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# A Comparative Study on the Knowledge, Attitude and Practices of Mothers towards Children Immunization in Barangay Poblacion West and Malubibit Norte, Flora, Apayao, Philippines

**Judelle D. Quintos[1], Deanne Clarisse S. Ramos[2], Hiyasmin C. Ramos[3], Larissa B. Ravelo[4], Rosemean Grace C. Relon[5], Jinky Marie T. Chua[6]**
Cagayan State University - Andrews Campus, Tuguegarao City, Cagayan, Philippines
*[1]judellquintos.11@gmail.com, [2]ramosdeanne29@gmail.com, [3]yasminramos181999@gmail.com, [4]lalaolevar17@gmail.com, [5]rosemeangracerelon@gmail.com, [6]ichua@csu.edu.ph*

## ABTRACT

*Childhood immunization is a critical public health intervention available for preventing childhood morbidity and mortality. However, UNICEF reported in 2020, that vaccination coverage in the Philippines has dropped dramatically; thus, this study aims to provide comparative data on mothers' knowledge, attitude, and practices towards children immunization in barangay Malubibit Norte having the highest data of fully immunized children and barangay Poblacion West with the lowest recorded data of fully immunized children. This study utilized a comparative research design to describe the profile of the respondents, their knowledge, attitude and practices on child immunization. Two hundred thirty-two (232) mothers were identified as respondents of this study by using stratified random sampling. It was discovered that in Barangay Poblacion West, the records of having the least number of fully immunized children were due to uncontrolled hindrances, which were the child is not feeling well during their scheduled vaccination and had a severe allergic reaction after vaccine administration. It was also found out that the overall mean score of mothers KAP from the two barangays are knowledgeable towards children immunization with positive attitude and good practice. Level of knowledge when grouped to their profile, vaccine benefit was influenced by religion. In relation to the level of attitude and practices, it was influenced by marital status, educational attainment, attended seminars, nature of work, religion, source of income, type of family, comorbidities of the mother, maintenance medication, and compliance to medication. Findings also showed that there is no significant relationship between Attitude and Practices of Mothers towards Child Immunization of both barangays and that there is no significant relationship between the Knowledge with that of Attitude and Practices of the mothers towards Child Immunization of both barangays.*

***Keywords:*** *mothers, children immunization, knowledge, attitude, practices*

## INTRODUCTION

Childhood immunization is perhaps the most critical public health intervention available for preventing childhood morbidity and mortality. Immunizations are a crucial health benefit that protects vulnerable people from infections that can prevent with vaccines preventable diseases (VPD). These vaccines shield children from illness and death, potentially saving up to three million lives annually, or more than five lives every minute of every day. Vaccines are both safe and efficient in the prevention of diseases (Madani, 2020). However, UNICEF reported on April 23, 2020, in recent years, vaccination coverage in the Philippines has dropped dramatically, from 87 percent in 2014 to 68 percent in 2019, exposing children to vaccine-preventable diseases like measles and polio. In a similar year, the latest measles outbreak in the Philippines showed a shocking 130 percent rise in cases in 2019.

Furthermore, polio resurfaced in 2019, with 17 reported cases, and health experts fear that the number of claims will rise as halted the polio

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outbreak response due to COVID-19. Also, vaccination program in the Philippines has come under the spotlight because of the Dengvaxia controversy, and the mess has led to more parents refusing to avail the government's various vaccination program, according to DOH (2018). The timeliness of immunizations, receiving vaccinations at the earliest appropriate age is a fundamental public goal for individuals and communities to remain protected. Observed stopped or interrupted immunization for any reason poses an increasing number of vaccine-preventable infections and related deaths.

WHO's Agenda 2030 (IA2030) lays out a bold, overarching global vision and plan for vaccinations and immunization for the years 2021–2030, to maintain and expand on hard-won progress by leaving no one behind in any circumstance or at any stage of existence. Also, the Department of Health (DOH) launched its immunization program against measles, rubella, and polio last February 1, 2021, covering regions in both Luzon and Visayas and scheduled to run until February 28, 2021. Global Vaccine Action Plan specified 2015 targets as 90% national coverage with DTP3 and at least 80% in all districts worldwide. However, many countries still fall short of these targets. Conducted studies revealed common factors that affect the performance of vaccination programs.

