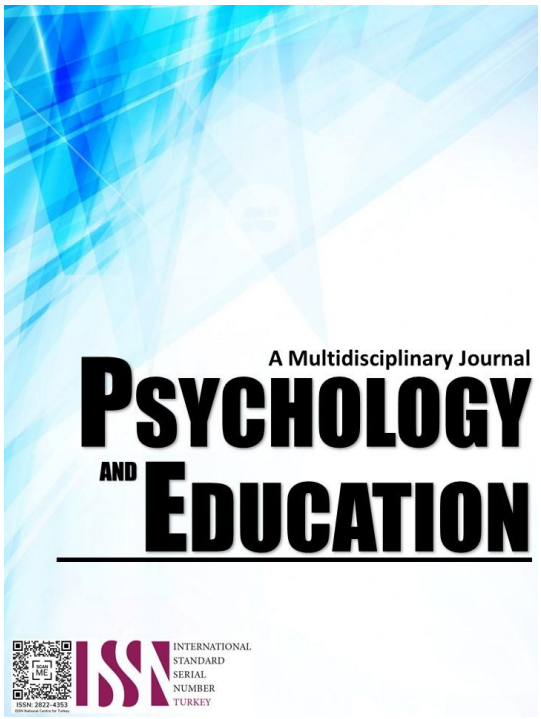
VACCINE HESITANCY OF PARENTS ON STUDENTS' VACCINATION IN MORONG NATIONAL HIGH SCHOOL



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Vaccine Hesitancy of Parents on Students' Vaccination in Morong National High School

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Abstract

This study determined the level of hesitancy of the respondents and the factors influencing parents' vaccine hesitancy on students' vaccination.A quantitative design was utilized in this study with the use of an adopted questionnaire with a series of structured questions to identify the profile of the respondents, level of vaccine hesitancy, and factors influencing parents' vaccine hesitancy. The researchers conducted this study at Morong National High School in the academic year 2022 to 2023 with 61 parent respondents out of 369 (16.5%) unvaccinated students from grade levels 7 to 10.The respondents' profile in terms of age ($F= 0.74$, $P > .05$), sex ($F= 2.32$, $P > .05$), educational attainment ($F= 1.66$, $P > .05$), and sources of information ($F= 0.46$, $P > .05$) have no significant differences. Moreover, there are significant differences in terms of the respondents' civil status ($F= 3.35$, $P < .05$), the number of children ($F= 2.58$, $P < .05$), monthly family income ($F= 3.22$, $P < .05$), and, occupation ($F= 5.57$, $P < .05$). The respondents who finished elementary education or lower are extremely hesitant, while those whose ages are above 51; males; single parent and separated; having one, two, three and four children; attained secondary, bachelor's degree and preferred not to say; have a monthly income of below Php. 8,000; work in the field of education, construction and others are at the level of high hesitancy. Protection, evidence and healthcare providers are the most common factors that cause hesitancy.

Keywords: *coronavirus disease (COVID-19), unvaccinated children, parental refusal, vaccine hesitancy, COVID-19 vaccine, vaccination*

Introduction

Coronavirus disease (COVID-19), a new respiratory illness brought on by the SARS-Cov-2 virus, was identified as a global health threat by the World Health Organization (WHO) on January 30, 2020 as a result of its rapid spread worldwide. Due to the diseases' contagious characteristics, vaccination was perceived to be one of the most effective strategies to combat it. As a consequence, the COVID-19 pandemic crisis propelled the creation of disease-specific vaccines using various state-of-the-art technologies.

The COVID-19 vaccines were developed using decades-old scientific principles. As of March 26, 2021, there are four COVID-19 vaccinations that have been licensed for use in the Philippines. These vaccines are produced by Pfizer/BioNTech, Sinovac, Gamaleya, and Oxford/AstraZeneca (Department of Health, 2021). However, despite clinical studies and the accessibility of vaccines, the proportion of unvaccinated children is still very high. In reality, according to the World Health Organization report on 2022, there were 3.4 million more unvaccinated children in 2020 than in 2019, despite a reduction in the overall percentage of children receiving vaccinations from 86% to 83%.

Furthermore, several studies led to the conclusion that parents have a crucial role in preserving public health through their choice to allow their children inoculated, and the knowledge and attitude of parents have a significant impact on their children's vaccination (Damnjanović et al., 2018; Alnumair et al., 2022). Republic Act No. 10152, also known as the Mandatory Infants and Children's Health Immunization Act of 2011, was mandated for the sustainable immunization program for all Filipino children and infants. In spite of what was mandated in the said act, an increasing number of parents are choosing to postpone or refuse immunizations for their offsprings. This worsens herd immunity, raises the chance of catching diseases that can be prevented by vaccination, and undermines public confidence in the ability of healthcare institutions to keep people safe. The term "vaccine reluctance" or "parental vaccine hesitancy" refers to this type of situation (Callaghan et al., 2021).

Hence, the researchers deemed it logical to hypothesize that the level of vaccine hesitancy of parents in terms of their demographic profile has a significant bearing on their decision. For instance, there is a possibility that the educational attainment of the parents reflects their perception towards their needs. Such parents who attained primary or lower education are more likely to be vaccine hesitant since they have different beliefs regarding their health needs.

Furthermore, their sources of information also have a big impact on their decision whether they would allow their children to be vaccinated or not. Some of them are online news articles, vlogs, blogs, radio news or infomercials, television programs or news, printed newspapers, brochures, infographic, posters, family, friends and the government. Information from the government is more likely to be the main source of the parents since it is usually where official reports and announcements come from. However, not all information sources are reliable in giving fact-based data; and this results in misinformation which affects the perception of the parents on COVID-19 vaccine. In a related study, Horiuchi et al. (2021) found that social media as a credible source of information was still associated with higher rates of parental vaccine hesitancy. Compared to those who trusted official information, those who trusted social media as a source of information were three times more likely to show no intention to vaccinate their children (95%). Also, a study by Migriño et al. (2020) concluded that most respondents (95.5%) believed that vaccines are protective, but vaccine hesitancy rates among the respondents reached 36.4%. Those who thought vaccines were protective were less likely to report having vaccine hesitation and were nine times less likely to refuse immunizing their children as a result of bad media coverage. The study emphasized the role that mass media plays in vaccine hesitation, supporting earlier findings that vaccine-hesitant parents are more likely to be influenced by media coverage.

