents the differences in the barriers to *vaccination compliance* among *mothers of preschool children* when grouped according to employment status.

The Kruskal-Wallis H Test was used to determine whether there were any statistically significant Differences in the Barriers to *Vaccination Compliance* among *Mothers of Preschool Children* when grouped according to employment status. The results indicated no significant Differences in the Barriers to *Vaccination Compliance* among *Mothers of Preschool Children* when grouped according to Highest *Educational Attainment* in terms of personal and family-related barriers ($H(2) = 1.525$, $p = 0.09$), health system and providers barriers ($H(2) = 1.937$, $p = 0.38$) and belief, cultural and religious barriers ($H(2) = 2.829$, $p = 0.24$). Thus, the null hypothesis must be accepted at a 0.05 significance level.

The findings reveal that there are no statistically significant differences in the barriers to *vaccination compliance* among *mothers of preschool children* when grouped according to their employment status.

Table 10

Differences in the Barriers to Vaccination Compliance among Mothers of Preschool Children when grouped according to Number of Children

Number of Children	N	Mean Rank	H Test	df	p-value
Personal and Family-Related Barriers					
1	31	65.24	20.465	3	<0.001
2	54	67.47			
3	30	71.13			
More than 3	38	104.76			
Number of Children	N	Mean Rank	H Test	df	p-value
Health System and Providers Barriers					
1	31	71.00	2.934	3	0.40
2	54	75.51			
3	30	73.03			
More than 3	38	87.14			
Number of Children	N	Mean Rank	H Test	df	p-value
Belief, Cultural and Religious Barriers					
1	31	57.37	10.769	3	0.013
2	54	77.86			
3	30	76.68			
More than 3	38	92.04			

Table 10 presents the differences in the barriers to *vaccination compliance* among *mothers of preschool children* when grouped according to the number of children.

The Kruskal-Wallis H Test was used to determine whether there were any statistically significant Differences in the Barriers to *Vaccination Compliance* among *Mothers of Preschool Children* when grouped according to the number of children. The results indicated significant Differences in the Barriers to *Vaccination Compliance* among *Mothers of Preschool Children* when grouped according to the number of children in terms of personal and family-related barriers ($H(3) = 20.465$, $p < 0.001$) and belief, cultural, and religious barriers ($H(3) = 10.769$, $p = 0.013$). Additionally, there are no significant Differences in the Barriers to *Vaccination Compliance* among *Mothers of Preschool Children* when grouped according to Their Highest *Educational Attainment* in terms of health system and provider barriers ($H(3) = 2.934$, $p = 0.040$). Thus, the null hypothesis must be rejected at a 0.05 significance level.

According to Dunn's pairwise tests, there was very strong evidence (adjusted using the Bonferroni correction) that there are statistically significant Differences in the Barriers

to *Vaccination Compliance* among *Mothers of Preschool Children* when grouped according to the number of children, in terms of personal and family-related barriers, and Belief, cultural, and Religious Barriers.

Table 11

Pairwise Comparisons of Number of Children in terms of Personal and Family-Related Barriers

Sample 1-Sample 2	Mean Rank Difference	p-value	Decision
1-More than 3	-39.521	0.001	Significant
2-More than 3	-37.291	0.001	Significant
3 -More than 3	-33.630	0.002	Significant

Table 11 shows the pairwise comparisons of number of children in terms of personal and family-related barriers.

The post hoc pairwise comparison reveals differences in barriers to *Vaccination Compliance* among *Mothers of Preschool Children* when grouped by number of children, in terms of both personal and family-related barriers.

The pairwise comparison results show that mothers with more than three children significantly differ from those with one, two, or three children in terms of personal and family-related barriers to *vaccination compliance*.

Table 12

Pairwise Comparisons of Number of Children in terms of Belief, Cultural and Religious Barriers

Sample 1-Sample 2	Mean Rank Difference	p-value	Decision
1-2	-20.490	0.038	Significant
1-More than 3	-34.669	0.001	Significant

Table 12 presents the pairwise comparisons of the number of children in terms of belief, cultural, and religious barriers.

The post hoc pairwise comparison reveals differences in the Barriers to *Vaccination Compliance* among *Mothers of Preschool Children* when grouped according to the number of children, in terms of Belief, cultural, and Religious Barriers.

The pairwise comparison results indicate that mothers with one child significantly

differ from those with two children and those with more than three children in terms of belief, cultural, and religious barriers.

DISCUSSION

This section interprets the results by contextualizing them with existing literature to provide a deeper understanding of *vaccination barriers* in the *Cabatuan East District*. It analyzes how demographic profiles and various personal, systemic, and cultural barriers influence maternal decision-making. Finally, it discusses the practical implications for creating targeted, culturally sensitive health interventions

I. Demographic Profile

Table 1 presents the demographic profile of the respondents by highest *educational attainment*, employment status, and number of children. The findings show that the majority of respondents were high school graduates (41.8%), unemployed or housewives (52.3%), and had two children (35.3%). These characteristics suggest that most mothers in the study belong to households where childcare responsibilities are primarily managed at home and where *educational attainment* is generally at the secondary level.

