

## Factors associated with parental acceptance of Covid-19 pediatric vaccination in camiling, Tarlac, Philippines: A cross sectional study

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### ABSTRACT

Controlling, containing, and fighting the Covid-19 virus depends on vaccination; thus, everyone is qualified. All are encouraged to take the Covid-19 jab for the country to achieve herd immunity. Moreover, for pediatric vaccination, parents' decisions play a crucial role in the vaccination program. The study assessed the factors associated with parental acceptance of pediatric vaccination for Covid-19. The study was conducted at Camiling Central Elementary School in Camiling, Tarlac - for the School Year 2022 - 2023. The study used quantitative descriptive research with a correlational design with 310 parents as the respondents using Slovin's Formula at a 5% error. Structured, validated, and reliability-tested questionnaires - were used in gathering data. The study found that most respondents were less than 40 years old, most were women, had completed college level, and most were from the lower class in their economic status. In addition, the study revealed that 298 out of 310 parents had received Covid-19 vaccines. However, there were 12 who were not vaccinated because they were still undecided. The study also found that respondents primarily obtained information about Covid-19 through social media. In addition, the study revealed that the respondents moderately accepted pediatric vaccination of Covid-19 in terms of effectiveness, convenience, complacency, and confidence. It showed no significant correlation between the demographic profile of age ( $p = 0.237$ ,  $r = 0.067$ ), gender ( $p = 0.270$ ,  $r = 0.063$ ), educational attainment ( $p = 0.144$ ,  $r = 0.083$ ), and level of parental acceptance. Moreover, the study discovered a substantial connection between economic status ( $p = 0.130$ ,  $r = 0.086$ ), vaccination status ( $p = 0.025$ ,  $r = 0.127$ ), and level of parental acceptance of Covid-19 pediatric vaccination. Finally, there are problems encountered by the respondents in Covid-19 vaccination. Thus, researchers proposed intervention measures to address the related issues.

### 1. Introduction

Coronavirus Disease (Covid-19) unprecedentedly impacted global public health, necessitating the rapid development and distribution of vaccines to mitigate its spread and

severity. Thus, these vaccines were introduced to children in late October 2021. While the vaccination of adults has played a crucial role in controlling the pandemic, extending vaccination efforts to the pediatric population is essential for achieving comprehensive immunity and further curbing transmission.

However, according to the Journal of the American Medical Association (JAMA), over 2.3 million children aged five to eleven had Covid-19, with over 200 passed away. The vaccine is now approved for use in children and is crucial for achieving complete immunity and reducing transmission; however, many of the parents and guardians of these children are still reluctant to have their children vaccinated (Suran, 2022).

According to DeCuir et al. (2022), only 36% of US children aged 05 - 11 have had two doses of the Covid-19 vaccine. Moreover, the authors cited two reasons parents are they are discouraged from having their children vaccinated. They seriously doubt the effectiveness of the vaccine, and they also believe that children are not vulnerable (low risk) to the Covid-19 virus.

Parental hesitation remains a substantial challenge despite the availability and proven effectiveness of Covid-19 vaccines. This hesitancy is reflected all over the world, where concerns about vaccine effectiveness and perceived low risk to children have contributed to suboptimal vaccination rates among the pediatric population.

Hence, acknowledging the significance of immunization in safeguarding children's health and facilitating their return to school, initiatives like the "Resbakuna Kids" campaign in the Philippines have been launched to promote pediatric Covid-19 vaccination.

In Tarlac City, a proactive vaccination campaign has been initiated, with schools serving as vaccination centers. However, challenges persist, as observed in Camiling Central Elementary School, where many students remain unvaccinated. This underscores the need to delve deeper into the factors influencing parental decisions regarding Covid-19 vaccination for their children.

Due to the circumstances mentioned above, the researcher conducted this cross-sectional study to explore the multifaceted factors associated with parental acceptance of Covid-19 vaccination for children. By investigating socio-demographic characteristics, health beliefs, sources of vaccine information, and cultural influences, the study seeks to illuminate the complexities of parental decision-making in the context of pediatric vaccination. Moreover, successful pediatric Covid-19 vaccination programs depend on vaccine availability and parental willingness to vaccinate. Understanding these factors is paramount for designing effective public health strategies and communication campaigns. Ultimately, this research contributes to the global endeavor to curb the pandemic's impact by ensuring the comprehensive protection of children through effective vaccination.