Additionally, in the study of Salazar et al. (2022), which was done in a US urban area, concluded that the number of children in the family was the only factor that was discovered to be statistically significant between parents who were hesitant about vaccinations (93%), and parents who were not (74%). This study also suggested that there might be more significant elements that affect hesitation. Concerns regarding children's immunizations were echoed by the majority of people who classified themselves as cautious. The vast number of hesitant parents (93%) were unsure about adhering to the advised vaccination schedule and agreed that kids should receive fewer shots at once. Also, 86% of reluctant parents were worried that the shot would not stop the sickness from occurring, while 93% said they were worried their child might experience a significant adverse effect from receiving the shot. Over half of the parents who were on the fence (43%) believed that it was preferable for their children to build immunity to a disease by being sick rather than by receiving vaccination.

According to CNN Philippines (2021), it is challenging because there would still be hesitancy among the public and different sectors mainly caused by misinformation regarding the COVID-19 vaccine. One of the reasons is the fear of not receiving the effectiveness that they are expecting. Likewise, in the study of Altulaihi et al. (2021), parents were concerned about the negative effects of COVID-19 vaccines on very young children, especially those aged three or younger, as they considered that they were most vulnerable, even if they believed that immunizations were beneficial in protecting their children, and parents of children between the ages of 13 and 18 were concerned about how the vaccinations may affect adolescent teens and young females' fertility. Additionally, it was discovered that earlier acceptance of the seasonal influenza vaccine as well as the parents' ages of 31–40 years old and the children's ages of 4–12 years old were both substantially related to increasing parental acceptability of the COVID-19 vaccine.

Parental vaccine hesitancy has been a developing issue that has an impact on children's health, particularly students who frequently interact with others at school, increasing their risk of contracting the COVID-19 virus. In fact, despite receiving their own inoculations, parents are reluctant to have their children vaccinated, according to a national survey. The findings showed that in June 2021, 842 parents (74.4%) were already vaccinated or vaccine-willing, while 298 (25.6%) were vaccine hesitant. A total of 212 children (48%) aged 12 to 15 years and 135 (58%) aged 16 to 17 years reportedly received at least 1 dose of the COVID-19 vaccine (Rane et al. 2021).

Moreover, the study by Larson et al. (2019) demonstrates that in 2015, 82% of parents and 93% of children, respectively, believed that vaccines were safe and important. However, in 2018, following the Dengvaxia issue, only 32% of respondents agreed with the concept that vaccines are important, and 21% thought they are safe. This controversy results from one of the factors contributing to the Philippines' rising vaccine reluctance. In addition, the World Health Organization (WHO) mandated that children aged between 6 and 17 years old were required to secure the consent of their parents or legal guardians. Hence, researchers set out to evaluate the nature and contributing factors of vaccination reluctance among parents of children at Morong National High School because vaccine hesitancy is a crucial topic, particularly for public health.

Records, data, and the personal experiences of students are indicative that there are students who are not yet vaccinated because of personal reasons such as health

and safety concerns and their parents' decisions. In order to understand vaccine behavior and carry out programs, the World Health Organization (2020) stressed the significance of adopting a life-course perspective. In response to this call, the researchers narrowed their investigation to the parents of students at Morong National High School. The goal of this study was to ascertain the causes and severity of parents' vaccine hesitancy. Furthermore, the study by Wee et al. (2021) also suggested that additional research be done in the future since another study (Lazarus et al., 2021) argued that vaccine decisions can still change over time. Given the many causes of vaccination hesitancy, it is also preferable to identify the other causes of vaccine reluctance among parents from other provinces or places. Additionally, this would serve as a call to action for those in higher positions, particularly government officials, to create and commence projects in response to the cases of unvaccinated students.

Research Questions

The study aimed to determine the level of vaccine hesitancy among the respondents along with the factors influencing parents' vaccine hesitancy towards COVID-19 vaccination among students of Morong National High School to provide a deeper understanding and adequate database for future reference. Specifically, it aimed to answer the following questions:

1. What is the demographic profile of the respondents in terms of:
   1.1 age;
   1.2 sex
   1.3 civil status;
   1.4 number of children;
   1.5 educational attainment;
   1.6 monthly family income;
   1.7 occupation; and
   1.8 source of information?
2. What is the level of hesitancy of the respondents in terms of their profile?
3. Is there a significant difference on the vaccine hesitancy level of the respondents in terms of their profile?
4. What are the factors influencing parents' vaccine hesitancy on students' vaccination?
5. What interventions may be recommended based on the findings of the study?

Methodology

Research Design

This study used a quantitative design with the use of an adopted questionnaire to identify with a structured series of questions to identify the profile of the respondents, level of vaccine hesitancy, and factors influencing parents' vaccine hesitancy.

Population and Sampling

The researchers conducted this study at Morong National High School in the academic year 2022 to 2023 with 61 respondents out of 369 (16.5%) unvaccinated students from grade levels 7 to 10. In addition, Slovin's formula was applied to determine the target number of respondents. The one-shot survey questionnaires were given exclusively to randomly selected students who were not yet inoculated and they were asked to have their parents answer them.

Instrument

This study used an adopted survey questionnaire created by Ali et al. (2022) and Parinyarux et al. (2022) with a structured series of questions to identify the profile of the respondents, level of vaccine hesitancy, and factors influencing parents' vaccine hesitation. The printed questionnaires were given to the students personally and the Google forms were sent through social media (Messenger) to parents of students who are unvaccinated. With the aid of a structured set of questions that was delivered to respondents in each class of junior high school students in grades 7 to 10 via Google Forms in English and Tagalog. The questionnaire consisted of three components: the first component was divided into two parts (A and B). Part A asked for information about the respondents' age, sex, and civil status, number of children, educational attainment, monthly income, occupation, and information source. Meanwhile, Part B included the student's current vaccination status. The second part was aimed to determine the participant's attitude towards the COVID-19 virus and both vaccines and vaccination programs. Finally, the third and final component focused on getting information on the variation in respondents' levels of vaccine reluctance, including factors that affect their uncertainty.