The predominance of high school graduates aligns with previous studies showing that *educational attainment* influences health literacy and the ability to understand health information. Larson et al. (2014) emphasized that mothers with higher *educational attainment* are generally more likely to understand the benefits of *childhood immunization* and make informed healthcare decisions. Similarly, Dubé et al. (2013) reported that education enhances parents' ability to evaluate vaccine-related information and reduces their susceptibility to misinformation. The relatively large proportion of mothers with only secondary education may explain why some respondents still faced barriers to vaccination despite recognizing its importance.

The finding that more than half of respondents were unemployed or housewives suggests that mothers were the primary caregivers responsible for monitoring their children's immunization schedules. However, as Maturan et al. (2022) note, being at home does not necessarily ensure *vaccination compliance*, as decisions may still be influenced by family support, access to health services, and parental beliefs. Likewise, the predominance of mothers with two children indicates that many respondents already had prior parenting experience, which may have increased their familiarity with routine *childhood immunization* (Aboagye et al., 2022). Nevertheless, caring for multiple children may also increase household responsibilities that compete with scheduled health visits.

These findings underscore the importance of designing vaccination promotion strategies that align with the demographic characteristics of mothers in the community. Health education materials should be presented in simple, culturally appropriate language, while community health nurses and barangay health workers should continue to provide individualized education, reminders, and family-centered support to encourage

timely *childhood immunization*.

II. Primary Barriers to Vaccine Compliance

Personal and Family-Related Barriers

Table 2 showed that personal and family-related factors were perceived as moderate barriers to *vaccination compliance*, with family decision-making the most influential concern. The highest-rated indicator was that mothers lacked confidence in giving permission for vaccination without their husbands' approval, whereas the lowest-rated indicator was that most respondents already understood the importance of childhood vaccination. These findings suggest that *vaccination compliance* is influenced more by family dynamics and shared decision-making than by lack of knowledge.

The findings support the Health Belief Model, which holds that perceived barriers can deter individuals from engaging in preventive health behaviors, even when they recognize the benefits of vaccination (Rosenstock et al., 1988). Likewise, Dubé et al. (2013) and Larson et al. (2014) reported that parental confidence, family influence, and shared household decision-making significantly affect *childhood immunization*. In many Filipino families, healthcare decisions are made jointly by both parents, which may explain why some mothers hesitate to proceed with vaccination without consulting their husbands. At the same time, the low rating for lack of knowledge suggests that previous health education efforts have generally increased mothers' awareness of the importance of immunization. These findings suggest that *childhood immunization* programs should go beyond educating mothers alone and actively engage fathers and other family members. Community health nurses and barangay health workers should promote family-centered health education, counseling, and vaccination campaigns that foster shared parental responsibility. Strengthening family support and participation may help reduce personal barriers and improve *vaccination compliance* among preschool children.

III. Differences in Barriers to *Vaccination Compliance* Based on Demographic Profile

The study revealed that perceived barriers to *vaccination compliance* differed significantly when mothers were grouped by highest *educational attainment* and number of children, whereas no significant difference was found by employment status. These findings suggest that mothers' educational background and parenting experience influence how they perceive barriers to childhood vaccination, whereas employment status alone does not.

The significant difference by *educational attainment* aligns with previous studies showing that education plays an important role in health literacy and vaccination decisions. Larson et al. (2014) found that mothers with higher *educational attainment* are generally better able to understand health information and recognize the benefits of *childhood immunization*. Similarly, Dubé et al. (2013) emphasized that education enables parents to evaluate vaccine-related information more critically and make informed health decisions. In the present study, mothers with lower *educational attainment* were more

likely to perceive greater barriers, possibly because they had fewer opportunities to access or understand reliable health information. This finding suggests that health education activities should be tailored to mothers' educational levels by using simple, culturally appropriate, and easily understandable communication materials.

Likewise, the significant difference by number of children suggests that parenting experience and family responsibilities shape mothers' perceptions of *vaccination barriers*. Although mothers with more children may be more familiar with routine immunization schedules, they also face greater caregiving responsibilities and competing household demands that may make it harder to adhere to scheduled vaccinations. This finding aligns with Aboagye et al. (2022), who reported that larger *family size* may increase the challenges of accessing routine immunization services. The result underscores the importance of providing ongoing reminders and flexible vaccination services for mothers managing larger households.

In contrast, no significant difference was observed when respondents were grouped by employment status. This indicates that employed mothers and housewives faced similar barriers to childhood vaccination. The finding suggests that vaccination decisions are influenced more by family support, educational background, and parenting responsibilities than by employment status alone. This observation aligns with Maturan et al. (2022), who reported that maternal employment does not necessarily determine *vaccination compliance* because other personal, family, and health system factors have a greater influence on immunization behavior. Therefore, vaccination promotion strategies should be implemented across all employment groups while focusing on the common barriers experienced by mothers in the community.