## **2. Theoretical basis**

### **Foreign studies**

Zhang et al. (2020) conducted a study to evaluate the acceptance of parents to vaccinate their children 18 years old and below against Covid-19 in China. Their study found that 72.6% of parents are willing to have their children immunized against Covid-19. In addition, the parents' acceptability of Covid-19 pediatric vaccination is higher in China, with a percentage of 70%. The higher parental acceptability is associated with the perception that family members will help and support them in vaccinating their child and the ability to control their child's behavior to protect against Covid-19.

Hammershaimb et al. (2022) conducted a cross-sectional study on vaccine acceptance among US parents. They used survey forms to gather data and found that parents' confidence in

the safety of Covid-19 immunization and routine youth immunization significantly influenced their willingness to vaccinate their children. Furthermore, this current research found that parents who completely immunized their children with routine immunization also had a high level of acceptance of the Covid-19 pediatric vaccines.

In the City of Narjan, Saudi Arabia, a study was conducted by Aedh in 2022 that used an online survey method of cross-sectional that selected parents of children aged 05 - 11, and some of the parents have children aged less than five who also answered the survey. The study revealed that inadequate safety data, probable future aftermath, and the effectiveness of vaccines are all contributing reasons for their hesitancy to Covid-19 vaccines in pediatrics. However, the study was limited to parents who only have access to the internet in Narjan as per the delimitation of the study. Hence, the current study confirmed that parents' fear of vaccine side effects influenced their acceptance of Covid-19 pediatric vaccination. Some parents even inquired about side effects experienced by friends and family before vaccinating their children.

### **Local**

A study published by Migriño et al. (2020) was about the aspects contributing to the vaccine hesitancy of parents with children aged two or younger. It was found that 95.5% of parents with children aged two or younger believe vaccines are protective and should be given, but media reports contribute to hesitancy. This current research revealed that most respondents gained information regarding Covid-19 from social media platforms. They stated they were easily influenced by the news and information they viewed from social media.

Wee et al. (2021) conducted a study on the factors leading to vaccine hesitancy among parents in Bulacan. The study found that parents' reluctance was primarily due to concerns about the Covid-19 vaccine and that there was no significant correlation between economic status and vaccine hesitancy. However, the study did find a significant relationship between parental educational attainment and vaccine hesitancy. In addition, the results of this current study also showed no significant relationship between parental acceptance of Covid-19 vaccination and the respondents' educational attainment.

Robledo (2021) conducted a study on school stakeholders' perceptions of Covid-19 vaccination and readiness to open schools. Their findings revealed that the highest percentage of respondents chose to get vaccinated for immunity from the virus. In contrast, the prevalence rate of not getting the vaccine is due to the possible effects on genetic makeup, which might harm the body. It was also stated that the respondents were not confident with the efficiency of the vaccine, which led to them developing vaccine hesitancy. According to the results of this current study, it was showed that there are respondents who do not trust and accept Covid-19 vaccines as a result of poor information and education concerning what Covid-19 vaccines do.

### **3. Methodology**

The study used quantitative descriptive correlational design to determine the factors associated with parental acceptance of pediatric vaccination for Covid-19. Frequency, percentage, 5 Likert scale, and Pearson R to determine significant relationships among variables were used.

The researchers utilized Slovin's Formula at a 5% error to identify the sample size. Hence, convenience sampling was then implemented to obtain the samples. We selected parents or guardians present in the school during their General Parents-Teachers Association (GPTA) meeting. Moreover, the questionnaire was structured, validated, and reliability tested using the validation tool of Dr. Luzviminda G. Rivera. It was validated by experts and reliability tested using the Cronbach's Alpha.

Furthermore, a quantitative correlation method was used. It used Pearson's Correlation Coefficient as a data analysis method in determining the significant relationship between the variables because of its suitability for examining the relationship between the variables. With this statistical method, it would be easier for the researchers to determine the significant variables associated with parental acceptance of Covid-19 pediatric vaccination.

#### 4. Findings

##### 4.1. The profile of the respondents

**Table 1**

Demographic profile of the respondents

<b>Variable</b>	<b>Categorical Data</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Age</b>	Less than 40	179	57.74
	40 to 60	110	35.48
	Over 60	21	6.77
	<b>Total</b>	<b>310</b>	<b>100.00</b>
<b>Variable</b>	<b>Categorical Data</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Gender</b>	Male	80	25.81
	Female	230	74.19
	<b>Total</b>	<b>310</b>	<b>100.00</b>
<b>Variable</b>	<b>Categorical Data</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Educational Attainment</b>	Elementary	37	11.94
	High School	109	35.16
	College	141	45.48
	Postgraduate	23	7.42
	<b>Total</b>	<b>310</b>	<b>100.00</b>
<b>Variable</b>	<b>Categorical Data</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Economic Status</b>	Upper Class	26	8.39
	Middle Class	67	21.61
	Lower Class	217	70.00
	<b>Total</b>	<b>310</b>	<b>100.00</b>