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Data Collection

Researchers gathered responses from parents of unvaccinated students in grades 7 to 10 during March 2023. The acquired data regarding the perceptions of the respondents were categorized and quantified into a table by getting the frequency and percentage. Moreover, this study maintained objectivity through quantitative content analysis in gauging the respondents' level of hesitancy towards the COVID-19 vaccine. Afterwards, the gathered data will be assessed to determine their profile, level of hesitancy and factors influencing parents' vaccine hesitancy.

Treatment of Data

The set of structured questions was used to determine the level of vaccine hesitancy of the parents and the factors that influence them to be vaccine-hesitant. Statistics were obtained in the forms of frequency, percentage, and rank distribution. Weighted means were also obtained to investigate the accuracy between variables. Also, the researchers used analysis of variance to determine if there were significant differences in the level of vaccine hesitancy of parents on deciding on their children's vaccination in terms of their profile. The Tukey Test, also called the Tukey Honest Significant Difference Test, was a follow-up to the analysis of variance to determine which pairwise comparison of mean in respect to the profile of the respondents contributes to the overall significant difference on the level of vaccine hesitancy of the parents.

Furthermore, this study also used a five- point likert scale in analyzing the level of vaccine hesitancy of parents. This scale consists of five points with mean score from 1.0 to 1.8 which is extremely low hesitancy followed by 1.9 to 2.6 which is verbally interpreted as low hesitancy. In addition, from 2.7 to 3.4 is moderate hesitancy while 3.5 to 4.2 are at the level of high hesitancy. Lastly, those with a mean score from 4.3 to 5.0 have extremely high hesitancy.

Result

Demographic Profile of the respondents

Table 1.1. *Demographic profile of the respondents in terms of their age*

Age	*f*	*%*	*Rank*
18-25	4	6.56	4
26-40	25	40.98	1
41-50	22	36.98	2
Above 51	10	16.39	3
Total	61	100	

Table 1.1 shows the demographic profile of the respondents in terms of age. Based on the results, the majority of respondents are in the age bracket of 26 to 40, with 25 responses, or 40.98%, followed by 22 parents who are aged 41 to 50, or 36.07%. Furthermore, 10 are above 51 years of age, which is 16.39%. Lastly, 4 out of 61 respondents were aged 18 to 25, or 6.56%, which is the lowest number out of all the 4 age brackets. These results indicate that the majority of the parents who are most hesitant to have their children vaccinated belong to the age group 26 to 40.

Table 1.2. *Demographic profile of the respondents in terms of their sex*

Sex	*f*	*%*	*Rank*
Male	12	19.7	2
Female	49	80.3	1
Total	61	100	

Furthermore, based on the results of Table 1.2, in terms of sex, out of all the 61 respondents who answered the questionnaire, there are 49 females, which is equivalent to 80.3%, followed by 12 male respondents, which is 19.7%. This result shows that out of all the parents who participated in the survey, women are greater than men, which particularly means that mothers of the students tend to be more hesitant than fathers.

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Table 1.3. *Demographic profile of the respondents in terms of their civil status*

Civil Status	*f*	*%*	*Rank*
Single parent	10	16.4	2
Living with partner	10	16.4	2
Married	40	65.6	1
Separated	1	1.6	3
Total	61	100	

As shown in Table 1.3, another relevant finding is that the majority of the respondents are married, with 40 in total, or 65.6%. Among which, 10 respondents are single parents or 16.4%; 10 respondents are living with their partner or 16.4%. Lastly, 1 or 1.6% of the respondents indicated that they were separated.

Table 1.4. *Demographic profile of the respondents in terms of number of children in the family*

Number of Children in the Family	*f*	*%*	*Rank*
1	5	8.2	5
2	11	18	4
3	16	26.2	1
4	14	23	3
5 and more	15	24.6	2
Total	61	100	

Table 1.4 shows the demographic profile of the respondents based on the number of children in the family to the variable of the number of children in the family, most of the respondents have three with 16 or 26.2%, followed by those who have five children or more with 15 or 24.6%. Moreover, 14 or 23% of the respondents reported having four children, while 11 or 18% indicated that they had two children. Lastly, the percentage of respondents with just one child is 5 or 8.2%. These results showed that most of the parents have three children in their family.

Table 1.5. *Demographic profile of the respondents in terms of their educational attainment*

Educational Attainment	*f*	*%*	*Rank*
Primary or lower	7	11.5	3
Secondary	28	45.9	1
Bachelor's degree	17	27.9	2
Master's degree or higher	6	9.8	4
Prefer not to say	3	4.9	5
Total	61	100	

Moreover, based on the results of table 1.5, 28 or 45.9% of the respondents have completed secondary education, followed by 17 or 27.9% of respondents with bachelor's degrees. There are also 7 or 11.5% of respondents who said they had only completed elementary or lower education, while 6 or 9.8% said they had a master's degree or more. Lastly, 3 or 4.9% of the participants did not prefer to say their educational attainment. As shown on the table, majority of respondents have completed secondary education, followed by respondents with bachelor's degrees, and those who did not prefer to respond to the particular question got the least percentage.