According to Rainey et al. (2019), factors that emerged under-vaccination and no vaccination include deficiencies in the immunization delivery system, deficiencies in the immunization delivery system, and challenges with communication or information delivery, family characteristics, and parental understanding about vaccination. Poor access and distance from vaccination services, insufficient vaccine supply, health worker availability and knowledge, and missed vaccination opportunities (including non-specified missed opportunities, misuse of contraindications, lacking vaccination, vaccinator absence at the scheduled time for vaccinations, direct and indirect costs associated with vaccination, place of residence (living in rural or specific urban settings such as slums) are among the findings in relation to the immunization system. The global immunization division of the Centers for Disease Control and Prevention (CDC) reported that the parental attitude and knowledge regarding immunization services were low, and parents have negative beliefs about measles and vaccinated programs.

Furthermore, Caingles (2011) revealed that parents in the Philippines still lacked knowledge concerning their children's vaccination. Therefore, the child's desire to be immunized is determined entirely by the vaccine's availability and affordability, as well as the parent's willingness and effort. Moreover, a study conducted by Mahalingam et al. (2014) found that there is a significant difference in mothers from rural and urban areas when it comes to their knowledge, attitude, and practices regarding vaccination. Hence, this study aimed to provide comparative data on mothers' knowledge, attitude, and practices towards children immunization in barangays Poblacion West and Malubibit Norte of Flora, Apayao having the highest and lowest recorded data of fully immunized children.

***Objectives of the Study***

The objective of this study is to utilize the Knowledge, Attitude, and Practices (KAP) theory as a framework to enhance our understanding of distinct health-related topics, specifically focusing on the degree of knowledge and practice among mothers in Barangay Poblacion West and Barangay Malubibit Norte, Flora, Apayao. This study seeks to quantitatively describe the knowledge and practice levels of these mothers and to investigate the significant associations between their knowledge, attitude, and practices. One key aspect to be explored is the influence of mothers' educational levels on the immunization status of their children, with findings suggesting that vaccination compliance tends to be higher among mothers with only primary or certificate education. Additionally, the study aims to shed light on the role of parental awareness in shaping their behavior, recognizing that knowledge directly impacts attitude. While some argue that increased awareness leads to better compliance

with immunizations, others suggest that heightened knowledge can also raise questions about vaccine safety and necessity. Furthermore, the study will examine the preference for healthcare facilities for child vaccination, with an emphasis on government health facilities, especially in urban slum areas where affordability becomes a crucial factor. Lastly, the study intends to assess the sources of information that mothers rely on regarding immunization, highlighting the prominent roles played by relatives, friends, and healthcare workers such as auxiliary nurse midwives and doctors. In sum, this research aims to contribute valuable insights into the knowledge, attitude, and practices of mothers regarding immunization in the specified region, thereby informing strategies for improving child healthcare and vaccination programs.

## MATERIALS AND METHODS

### *Research Design*

This study utilized a descriptive comparative research design. The descriptive research described the profile of the respondents, their knowledge, attitude, and practices on child immunization. Researchers utilized a comparative research type to determine the difference in the respondents' level of knowledge, attitude, and practices towards child immunization in the selected barangays of Flora, Apayao.

### *Sampling Technique*

The researchers obtained the selected respondents of this study from the identified rural and urban barangays of Flora, Apayao, having recorded data of highest fully immunized and highest non- fully vaccinated children retrieved from the Municipal Health Office. Respondents of this study are mothers who (a) are 18 to 45 years old, (b) residents for at least six months (c) have a child aged 0-5 years old regardless of the number of children or gravida. The researchers used Slovin's formula to calculate the total number of respondents using the confidence level of 95%. A stratified random sampling was employed in this study, 232 respondents from the identified barangays having the highest (147) and lowest (85) recorded data of fully immunized children were selected to represent 550 households.

### *Locale of the Study*

This study was conducted in the Province of Apayao, specifically in the Municipality of Flora. The Municipal Health Office identified the two (2) barangays: Barangay Poblacion West having the least recorded number of Fully Immunized Children (FIC) and Barangay Malubibit Norte having the highest registered number of FIC.