Source: Data from the results of this study

Most of the respondents belong to parents aged 40 years old or below, 179 (57.74%) followed by 40 - 60 years old (35.38%) and over 60, which is 21 (6.77%). As to the gender of the respondents, most of the respondents are female, with 230 respondents (74.19%), and male, with 80 respondents (25.81%). While in terms of educational attainment the respondents, most of them completed college 141 (45.48%), followed by high school with 109 respondents (35.26%),

then elementary graduates with 37 respondents (11.94%), and completers of postgraduate studies with 23 respondents (7.42%). The majority of the respondents are from the lower class, with 217 respondents (70.00%), followed by the middle class, with 67 respondents (21.61%), and the upper class, with 26 respondents (8.9%) (Table 1).

#### 4.2. The vaccination status of the respondents

Most respondents have received their Covid-19 vaccinations, with 96.13%. Out of those vaccinated, 52.90% are fully vaccinated, 35.81% have received a booster, 3.87% have only received the 1st dose, and 3.55% have the J&J vaccine. These findings may help understand parents' vaccination decisions for their children (Table 2).

**Table 2**

The Vaccination status of the patient

Variable	Categorical Data	Frequency	Percentage
If Vaccinated?	Yes	298	96.13
	No	12	3.87
	Total	310	100.00
Status	Partially Vaccinated (1st Dose only)	12	3.87
	Fully Vaccinated with Booster Dose	111	35.81
	Fully Vaccinated (1st and 2nd Dose)	164	52.90
	Fully Vaccinated (with J&J)	11	3.55
	<b>Total</b>	<b>298</b>	<b>92.26</b>

Source: Data from the results of this study

**Table 3**

Access of information

Sources	Frequency	Percentage
Radio	12	3.87
Social Media	164	52.90
Written Articles	111	35.81
Others	23	7.42
<b>Total</b>	<b>310</b>	<b>100.00</b>

Source: Data from the results of this study

Parents rely heavily on social media and written articles to gather information on Covid-19 vaccinations for their children, according to survey results. Other sources of communication, such as radio, were used less frequently (Table 3).

### 4.3. The parental acceptance of Covid-19 pediatric vaccination

**Table 4**

The Level of Acceptance in terms of Effectiveness, Convenience and Complacency

Point Scale	Index Limit	Descriptive Rating
5	4.5 - 5.0	Highly Accepted
4	3.5 - 4.49	Moderately Accepted
3	2.5 - 3.49	Neutral
2	1.5 - 2.49	Slightly Unaccepted
1	0 - 1.49	Not accepted

Source: Data from the results of this study

#### 4.3.1. Effectiveness

For the effectiveness of the Covid-19 vaccine for pediatrics as per parent's response, the grand mean value of the vaccine's effectiveness is 3.96, which is moderately accepted. Respondents trust the vaccine's effectiveness and consider it adequate for their children.

#### 4.3.2. Convenience

For the level of acceptance of pediatric vaccination in terms of convenience is 3.98, which is moderately accepted. According to the respondents, they find Covid-19 vaccination convenient and are willing to participate in the vaccination program to get their children vaccinated.

#### 4.3.3. Complacency

The level of acceptance in terms of complacency was 3.97 and described as moderately accepted. According to the respondents, they found social media news helpful in deciding on vaccines for their children and were influenced by the experiences of friends and family.

#### 4.3.4. Confidence

**Table 5**

The level of acceptance in terms of confidence

Point Scale	Index limit	Descriptive rating
5	4.5 - 5.0	Extremely Confident
4	3.5 - 4.49	Very Confident
3	2.5 - 3.49	Moderately Confident
2	1.5 - 2.49	Not so Confident
1	0 - 1.49	Not Confident

Source: Data from the results of this study

The level of acceptance in terms of confidence was 3.87 and described as very confident. According to the respondents, they are very confident in vaccinating their children and believing in the safety of Covid-19 vaccines (Table 5).