Table 1.6.*Demographic profile of the respondents in terms of their monthly Family Income*

Monthly Family Income	*f*	*%*	*Rank*
Below PHP 8,000	21	34.4	1
Php. 8,000 - Php. 15,000	16	26.2	2
Php. 16,000- Php. 20,000	13	21.3	3
Above Php. 20,000	11	18	4
Total	61	100	

Table 1.6 shows the data of the respondents' profile in terms of monthly income of the family which revealed that out of 61 participants, 21 or 34.4% of parents who participated in the study have a monthly income less than Php. 8,000, followed by 16 or 26.2% who stated that their monthly income is between Php. 8,000 and PHP 15,000, o13 or 21.3% have a monthly income of between Php 16,000 and Php 20,000, and 11 or 18% have an income higher than Php 20,000. Hence, most

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of the monthly family income of the respondents are less than Php. 8, 000.

Table 1.7. *Demographic profile of the respondents in terms of their occupation*

Occupation	*f*	*%*	*Rank*
Education	11	18	2
Construction	3	4.9	4
Industry	5	8.2	3
Others	42	68.9	1
Total	61	100	

According to the results in Table 1.7, 68.9% or 42 respondents work in a variety of areas and industries. In addition, respondents who work in the field of education have a total of 11 or 18%, and none of them are employed in the health sector. Moreover, 4.9% or 3 of respondents work in construction, while the overall total of respondents who work for industry are 5 or 8.2%.

Table 1.8. *Sources of information of the respondents*

Source of Information	*f*	*%*	*Rank*
Government/official sources	40	37.4	1
Private/personal medical sources	8	7.5	5
Social Media (Facebook, Instagram, WhatsApp, Twitter, Tiktok, YouTube)	13	12.2	4
Personal Internet Research (Via Google, Safari, Bing, Yahoo: baldu, Aol, Ask.cok, Excite)	7	6.5	6
Information from Family and Friends	15	14	3
Local Radio Television, Newspaper	24	22.4	2

Table 1.8 shows the sources of information for parents regarding the COVID-19 vaccine. The findings indicate government or official sources make up the majority of respondents' sources of information about the COVID-19 vaccine, with 40 responses, or 37.4%. Moreover, respondents who rely on local radio, television, and newspapers have a total of 22.4% or 24 responses, while parents who get information from family and friends have a rating of 14% or 15 responses. Additionally, social media sites like Facebook, Instagram, WhatsApp, and Twitter received a total of 13 responses or with a rating of 12.2%, while private or personal medical sources had 7.5% or 8 total responses. The least reliable source of information about the COVID-19 vaccine received a rating of 6.5% or 7 responses, wherein participants did personal internet searches using Google, Safari, Bing, and Yahoo.

To infer, the majority of parents who seek information about COVID-19 vaccines seek it from government or official sources.In the study by Goulding et al., (2022) showed that perceptions of COVID-19 severity and the likelihood of COVID-19 vaccine uptake were influenced by the primary source of COVID-19 information. Those relying on social media, other websites/Internet, friends or family members, or health care practitioners were considerably less likely to have high perceptions of COVID-19 severity compared to those who primarily accessed traditional news sources. However, several studies found associations between vaccine hesitation and social media use as well as mistrust of official information (Skafle et al.,2022; Jennings et al.,2021).

Level of Hesitancy of the Respondents in Terms of their Profile

Table 2.1. *Level of vaccine hesitancy of parents in terms of their age*

Age	*Mean*	*Verbal Interpretation*
18-25	3.40	Moderate Hesitancy
26-40	3.23	Moderate Hesitancy
41-50	3.30	Moderate Hesitancy
Above 51	4.25	High Hesitancy

As shown in Table 2.1, respondents whose ages are above 51 years old have a weighted mean of 4.25, which is verbally interpreted as high hesitancy, followed by participants who are aged from 18 to 25

years old with a weighted mean of 3.40, which is verbally interpreted as moderate hesitancy. Moreover, parents and guardians who are 41 to 50 years old have a weighted mean of 3.30, which is also verbally interpreted as moderate hesitancy. The respondents who were in the age bracket of 26 to 40 years old have a weighted mean of 3.23, which is verbally interpreted as moderate hesitancy. Therefore, the respondents demographic profile in terms of their age concludes that the responses from parents and guardians who are aged above 51 years old show high hesitancy, while respondents who are aged between 18 to 25 years old turned out to show moderate hesitancy to vaccinate their children the same with those who are in the age bracket of 41 to 50 years old and 26 to 40 years old. As a result, the demographic profile of the respondents in terms of their age draws the conclusion that statements from parents and guardians older than 51 years old exhibit greater hesitation than responses from other age groups. In contrast, in the study by Beleche et al. (2021), parents aged 25 to 39 (37%) had the highest vaccine reluctance for children, while parents aged 55 to 64 (21%) had the lowest hesitancy based on their findings.

Table 2.2. *Level of Hesitancy of the Respondents in Terms of their Sex*

Sex	*Mean*	*Verbal Interpretation*
Male	3.72	High Hesitancy
Female	3.37	Moderate Hesitancy

Based on the results of table 2.2, in terms of their sex, respondents who are identified as males have a weighted mean of 3.72, which is verbally interpreted as high hesitancy, while female respondents have a weighted mean of 3.37, which is verbally interpreted as moderate hesitancy. Therefore, responses from the participants turned out to be more likely to indicate reluctance among male participants than female participants. In addition, various studies examined the association between sex and the level of reluctance of parents to vaccinate their children against the COVID-19 virus (Goldman & Cabello, 2020; Murphy et al., 2021). Studies implied that female participants were more likely to appear hesitant to have their children vaccinated than male participants. According to the study of Horiuchi et al. (2021), although the assessment of the study's data is not enough to scrutinize the gap hesitancy between male and female participants, it is stated that it may be due to fear of adverse or negative reactions; however, the study stated that women have more potential to experience adverse or negative reactions. Furthermore, some factors are also identified as causing a gap between the two. It has been reported that social relationships, anxiety due to the pandemic, and the boost in usage of smartphones, in particular the internet, led to several influences on both sexes. Moreover, the majority of the respondents in this study are female, yet males turned out to be more vaccine-hesitant. Aligned to the findings of Horiuchi et al. (2021), gender-specific communication tactics to encourage vaccination among children should be brought into consideration, along with further studies to fully understand and determine factors underlying the significance of the gender gap.