Overall, the findings indicate that *educational attainment* and *family size* are important factors influencing mothers' perceptions of *vaccination barriers*. These results underscore the need for targeted health education and family-centered immunization strategies that address the specific needs of mothers with lower *educational attainment* and larger families while maintaining inclusive vaccination programs for all mothers regardless of employment status.

Conclusions

Based on the findings of the study, the following conclusions are drawn:

Demographic Profile of the Respondents

The mothers in the *Cabatuan East District* are primarily high school graduates (41.8%) and unemployed or housewives (52.3%). Most families are comprised of two children (35.3%), though a notable portion has more than three. This profile indicates that the study population generally consists of families with modest educational backgrounds and limited formal employment, which are significant factors in shaping their healthcare access and vaccine-related decision-making processes.

Primary Barriers to *Vaccination Compliance*

Vaccination hesitancy in the study area is a multifaceted issue driven primarily by personal and family-related barriers, followed by belief, cultural, and religious concerns, both of which were perceived as moderate obstacles. Specifically, the lack of maternal confidence in making health decisions without spousal input and skepticism regarding foreign-made vaccines were the most prominent individual challenges. In contrast, health system and provider-related factors were perceived as the least significant or only "slight" barriers, suggesting that service delivery is relatively stable, but internal family dynamics and personal beliefs remain the critical hurdles to universal compliance.

Differences Based on Demographic Profile

There are significant differences in the perception of *vaccination barriers* when mothers are grouped by their *educational attainment* and number of children. Mothers with lower education levels and larger families encounter substantially higher personal, family, and belief-based challenges. However, employment status does not significantly influence these barriers, as both working and non-working mothers perceive similar levels of difficulty in adhering to vaccination schedules. Therefore, the null hypothesis is partially rejected, confirming that academic background and *family size* are the primary demographic determinants of vaccine compliance in this district

Recommendations

Based on the findings and conclusions of the study, the following recommendations are proposed:

The Municipal Health Office should strengthen community-based immunization programs by implementing regular health education sessions that address common concerns regarding childhood vaccination. Information campaigns should emphasize the safety, effectiveness, and importance of completing the recommended immunization schedule while actively countering misinformation and misconceptions about vaccines.

Community health nurses and barangay health workers should intensify household visits, personalized counseling, and reminder systems for *mothers of preschool children*. Since personal and family-related barriers were identified as the primary challenges, health education should encourage the participation of both mothers and fathers in vaccination-related decisions to promote shared responsibility and increase vaccine acceptance.

The Local Government Unit should continue supporting immunization programs through adequate logistical, financial, and human resources. Strengthening partnerships among the Municipal Health Office, barangay officials, schools, and community organizations may improve the delivery of vaccination services and increase community participation in immunization activities.

Parents should actively seek accurate and reliable information regarding *childhood*

immunization from qualified healthcare professionals rather than relying on misinformation from informal sources. Family members should support mothers in making timely vaccination decisions to ensure that children receive complete protection against vaccine-preventable diseases.

Future studies may investigate additional factors influencing *vaccination compliance*, such as vaccine literacy, trust in healthcare providers, exposure to social media misinformation, and parental health beliefs. Researchers may also employ qualitative or mixed-methods designs to gain a deeper understanding of parents' experiences and decision-making processes. Furthermore, similar studies may be conducted in other municipalities or provinces to compare findings across different geographical and socioeconomic settings and enhance the generalizability of the results.

Compliance of Ethical Standards

The study followed ethical standards to safeguard the well-being of participants. Essential ethical considerations encompass:

Ethical considerations are critical in ensuring the integrity and respect for participants in this study. The following principles guided the research process:

Informed Consent. Participants were provided with detailed information about the study, including its objectives, purpose, procedures, potential risks, and benefits. Moreover, written or verbal consent was obtained from all participants before their involvement in the study. For mothers with limited literacy, the consent form will be explained verbally to ensure comprehension. Participants will be informed of their right to withdraw from the study at any time without penalty.

Voluntary Participation. Participation in the study will be entirely voluntary. Mothers will not be coerced or pressured into taking part in the research. No financial or material incentives will be used to unduly influence participation, although small tokens of appreciation (e.g., informational health leaflets) may be provided.

Confidentiality and Privacy. All personal information collected during the study will be kept strictly confidential. Identifiers, such as names or addresses, will not be linked to the responses in the survey. Data will be stored securely, and access will be restricted to authorized research team members only. Survey results will be reported in aggregate form, ensuring that individual participants cannot be identified.

Anonymity. The study will be designed to maintain the anonymity of participants wherever possible. Responses will be coded to prevent the identification of specific individuals.

Cultural Sensitivity. The researcher will ensure that the questionnaire and interactions with participants are culturally appropriate and respectful of the community's norms and values. Efforts will be made to use language that is easily understood by the participants.

Responsible use of AI. The use of artificial intelligence (AI) in this study was limited

to assisting with language refinement and organization, while all analysis, interpretation, and conclusions remained the sole responsibility of the researcher. AI tools were used ethically, with careful verification of content, proper citation of sources, and strict protection of participants' data and confidentiality.

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