### *Research Instruments*

Researchers developed a survey questionnaire composing a series of questions adapted from several studies. Part I highlighted the profile information of respondents (i.e., demographic profile, socioeconomic profile, clinical and health profile, health-seeking behavior on immunization, where do mothers get information about vaccination) and the vaccination status of children and hindrances met by mothers. Part II and III was a modified questionnaire that assessed the attitude and practices of mothers toward children immunization from the study conducted by Kulintang et al. (2017). These parts utilized a four-Likert scaling. Part IV focused on assessing the level of knowledge of mothers about children's immunizations (i.e., schedule of vaccine administration, benefits of vaccinations, vaccine contraindications, the effect of delayed vaccination) adapted and modified from Verulava et al. (2019) and Alruwaili et al. (2018). The response options in this part are Yes, No or I don't know.

### *Data Gathering Procedure*

The researchers prepared a combined self-constructed and a modified questionnaire. This was validated by five experts and tested for its reliability through pilot testing with ten respondents that are not included in the study and used Cronbach alpha as a measuring tool. The researchers sought permission from the Municipal Health Office of Flora and the Health Centers of Barangays Poblacion West and Malubibit Norte in gathering data needed for sample size determination and sampling. Following approval, the researchers sought permission to survey with the Barangay Officials of the selected barangays. The researchers applied for ethical clearance in Region II Trauma and Medical Center

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(R2TMC). The researchers provided every respondent an informed consent to those mothers who are 18 to 45 years old, residents for at least six months on the said barangays, and have a child aged 0-5 years old regardless of the number of children. The researchers also explained to the respondents the purpose of the study and their rights to withdraw at any stage. Opportunity was given to the respondents to ask questions or clarifications. The researchers are required to adhere to all preventive measurements, rules and complying to the IATF guidelines where the research is conducted, and no research activities should be undertaken if they impede emergency responses. Approximately four weeks was set by the researchers to distribute and retrieve the questionnaires handed to the respondents. After gathering, data was analyzed using statistical tools and results were interpreted and discussed.

***Analysis of the Data/Statistical treatment***

Frequency and percentage distribution were used to describe the profile of the respondents. Mean scores was used in defining the respondents' level of knowledge, attitude, and practices on child immunization. The significant difference on the attitude and practices of mothers in the two barangays with that of the profile variable was determined using t-test while Chi-square was utilized for their knowledge. The association of mother's knowledge in the two barangays with that of their attitude and practices was determined by Chi-square and T-test respectively.

## RESULTS AND DISCUSSION

Table 1.1 shows that 147 or 63.36% of the total respondents came from Poblacion West, while the remaining 85 or 36.64%, came from Malubibit Norte. Respondents' age ranges from 26 – 30, with a percentage of 27.16%, followed by ages ranging from 31 – 35 with 23.71%. On the other hand, the data revealed that the age range 16 – 20 has the least percentage of the respondents, which is only 5.60% of the total sample, implying that most of the respondents were in the middle stage of adulthood. According to Al – lela et al. (2014), mothers aged at delivery of 20 to 29 years had a higher percentage (60.5%) of adequate knowledge and practices than other groups as reflected in the table, it shows the Marital Status of the respondents, with 75% of the sample, are married. A study conducted by Al – lela et al. showed a significant association between knowledge and practices of immunization and marital status. This result is not surprising because one of the parents might provide the information to another parent and increase the source of information. In addition, married parents had a higher socioeconomic status than divorced or widowed parents.

**Table 1.1** Frequency Distribution of Respondent's Demographic Profile (n=232)

| Profile Variables | Frequency | Percentage |
|---|---|---|
| **Residence** | | |
| Poblacion West | 147 | **63.36** |
| Malubibit Norte | 85 | **36.64** |
| **Total** | **232** | **100.00** |
| **Age** | | |
| 16-20 | 13 | **5.60** |
| 21-25 | 48 | **20.69** |
| 26-30 | 63 | **27.16** |
| 31-35 | 55 | **23.71** |
| 36-40 | 34 | **14.66** |
| 41-45 | 19 | **8.19** |
| **Marital Status** | | |
| **Single** | 13 | **5.60** |
| **Married** | 174 | **75.00** |
| **Widowed** | 3 | **1.29** |
| **Separated** | 3 | **1.29** |
| **Live in** | 39 | **16.81** |
| **Seminar Attended** | | |
| **0** | 23 | **9.91** |
| **1-3** | 197 | **84.91** |
| **4-6** | 12 | **5.17** |
| **7-10** | **0** | **0** |

It is observed that in seminars attended, most of the respondents, with 84.91%, have attended 1 to 3 a seminar related to child vaccination while 9.91% have no seminar attended. In the study conducted by Hu (2015), one-hour education seminars given to caregivers in vaccination clinics were an effective and practical strategy to improve the knowledge level on vaccination.