Table 2.3. *Level of Hesitancy of the Respondents in Terms of their Civil Status*

Civil Status	*Mean*	*Verbal Interpretation*
Single parent	4.04	High Hesitancy
Living with partner	3.26	Moderate Hesitancy
Married	3.32	Moderate Hesitancy
Separated	3.78	High Hesitancy

Moreover, the data of table 2.3 reveals that respondents who were single parents had a weighted mean of 4.04, which is verbally interpreted as high hesitancy regarding their child's immunization. More so, respondents who are separated had a weighted mean of 3.78, which is verbally interpreted as high hesitancy, while respondents who were married obtained a weighted mean of 3.32, which is verbally interpreted as moderate hesitancy, and the respondents who were living with their partner obtained a weighted mean of 3.26, which is also verbally interpreted as moderate hesitancy. Furthermore, most of the studies about parental hesitancy in COVID-19 vaccine conclude that married parents are more vaccine hesitant (Salazar et al., 2022; Ruiz and Bell, 2022); however, in the present study, single parents show more hesitancy than married parents, similar to the study of Ceannt et al. (2022), who observed that parents living alone (single parent) are one of the factors associated with their hesitancy in COVID-19 vaccine.

Table 2.4. *Level of Hesitancy of the Respondents in Terms of the Number of Children in the Family*

Number of Childrenin the Family	*Mean*	*Verbal Interpretation*
1	4.40	High Hesitancy
2	4.00	High Hesitancy
3	3.50	High Hesitancy
4	3.79	High Hesitancy
5 and more	2.93	Moderate Hesitancy

As shown in the results of Table 2.4 which presents the number of children in the family, respondents who have one child had a weighted mean of 4.40, which is verbally interpreted as extremely high hesitancy. More so, respondents who have two children had a weighted mean of 4.00, which is verbally interpreted as high hesitancy the same level of hesitancy with those respondents who have three children in the family that obtained a weighted mean of 3.50 and the parents who have four children that obtained a weighted mean of 3.79. Moreover, the respondents who have five or more children obtained a weighted mean of 2.93, which is verbally interpreted as moderate hesitancy. The results therefore showed that the respondents who have one child had extremely high levels of hesitancy, followed by the respondents who have two, three, and four children, which are verbally interpreted as high hesitancy. While respondents who have five or more children showed moderate hesitancy regarding their child's vaccinations. Based on the results of Salazar et al. (2022), it was concluded that compared to 74% of non-hesitant parents, 93% of hesitant parents reported having two or more children. This is similar to the results of this study since parents with two or more children are at high hesitancy, however it is also concluded that parents with one child are the most vaccine hesitant.

In terms of educational attainment in Table 2.5, respondents who have attained elementary or lower have a weighted mean of 4.71, which is verbally interpreted as extremely high hesitancy. This was followed by those who did not prefer to say their educational attainment with a weighted mean of 4.00, which is verbally interpreted as high hesitancy the same level of hesitancy with those who attained secondary education with a mean of 3.57. While respondents who attained bachelor's degree had a weighted mean of 3.18, which is verbally interpreted as high hesitancy. Lastly, participants who have obtained a master's degree or higher had a weighted mean of 2.33, which is verbally interpreted as low hesitancy. According to the results, the respondents with primary or lower educational attainment have extremely high level of hesitation. This was followed by participants who did not prefer to say, and then parents who attained secondary education who were in the level of high hesitancy. The participants with bachelor's degrees came next as moderately hesitant to vaccinate their children against COVID-19, while those who attained master's degree or higher education appeared to be at low hesitancy. Furthermore, based on the results, the respondents who attained elementary or lower education are the most vaccine hesitant. In addition, different studies examined the relevance between educational attainment and the vaccine hesitancy of parents in COVID-19 vaccination. Findings from the studies conclude that parental educational level has an impact on their decision to immunize their children against COVID-19 (Brandstetter et al., 2021; Malik et al., 2020; Nguyen et al., 2021). For instance, a study conducted in the United States found that those individuals with less education exhibit a low willingness to get the COVID-19 vaccine (Szilagyi et al., 2020) and low level of education are also one of the factors associated with vaccination refusal in Pakistan (Khattak et al., 2021).

As shown in Table 2.6, parents who have monthly family income below Php. 8,000 have a weighted mean of 3.78, which is verbally interpreted as high hesitancy. On the other hand, respondents who stated that their monthly family income is above Php. 20,000 have a weighted mean of 3.36, which is verbally interpreted as moderate hesitancy, while monthly family income ranges from Php. 8,000 to Php. 15,000 had a weighted mean of 3.34, which is also verbally interpreted as moderate hesitancy. The weighted mean of the participants who have a monthly family income of Php. 16,000 to Php. 20,000 is 3.07, which is verbally interpreted as moderate hesitancy. Based on the results, respondents who have a monthly family income below Php. 8,000 showed high hesitancy, while moderate reluctance is matched to respondents who have a monthly family income above PHP 20,000, followed by a monthly family income that ranges from PHP 8,000 to PHP 15,000 and a monthly family income that scales from PHP 16,000 to PHP 20,000. Based on the results, respondents who have a monthly family income below Php 8,000 showed high hesitancy, and according to certain research, along with the findings of the present study about monthly family income, parents of lower-income families are

more vaccine-hesitant and concerned about the necessity and safety of vaccinations than parents of higher-income families (Santibanez et al., 2020), and the study of Alfieri et al. (2021), conducted in Chicago and Cook Country, Illinois, using cross-sectional online surveys of parents, found that families with lower income had greater odds of COVID-19 vaccine hesitancy than families in the highest income bracket.