#### 4.4. Correlation between age and level of parental acceptance

**Table 6**

Correlation between age and level of parental acceptance

Variable	Pearson <i>r</i>	<i>p</i> -value	Decision	Result
Effectiveness	0.067	0.237	Accept Ho	Not Significant
Convenience	0.089	0.118	Accept Ho	Not Significant
Complacency	0.090	0.112	Accept Ho	Not Significant
Confidence	0.073	0.199	Accept Ho	Not Significant

Source: Data from the results of this study

The table illustrates that there is no significant relationship, between age and level of parental acceptance in terms of effectiveness ( $p = 0.237$ ,  $r = 0.067$ ), convenience ( $p = 0.118$ ,  $r = 0.089$ ), complacency ( $p = 0.112$ ,  $r = 0.090$ ); and confidence ( $p = 0.199$ ,  $r = 0.073$ ). Thus, the result reveals that age does not significantly affect parents' acceptance of the Covid-19 pediatric vaccine. The *p*-values exceed the acceptance level of *R*-values of 0.05 (Table 6).

#### 4.5. Correlation between the gender and level of parental acceptance

The table revealed that there is no significant correlation, between gender and level of parental acceptance and effectiveness ( $p = 0.270$ ,  $r = 0.063$ ), convenience ( $p = 0.079$ ,  $r = 0.100$ ), complacency ( $p = 0.522$ ,  $r = 0.036$ ); and confidence ( $p = 0.513$ ,  $r = 0.037$ ). Therefore, it shows that the decision to accept Covid-19 pediatric vaccine is not based on the gender of the parents (Table 7).

**Table 7**

Correlation between gender and level of parental acceptance

Variable	Pearson <i>r</i>	<i>p</i> -value	Decision	Result
Effectiveness	0.063	0.270	Accept Ho	Not Significant
Convenience	0.100	0.079	Accept Ho	Not Significant
Complacency	0.036	0.522	Accept Ho	Not Significant
Confidence	0.037	0.513	Accept Ho	Not Significant

Source: Data from the results of this study

#### 4.6. Correlation between educational attainment and level of parental acceptance

**Table 8**

Correlation between educational attainment and level of parental acceptance

Variable	Pearson <i>r</i>	<i>p</i> -value	Decision	Result
Effectiveness	0.083	0.144	Accept Ho	Not Significant
Convenience	0.044	0.438	Accept Ho	Not Significant
Complacency	0.086	0.130	Accept Ho	Not Significant
Confidence	0.083	0.144	Accept Ho	Not Significant

Source: Data from the results of this study

The table reveals that there is no significant relationship, between educational attainment and level of parental acceptance and in terms of effectiveness ( $p = 0.144$ ,  $r = 0.083$ ), convenience ( $p = 0.438$ ,  $r = 0.044$ ), complacency ( $p = 0.130$ ,  $r = 0.086$ ); and confidence ( $p = 0.144$ ,  $r = 0.083$ ). Therefore, it shows that there is no significant relationship between educational attainment and the level of parental acceptance of Covid-19 pediatric vaccination. It implies that whether they graduated or not does not affect their acceptance of the Covid-19 pediatric vaccination (Table 8).

**4.7. Correlation between economic status and level of parental acceptance**

The table reveals that there is no significant relationship between economic status and level of parental acceptance in terms of effectiveness ( $p = 0.144$ ,  $r = 0.083$ ), convenience ( $p = 0.438$ ,  $r = 0.044$ ), and confidence ( $p = 0.144$ ,  $r = 0.083$ ). However, it was found that economic status in terms of complacency ( $p = 0.130$ ,  $r = 0.086$ ) is significantly correlated with the level of parental acceptance of Covid-19 pediatric vaccination. It further implies that those in the lower class are less complacent than those in the upper class, which contributes to the higher percentage of vaccine hesitancy (Table 9).

**Table 9**

Correlation between economic status and level of acceptance of respondents

Variable	Pearson <i>r</i>	<i>p</i> -value	Decision	Result
Effectiveness	0.067	0.241	Accept Ho	Not Significant
Convenience	0.096	0.092	Accept Ho	Not Significant
Complacency	0.121	0.034	Reject Ho	Significant
Confidence	0.094	0.099	Accept Ho	Not Significant

Source: Data from the results of this study

**4.8. Significant relationship between the vaccination status of the respondents and their acceptance of the Covid-19 vaccine for their children**

The table shows that vaccination status has a significant correlation to the level of parental acceptance in terms of effectiveness ( $p = 0.025$ ,  $r = 0.127$ ); convenience ( $p = 0.019$ ,  $r = 0.133$ ); complacency ( $p = 0.006$ ,  $r = 0.156$ ); and confidence ( $p = 0.001$ ,  $r = 0.194$ ). The table demonstrates a significant correlation between vaccination status and parental acceptance regarding effectiveness, convenience, complacency, and confidence. Higher effectiveness rates and well-organized vaccination programs lead to more significant parental approval (Table 10).