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Table 1.2 shows that 34.1% of the respondents are high school graduates. Only 5 or 2.16% of the respondents are postgraduate. In contrast, three of the remaining five respondents are vocational graduates, and the remaining two respondents have no formal education and elementary level, respectively. A study result conducted by Kumar et al. (2013) showed that knowledge was significantly greater among mothers with a higher education level and among those who were older at the time of the child's birth. Another study by Legesse et al. (2015) supported the findings that mothers' educational status is among the determinants of immunization completion. Those mothers or caregivers who attended secondary and above levels were two times more likely to complete their children's immunization than mothers unable to read and write. Thus, as the family's educational status improves, the family's health-seeking behavior may increase. This, in turn, may have a positive impact on child immunization.

As also shown in the table the frequency of the nature of work, the highest percentage of the respondents have other job titles not mentioned in the questionnaire with 43.10% followed by the business owner with 23.71%, a government employee with 18.97%, housemaid/house helper with 7.33% and farmer being the least with 6.90%. On the other hand, a high percentage of the respondents were unemployed, with 73 or 31.47%. For the source of income, 103 or 44.40% of the respondents fall under the blue-collar job category. These findings are similar to the result of the study of Kulintang (2017). For ethnicity, almost all the respondents are Ilocano, with 194 or 83.62%, followed by Isneg with 16 or 6.90%. Three of the respondents are Kalinga. One Ibaloi and seven Itawes, while 11 or 4.74% respondents are from other ethnicities, not indicated in the survey. Regarding the religion, 102 and 43.97% are Iglesia ni Cristo, and 80 or 34.48% are Roman Catholic. In a study conducted by Tumuhairwe (2016), it was important to note that though the majority (83%) of the respondents agreed that child immunization was not prohibited in their religion. Religion has a strong influence on society and has a role to play in influencing decisions that are important for implementing community programs such as immunization.

Tricycle and motorcycle were revealed as the everyday transportation of the respondents with 46 (19.83%) and 45 (19.40%) respondents, respectively. Sixty- six or 28.45% of the respondents tend to walk to a health facility. In the study by Prabon (2020), those mothers living far from health clinics only need to pay for their transport to get to the clinic sites. This study revealed that participants traveled into town by private vehicles or public transportation. However, transportation is a problem in rural areas due to difficult terrain, poor conditions, and cost.

With regards to average household income, majority (36.64%) of the respondents have an average monthly income below Php5,000.00 similar to the study of Kulintang (2017). This means that most of the respondents were minimum wage earners. Low family incomes and limited parental education are problems many parents face and can adversely affect their immunization knowledge and practice and their ability to complete their children's vaccination. Lower family income could be a barrier to effective communication between immunization providers and parents. Similar to other studies in developing countries, these results show that mothers' knowledge, attitude, and practice positively correlate with families' monthly income (Al – lela et al., 2014).
Regarding appliances, common to the respondents are Mobile Phones and television with 87.06% and 75%, respectively. Furthermore, the data revealed that most respondents, with an average of 86.64%, do not belong to any organization. 31 or 13.36% of respondents belong to an organization.

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**Table 1.2** Frequency Distribution of Respondent's Socio-economic Profile