Table 2.5. *Level of Hesitancy of the Respondents in terms of their Educational Attainment*

Educational Attainment	*Mean*	*Verbal Interpretation*
Elementary or lower	4.71	Extremely High Hesitancy
Secondary	3.57	High Hesitancy
Bachelor's Degree	3.18	High Hesitancy
Master's Degree	2.33	Moderate Hesitancy
Prefer not to say	4.00	High Hesitancy

Table 2.6. *Level of Hesitancy of the Respondents in Terms of their Monthly Family Income*

Monthly Family Income	*Mean*	*Verbal Interpretation*
Below PHP 8,000	3.78	High Hesitancy
Php. 8, 000- Php. 15, 000	3.34	Moderate Hesitancy
Php. 16, 000- Php. 20, 000	3.07	Moderate Hesitancy
Above Php. 20, 000	3.36	Moderate Hesitancy

Table 2.7. *Level of Hesitancy of the Respondents in Terms of their Occupation*

Occupation	*Mean*	*Verbal Interpretation*
Education	3.60	High Hesitancy
Construction	3.90	High Hesitancy
Industry	2.34	Moderate Hesitancy
Others	3.49	High Hesitancy

Table 2.7 shows the level of hesitancy of respondents in accordance with their occupation. The construction field obtained a weighted mean of 3.90, which is verbally interpreted as a high hesitancy regarding the student's vaccination. Educational fields then obtained a weighted mean of 3.60, which is verbally interpreted as high hesitancy, while respondents who are in other sectors obtained a weighted mean of 3.49, which is also verbally interpreted as moderate hesitancy, and the industry field obtained a weighted mean of 2.34, which is verbally interpreted as low hesitancy, and in the health sector there is no reluctancy at all. As a result, it was evident from the findings that respondents who work in the construction sector have a high level of vaccine hesitation. Similar to the study by Phillips (2021), construction workers are regarded to be the group of people who are least likely to get immunized. In fact, almost half (46.4%) of individuals involved in the construction/occupation group who responded to the study said they would most likely choose not to get vaccinated if given the option of the COVID-19 vaccine.

Table 3.1. *Significant Difference on the Level of Vaccine Hesitancy of Parents in Vaccinating their Children in terms of their Profile*

Profile	*F-value*	*P-value*	*Ho*	*Verbal interpretation*
Age	0.74	0.532	FR	There is NO significant difference
Sex	2.32	0.133	FR	There is NO significant difference
Civil Status	3.35	0.025	R	There is a significant difference
Number of children in the family	2.58	0.047	R	There is a significant difference
Educational attainment	1.66	0.171	FR	There is NO significant difference
Monthly family income	3.22	0.029	R	There is a significant difference
Occupation	5.57	0.002	R	There is a significant difference

Table 3.1 reveals the significant difference in the level of vaccine hesitancy of parents in vaccinating their children in terms of their profile. On the subject of age, there is no significant difference (F -value = 0.74, P -value = 0.532). Also, there is no significant difference in terms of the parents' sex (F- value = 2.32, P -value = 0.133). There is a significant difference in terms of the respondents' civil status that resulted in (F -value = 3.35, P -value = 0.025). The number of children also had a significant difference (F -value = 2.58, P -value = 0.047). With (F -value = 1.66, P -value = 0.171), there is no significant difference in terms of the parents' educational attainment. Monthly family income resulted in(F -value =3.22, P -value = 0.029) which had a significant difference. Also, occupation had a significant difference (F -value = 5.57, P -value = 0.002). With (F -value = 0.46, P -value = 0.921),

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sources of information of the respondents had no significant difference.

Furthermore, the results implied that the parents' profile in terms of their age, sex, educational attainment, and sources of information had no significant difference on the level of vaccine hesitancy of parents to vaccinate their children. Thus, the null hypothesis was failed to reject. In the subject of the respondents' civil status, number of children in the family, monthly family income, and occupation had a significant difference on the level of vaccine hesitancy of parents. Thus, the null hypothesis was rejected.

Post Hoc Test within Variables with Significant Differences

Table 3.2. *Comparison Between Civil status of the Respondents using Tukey's Post Hoc Test*

Comparisons Between Civil Status	*Civil Status*	*P-value*	*Verbal interpretation*
Single parent	Living with partner	0.06	No significant difference
	Married	0.02	Has a significant difference
	Separated	0.99	No significant difference
Living with partner	Married	1.00	No significant difference
	Separated	0.86	No significant difference
Married	Separated	0.88	No significant difference

Table 3.2 shows the results that the civil status of the respondents in the area of single parent had significant differences with those married (P-value=0.02). The study of Ruiz and Bell (2022) shows that vaccine hesitancy was higher among married parents. More so, this data resulted in a significant difference between their civil status in their hesitancy towards COVID-19 vaccines.

Based on the results of Table 3.3, there is no significant difference between the number of children in the family upon Tukey's Post Hoc test despite the result of the analysis of variance test which resulted in there were significant differences.

Table 3.3. *Comparisons Between Number of Children using Tukey's Post Hoc Test*

Comparisons Between Number of Children	*Number of children*	*P-value*	*Verbal interpretation*
1	2	1.00	No significant difference
	3	1.00	No significant difference
	4	1.00	No significant difference
	5 and above	0.88	No significant difference
2	3	1.00	No significant difference
	4	1.00	No significant difference
	5 and above	0.87	No significant difference
3	4	1.00	No significant difference
	5 and above	0.87	No significant difference
4	5 and above	0.78	No significant difference

Table 3.4. *Comparisons Between Monthly Family Income using Tukey's Post Hoc Test*

Comparisons Between Monthly Family Income	*Monthly family income*	*P-value*	*Verbal interpretation*
Below Php. 8, 000	Php. 8, 000 - Php. 15, 000	0.23	No significant difference
	Php. 15, 000 - Php.20, 000	0.03	Has a significant difference
	Above 20, 000	0.48	No significant difference
Php. 8, 000 - Php. 15, 000	Php. 15, 000 - Php. 20, 000	0.76	No significant difference
	Above Php. 20, 000	0.99	No significant difference
Php. 15, 000 - Php. 20, 000	Above Php. 20, 000	0.65	No significant difference

Table 3.4 shows the results that the monthly family income of the respondents in the area below Php. 8, 000 had a significant difference with that of Php. 15, 000 to Php. 20, 000 area (P-value =0.03). This is quite similar to the study by Marzo et al. (2022), which indicates that participants with low family economic status were significantly more likely than those with a medium or high family economic status to believe that vaccine costs are significant when deciding whether to accept COVID-19 vaccination. Participants with a low and high family economic status were substantially more likely than participants with medium family economic status to express reluctance about receiving COVID-19 vaccines. This data establishes a significant difference in their hesitancy toward COVID-19 vaccines.