**Table 10**

Correlation between Vaccination status and level of acceptance of respondents

Variable	Pearson <i>r</i>	<i>p</i> -value	Decision	Result
Effectiveness	0.127	0.025	Reject Ho	Significant
Convenience	0.133	0.019	Reject Ho	Significant
Complacency	0.156	0.006	Reject Ho	Significant
Confidence	0.194	0.001	Reject Ho	Significant

Source: Data from the results of this study

#### 4.9. Problems encountered by the parents in Covid-19 pediatric vaccination

**Table 11**

Problems encountered by the parents

Situations	Frequency	Percentage
I have hesitancy with the available Covid-19 vaccine brand.	85	27.42
I cannot participate or attend the vaccine schedule because of crowdedness.	71	22.90
I experienced an allergic reaction after getting vaccinated that affected my decision to vaccinate my child.	35	11.29
I believe Covid-19 is a scam.	35	11.29

Source: Data from the results of this study

There were several problems encountered with Covid-19 pediatric vaccination, including hesitancy (27.42%), overcrowding (22.90%), allergic reactions (11.29%), and false beliefs about Covid-19 (11.29%). This data suggests that hesitancy towards the vaccine is the primary factor affecting parental acceptance (Table 11).

### 5. Discussion

This research offers insightful findings on accepting pediatric Covid-19 vaccination among a diverse group of parents. It challenges preconceived notions and provides practical recommendations to optimize future interventions. Tailored campaigns that address the unique concerns and information requirements of parents in their 40s, who are more likely to participate in vaccine surveys, are emphasized. The study also highlights the significance of personal experiences and digital platforms, like social media, in shaping vaccine perceptions.

These insights can help optimize social media for effective vaccine communication and address socioeconomic factors that impact parental vaccine acceptance. The study underscores the importance of government and non-government organizations working together in vaccine advocacy, creating innovative partnerships and tailored interventions.

While the study acknowledges challenges, it leaves room for future innovation by identifying and addressing them with solutions that can revolutionize vaccine acceptance. Innovative communication strategies can safeguard public health by boosting confidence levels and increasing acceptance and trust in vaccine effectiveness and safety. In summary, this research establishes a solid foundation for future studies to explore intricate dimensions of pediatric Covid-19 vaccination acceptance and pave the way for innovative solutions to enhance vaccination campaigns.

### 6. Conclusions & recommendations

#### 6.1. Conclusions

The following are the conclusions drawn from the summary of the findings.

The study found that most participants were women over 40 from lower economic backgrounds with college degrees. These individuals received both doses of the Covid-19 vaccine and primarily relied on social media for information.

The study also discovered a moderate acceptance of the pediatric Covid-19 vaccine, with no noteworthy influence from age, gender, or education.

Proposed interventions aim to explore and address parental hesitancy toward vaccinating their children while also increasing awareness of the crucial role of immunization. This research can serve as a valuable resource for future studies and aid in developing effective vaccine utilization interventions.

### **6.2. Recommendations**

The Department of Health should use social media platforms to promote vaccination and increase vaccine literacy, awareness, and confidence among parents and guardians of children. This will help enhance the uptake of Covid-19 vaccination, especially among pediatrics, now that they can have face-to-face classes.

To the Provincial Government of Tarlac, Rural Health Unit of Camiling, Tarlac, and the school administrators to adopt and participate in the proposed program “BIBOVAX.” “BIBOVAX,” which means “Bibong Bata Vaccination,” and has an acronym of “Be Immunized to Break the Outbreak,” aims to help the government promote protection through vaccines and completely eradicate the threat of Covid-19, especially for children. To address the concerns and fears of parents or guardians, seminars and pamphlets will be provided. The program will also intensify vaccine advocacy and campaigns.

To the Municipal Government of Camiling, a feasible actional plan must be created to focus on the scheduling system to have a more systemic flow of procedures inside the vaccination hub to address the over crowdedness. Also, this will allow for an efficient flow of vaccinations resulting in a more excellent experience and will encourage more parents to vaccinate their children.

To the Health and Nutrition Personnel of DepED-Tarlac Province and Rural Health Units, they may must be able to use the findings of this study that will help them address the factors for vaccine acceptance and the problems encountered during Covid-19 pedia vaccination.

To the Camiling Central Elementary School Teaching and non- Teaching Personnel, the study’s findings will serve as basis for them in implementing the intervention measures and facilitate the increase in the uptake of the Covid-19 Pedia Vaccine.

The Parents and Community, they may be able to accept the importance of the vaccine and help in the adoption of BIBOVAX, which will facilitate the acceptance and increase the number of children to be vaccinated.

Future researchers are encouraged to focus on behavior modification towards vaccines and enhance the student’s knowledge by focusing on nursing competency.

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