| Profile Variables | Frequency | Percentage |
|---|---|---|
| **Educational Attainment** | | |
| No Formal Education | 1 | **0.43** |
| Primary level | 0 | **0.00** |
| Elementary level | 1 | **0.43** |
| Elementary graduate | 14 | **6.03** |
| Highschool level | 28 | **12.1** |
| High school graduate | 79 | **34.1** |
| Vocational graduate | 3 | **1.29** |
| College level | 34 | **14.7** |
| College graduate | 67 | **28.88** |
| Postgraduate | 5 | **2.16** |
| **Nature of Work** | | |
| Government Employee | 44 | **18.97** |
| Business Owner | 55 | **23.71** |
| Farmer | 16 | **6.90** |
| Housemaid/House Helper | 17 | **7.33** |
| Others | 100 | **43.10** |
| Source of Income | | |
| White Collar Job | 46 | **19.83** |
| Blue Collar Job | 103 | **44.40** |
| Self-employed | 10 | **4.31** |
| Unemployed | 73 | **31.47** |
| **Ethnicity** | | |
| Ilocano | 194 | **83.62** |
| Isneg | 16 | **6.90** |
| Malaueg | 0 | **0.00** |
| Kalinga | 3 | **1.29** |
| Bontoc | 0 | **0.00** |
| Ibaloi | 1 | **0.43** |
| Itawes | 7 | **3.02** |
| Kankanaey | 0 | **0.00** |
| Others | 11 | **4.74** |
| **Religion** | | |
| Roman Catholic | 80 | **34.48** |
| Born Again | 24 | **10.34** |
| Iglesia Ni Cristo | 102 | **43.97** |
| Jehovah's Witnesses | 1 | **0.43** |
| United Methodist | 9 | **3.88** |
| Baptist | 5 | **2.16** |
| Others | 11 | **4.74** |
| **Mode of Transportation** | | |
| Private Car | 38 | **16.38** |
| Tricycle | 46 | **19.83** |
| Motorcycle | 45 | **19.40** |
| Commute | 37 | **15.95** |
| None | 66 | **28.45** |
| **Household average monthly income** | | |
| Below P5000 | 85 | **36.64** |
| P5,000 - P10,000 | 65 | **28.02** |
| P10,001 - P20,000 | 44 | **18.97** |
| P20,001 - P30,000 | 31 | **13.36** |
| P30,001 - P40,000 | 3 | **1.29** |
| P40,001 - P50,000 | 1 | **0.43** |
| **Appliances found at home** | | |
| Mobile Phone | 202 | **87.06** |
| Television | 174 | **75.00** |
| Radio | 74 | **31.90** |
| Laptop/Computer Unit | 77 | **33.19** |
| Television Cable | 73 | **31.47** |
| Internet Provider | 82 | **35.34** |
| **Organization Membership** | | |
| Yes | 31 | **13.36** |
| No | **201** | **86.64** |

Table 1.3 shows that most of the respondents, with 96.55%, have no disease at present, while the remaining 3.45% said they have. Most of the respondents, with 74.57%, have no comorbidities. The data also shows that hypertension is the leading comorbidities of the respondents with 10.78%. On the other hand,

**Table 1.3** Frequency Distribution of Respondent's Clinical and Health Practice

| Variables | Frequency | Percentage |
|---|---|---|
| **Disease Present** | | |
| Yes | 8 | **3.45** |
| No | 224 | **96.55** |
| **Comorbidity** | | |
| Hypertension | 25 | **10.78** |
| Allergies | 14 | **6.03** |
| Asthma | 14 | **6.03** |
| Diabetes | 1 | **0.43** |
| None | 173 | **74.57** |
| Others | 5 | **2.16** |
| **Maintenance Meds** | | |
| Yes | 38 | **16.38** |
| No | 194 | **83.62** |
| **Food Supplement/Vit** | | |
| Yes | 124 | **53.45** |
| No | 108 | **46.55** |
| **Child fully Vaccinated** | | |
| Yes | 197 | **84.91** |
| No | 3 | **1.29** |
| Ongoing | **32** | **13.79** |

6.03% of the respondents have allergies like asthma. Only one respondent has diabetes, and

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the remaining 5 or 2.16% of the respondents have comorbidities not indicated in the survey. Furthermore, most of the respondents (83.62%). In taking food supplements and vitamins, 53.45% are taking while 46.55% are not. Thus, this result implies that most mothers are healthy; however, almost half of them do not take any supplements and vitamins to keep their bodies protected. Based on the data presented above, most of the respondents (84.91%), have fully vaccinated children. 13.79% are ongoing, and only 1.29% are not fully vaccinated. This result implies that Flora is compliant with children immunization; however, the non-fully vaccinated children must be followed up.

It can be viewed from table 1.4 the situation that hindrances the child's vaccination, and only 19.83% of the respondents mentioned that their 'child is not feeling well' hinders the vaccination of their children. This includes having cough, colds, fever, or diarrhea. This is similar to the findings of Hussin et al. (2020) that out of all respondents, 69 (22.5%) respondents also attributed hindrance to vaccination to their child's illness during their immunization schedule. This figure is nearly the same as that in the studies of Lim et al. wherein 22.6% of respondents had the same reason. However, it is lower than the study conducted by Azhar et al. wherein 38% of respondents mentioned that their child had a fever exceeding 38°C during the immunization period was their reason for defaulting.