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Table 3.5. *Comparisons Among Occupations using Tukey's Post Hoc Test*

Comparisons Between Occupation	*Occupation*	*P -value*	*Verbal interpretation*
Education	Construction	0.91	No significant difference
	Industry	0.00	Has a significant difference
	Others	0.89	No significant difference
Construction	Industry	0.01	Has a significant difference
	Others	0.67	No significant difference
Industry	Others	0.00	Has a significant difference

Table 3.5 indicates that there is a significant difference between the occupation of the parents in the industry area (P-value =0.00) with that of the education area. The occupation of the parents in the construction companies had a significant difference with that of industry (P-value= 0.01). There was also a significant difference in the occupation of the respondents in the industry field with that of other occupation areas (P-value= 0.00). In a similar study, King et al. (2021) stated that the majority of hesitant workers in the workforce such as construction or industry, and in particular professions expressed reluctance. The study also concluded that their reluctance may be based on their lack of trust in the government or the process used to develop the vaccine. This information demonstrates a significant difference in their reluctance towards receiving the COVID-19 vaccination.A recent study found that there were 57. 60% vaccine hesitancy among teachers in the Morning-Sub Office. This can be considered a far cry from the minimum tolerable hesitancy of only between 20 to 30 percent (Raymundo, 2022).

Based on the results in Table 4, the most common factor in vaccine and vaccination problems that causes vaccine hesitancy among parents is protection, with a total percentage of 42.9%. It is followed by health risk with a percentage of 25%, health concerns with 21.4%, and finally effectiveness with a total percentage of 10.7%. Furthermore, despite various studies and clinical trials, the respondents are still questioning the effectiveness of the vaccine. Also, parents still think about the risks and possible side effects for their children when they are vaccinated with the COVID-19 vaccine. Despite this, the majority of the respondents believed that the COVID-19 vaccine served as protection for their children, while some didn't. Moreover, similar to the study by Altulaihi et al. (2021), the majority of parents believed that the vaccine would protect their children effectively, but they were worried about the adverse effects it might have on young kids, especially those who were three years old or younger, since they thought they were most vulnerable. However, Bradley & Elder (2020) suggested that it is still the doctors' and other health care providers' responsibility to be honest about the side effects of vaccination in order to win patients' trust in the healthcare system, regardless of how these negative effects affect parents' vaccine hesitancy.

Table 4. *Factors Causing Vaccine Hesitancy Among Parents*

Factor	*f*	*%*	*Rank*
Vaccine and vaccination problem			
Protection	12	42.9	1
Risk	7	25	2
Health concern	6	21.4	3
Effectiveness	3	10.7	4
Influences			
Evidence	17	60.7	1
Social and mass media	7	25	2
Family influence	3	10.7	3
Influential leaders	1	3.6	4
Individuals and Groups			
Healthcare providers	9	75	1
Knowledge/Awareness	3	25	2

The most common factor under influence causing vaccine hesitancy among parents is evidence, with a total of 60.7%, followed by social and mass media at 25%, family influence at 10.7%, and lastly, influential leaders at a total of 3.6%. Moreover, the majority of respondents stated that the evidence they received was not enough for them to be convinced to agree on having their children inoculated, such as evidence from social media, television advertisements, news, etc. The findings were in accordance with the study by Altulaihi et al. (2021), which revealed that the parents' most frequently cited reasons for refusing vaccination for their children were lack of knowledge about the

COVID-19 vaccine (97.5%), followed by a lack of supporting data and evidence for the vaccine (96.6%).

Lastly, the most common factor among groups and individuals causing vaccine hesitancy among parents is healthcare providers, with an overall total of 75%, followed by knowledge and awareness, with 25% total responses. Moreover, the majority of parents rely on the recommendations and suggestions of some healthcare providers but still choose not to have their children vaccinated. In congruence to the study of Fernàndez-Basanta et al. (2021) which concludes that these kinds of actions were impacted by cultural and religious context as well as erroneous vaccination beliefs after observing that parents who were well-informed, similarly to parents who did not have enough information about children's immunization by healthcare professionals, still stood on the rejection of vaccination.

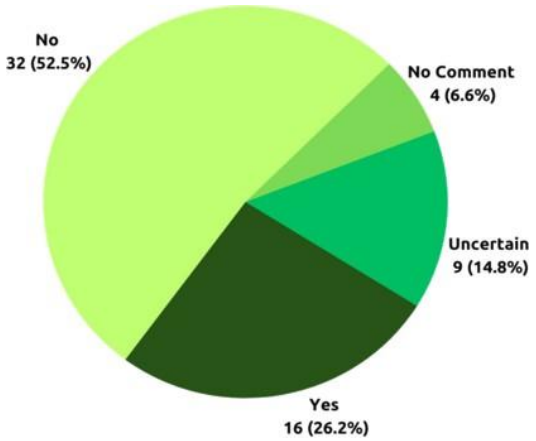

Figure 1.1. *Perception of Vaccine Hesitant Parents towards the Effectiveness of COVID-19 Vaccine*

Based on the results as shown in Figure 1.1, 32 parents, or 52.5% assert that some components of the vaccine against COVID-19 are not good for their child's health. Furthermore, 16 or 26.2% of respondents assert that it is good enough, while 9 or 14.8% sum up to be uncertain and 4, or 6.6% of participants provided no comment. These results show that the majority of the parents do not agree that vaccines would have positive effects on their children since they doubt some of the components or ingredients which cause them to be vaccine-hesitant. The findings of the study of Dubé et al. (2021), over the past 30 years, there have been numerous vaccine controversies that have spread across the world, there are initial claims that a component of the pertussis vaccine was contributing to various health issues and ending with charges that the HPV vaccine was associated to unfavorable side effects in the 2010s. On the other hand, a great deal of research has been done on the causes, effects, and effects of vaccine resistance in the past decades.