Some of the respondents explained that they don't proceed with the immunization of their child when it is not feeling well due to sickness such as cough, fever and diarrhea. Some of the mothers also stated that they need to wait until child's sickness will resolve especially when the treatment is ongoing before continuing with the scheduled immunization. Also, some of them stated that they seek first a consultation with their child's attending physician before deciding whether they will immunize their child or not. Meanwhile, others mentioned that they are still glad to receive their missed child immunization after the sickness resolves as this protect them from serious illnesses. These

**Table 1.4** Frequency Distribution of Respondents' Clinical and Health Profile regarding the Hindrances preventing Child's Vaccination

| Statements | Frequency | Percentage |
|---|---|---|
| 1. I do not know the required vaccine for my child. | 0 | 0 |
| 2. My child is not feeling well. | 46 | 19.83 |
| 3. I did not know where to bring my child for vaccination. | 0 | 0 |
| 4. Health facility is too far from our residence. | 0 | 0 |
| 5. I did not have the gadget to contact the health worker in the clinic. | 0 | 0 |
| 6. I could not contact any of the healthcare providers. | 0 | 0 |
| 7. Transportation problem to reach the vaccination health facility. | 0 | 0 |
| 8. The schedule of vaccination is not convenient for me. | 0 | 0 |
| 9. No one could take care of my other children during the vaccination schedule. | 0 | 0 |
| 10. I could not seek a leave of absence from my employer. | 0 | 0 |
| 11. I do not have the information about the routine vaccination schedule. | 0 | 0 |
| 12. I do not understand the real benefit of vaccines. | 0 | 0 |
| 13. I am afraid about the vaccination of my children. | 0 | 0 |

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claims are in line with the study by Bofarraj (2011) that the most often mentioned reason for incomplete immunization was child sickness which was reported in 54%, followed by social reasons, forgetfulness, and others.

**Table 1.5** Frequency Distribution of Respondents' Health Seeking Behavior when a child is sick

| Variable | Frequency | Rank |
|---|---|---|
| **Person to whom you seek when a child is sick** | | |
| Pediatrician | 148 | **1** |
| Midwife | 107 | **2** |
| Friend | 6 | **5** |
| BHW | 51 | **3** |
| Relative | 7 | **4** |
| Neighbor | 3 | **7** |
| Traditional Healers | 5 | **6** |
| **Institution confided problems when a child is sick** | | |
| Health Center | 134 | **1** |
| Hospital | 92 | **3** |
| Private Clinic | 98 | **2** |
| BHS | 5 | **4** |
| Sacred Places | 4 | **5** |
| **Platforms used in communication when the child is sick** | | |
| Face-to-Face | 147 | **1** |
| Goes to Health Center | 118 | **2** |
| Tele-Medicine | 10 | **3** |
| **Source of Vaccine Information** | | |
| Attending Physician | 97 | **2** |
| Trainings | 1 | **7** |
| Friends | 1 | **7** |
| Neighbor | 3 | **4** |
| Relatives | 2 | **5** |
| Internet Sources | 16 | **3** |
| BHWs | 128 | **1** |
| Others | **2** | **5** |

Table 1.5 shows that most respondents sought a pediatrician and midwife whenever their child was sick, followed by seeking a BHW, relative, friend, traditional healer, and neighbor. Moreover, most of the respondents visit health centers and Private Clinics whenever their children are sick, followed by 42.24%, hospitals and sacred places. The table implies that most of the respondents communicate face-to-face to the health care provider when their child is sick when it comes to platforms. Other respondents went to the health center, and the least of them sought teleconsultation. Regarding the sources of information about vaccination, most of the respondents rely on the information from the BHWs, followed by attending physicians, followed by relying on internet sources, neighbors, relatives, friends, and training. Abdullah et al. (2016) described the source where the respondents obtained their information about childhood immunizations. The top three sources were the doctor, nurses, and the internet. The majority of the respondents ranked sources of information by doctors and nurses as excellent or good. While for the source of information from the internet, most respondents ranked it as good or average. Deborah et al. (2005) reported that most parents made good decisions about immunization if they had enough access to information regarding vaccinations. The majority of parents in the United States actively self-obtained information before their child is vaccinated. Health professionals, family members, and media, including television, newspapers, and the internet, were listed as their three most important sources of information about childhood vaccination (Allison, Katherine, Glen, Michelle & Sarah, 2011). Similar findings in Iraq, sources of information, and communication between parents and providers have been identified as important factors which determined a good parental practice towards child immunization. Improving communications had reported improving parents' perception of the benefits of vaccines (Al-lela, Bahari, Al-qazaz, & Salih, 2014).