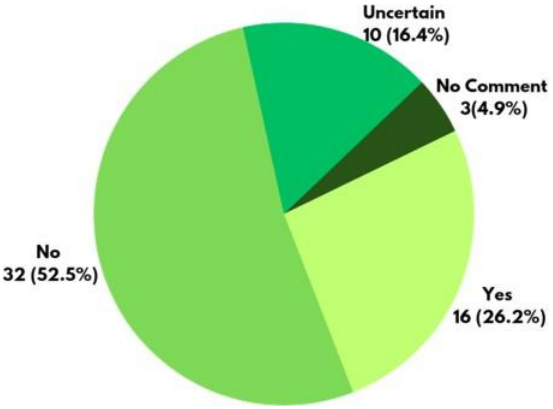

Figure 1.2. *Perception of Vaccine Hesitant Parents towards their Sources of Information*

Figure 1.2 shows that 32, or 52.5%, failed to pay attention and observe, followed by respondents noticing and seeing that the information from their sources provides updates and reliable details to help their children get immunized, for an overall total of 16 or 26.2%. Furthermore, 16.4%, or 10 respondents, appear uncertain, while 3 or 4.9% of respondents did not provide any comments. According to the study of Babicki et al. (2021), mass media is the most widespread source of information, and can be a secure and efficient means to immediately and accurately inform a large population, however, the development of effective strategies is to counter misinformations and fake news.

Figure 1.3 shows that 59% of the respondents or 36 did not receive any recommendation from medical experts, while 22, or 36.1% received. Furthermore, 2 parents or 3.3% were doubtful and only 1 or 1.6% did not provide any answers. These results show that most parents did not receive any recommendation from experts, which might be one of the reasons they are hesitant since there is not enough reliable information for them. In the study of Yıldırım et al. (2022) providing individuals with sufficient information prior to giving their informed consent to healthcare professionals can increase people's confidence in receiving vaccinations and thereby their willingness to receive vaccinations.

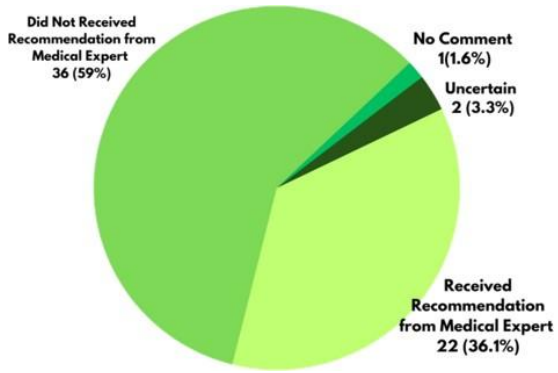

Figure 1.3.*Receiving of Recommendation from Medical Experts*

Intervention

The researchers intend to make the research findings widely available by implementing face-to-face informative health seminars and flyers at school that will be made available to all parents of students in Morong national HIgh School. Parents of students at Morong National will attend the seminar, which seeks to give them a broad understanding about COVID-19 vaccines and serve as awareness or knowledge for them regarding vaccination. More so, the flyers will have all of the relevant data, including a list of healthcare facilities and facts about vaccines. The flyers will encourage a safe and efficient method of communication for parents in immunization by providing accurate data about vaccines.

Moreover, the researchers will also encourage the healthcare officials and local government institutions to conduct health seminars for parents in Morong, Rizal to raise awareness about COVID-19 vaccinations.

Furthermore, the research findings may be used as bases for the public health officials to tailor their communication strategies in addressing the factors that contribute to vaccine hesitancy and make an implementation program for vaccination in Morong National High School.

Conclusion

Based on the results of the study, respondents who are above 51 years old are more hesitant than the other respondents. Whereas, in terms of sex, males are more hesitant than females. Single and separated parents have a high hesitancy level while others responded with having a moderate level of hesitancy. When it comes to the number of children, parents with one to four children were found to be more vaccine hesitant than those who have five or more children.

In addition, in terms of the subjects' educational attainment, respondents who attained primary or lower education turned out to be extremely hesitant compared to those who attained secondary, bachelor's, and master's degrees. Among the 61 respondents, those who have a monthly income below Php 8, 000 turned out to be more hesitant than those who have a monthly income above Php 8, 000. Moreover, the parents who work in the fields of education and construction were found to be more hesitant than those in other sectors whose level of hesitancy are either moderate or low. With the use of analysis of variance, it was revealed that there is no significant difference in the profile of the respondents in terms of age, sex, educational attainment, and sources of information. On the other hand, there is a significant difference in terms of civil status, number of children, monthly family income, and occupation. When researchers conducted the Tukey's post hoc test, it resulted that there is no significant difference between the number of children in the family despite the opposite result from the analysis of variance test.

In terms of vaccines and vaccination problems, protection is found to be the most common factor compared to the other three, which are risk, health concern, and effectiveness. When it comes to influences, evidence turned out to be the factor that most parents are hesitant about, followed by mass media, family influence, and influential leaders. Lastly, among influential individuals or groups, healthcare providers cause higher hesitancy compared to their own individual knowledge or awareness. In consideration of the findings and conclusions drawn from this study, it is recommended that future researchers carry out further investigation since Gallant et al. (2021) claimed that there have been significant changes in vaccination decisions during the pandemic. Additionally, considering that students are currently attending face-to-face classes, it is advised that future researchers conduct further studies that take parental circumstances and challenges into account in accordance with their demographic profile apart from identifying and determining more factors that cause parents' resistance to COVID-19 immunization among students across multiple grade levels. Furthermore, it is suggested to do in-person interviews with parents who lack internet access and were unable to answer

via Google Forms, as individuals may experience difficulties accessing it.

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