Table 2 shows the level of knowledge of mothers about children's immunization regarding the vaccination schedule, vaccination benefits, vaccine contraindication, and the effect of delayed vaccination. The researchers

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**Table 2.** Mean Average on the Level of mother's Knowledge towards children vaccination

| Barangay | Attitude towards children immunization | Score | | | Mean | Descriptive Value |
|---|---|---|---|---|---|---|
| | | Yes | No | I don't know | | |
| Poblacion West | 1. Vaccines can be given anytime. | **20** | 127 | 0 | 2.13 | Slightly Knowledgeable |
| Malubibit Norte | | 7 | 78 | 0 | 2.08 | Slightly Knowledgeable |
| Poblacion West | 2. Multi-doses of the same vaccines such as Pentavalent Vaccine, Oral Polio Vaccine (OPV), Pnuemococcal Conjugate Vaccine and Measles Mumps Rubella should be given at intervals. | **135** | 0 | 12 | 2.83 | Knowledgeable |
| Malubibit Norte | | 75 | 0 | 10 | 2.76 | Knowledgeable |
| Poblacion West | 3. Bacille Calmette-Guérin (BCG) vaccine should be given at the earliest possible age after birth preferably within the first 2 months of child's life | **138** | 0 | 9 | 2.88 | Knowledgeable |
| Malubibit Norte | | 75 | 0 | 10 | 2.76 | Knowledgeable |
| Poblacion West | 4. Primary vaccination of Pneumococcal Conjugate Vaccines (PCV) consists of 3 doses with an interval of at least 4 weeks between doses plus a booster dose given 6 months after the 3rd dose. | **135** | 0 | 12 | 2.84 | Knowledgeable |
| Malubibit Norte | | 67 | 0 | 18 | 2.58 | Knowledgeable |
| Poblacion West | 5. Primary vaccination of Pneumococcal Conjugate Vaccines (PCV) consists of 3 doses with an interval of at least 4 weeks between doses plus a booster dose given 6 months after the 3rd dose. | **138** | 0 | 9 | 2.88 | Knowledgeable |
| Malubibit Norte | | 69 | 0 | 16 | 2.62 | Knowledgeable |
| Poblacion West | 6 First dosed of Measles-Mumps- Rubella (MMR) Vaccine can be administered to a child at a minimum age of 12 months and the second dose is | **133** | 0 | 14 | 2.81 | Knowledgeable |
| Malubibit Norte | | 78 | 0 | 7 | 2.84 | Knowledgeable |

vaccines can be given anytime showed a result of 2.13% for Poblacion East and 2.08% for Malubibit Norte which indicates that both barangays are slightly knowledgeable to it. Meanwhile, results showed that respondents from both barangay are knowledgeable regarding on- a fully immunized child must have completed the doses of BCG, Pentavalent, OPV, Hepatitis B, measles vaccines before the 1st birthday of the child, multi-dose of the same vaccines such as Pentavalent Vaccine, Oral Polio Vaccine (OPV), Pneumococcal Conjugate Vaccine, and Measles Mumps Rubella should be given at intervals which showed a mean average ranges from 2.58% to 3%. The majority of mothers are knowledgeable about their child immunization schedule because their child's immunization card guides them.

For the benefits, result showed that both barangays had a mean average that ranges from 2.81% to 3% which implies that respondents from both barangays are knowledgeable. Respectively, they are knowledgeable that children immunization prevents disease, and its complications and that child's body develops protection against viruses or bacteria through immunization, can prevent that disease through immunization, and vaccination lowers the risk of a child's or disease death. Similar findings were found in a study conducted by Singh et al. (2019), majority agreed that the routine vaccination prevents children from serious microbiological infection and its complication. To add a back-up the results, a study conducted by Danjuma et al. (2020), it was found that participants agreed that vaccination prevents infectious diseases, and believed that vaccination is not generally harmful for children, while in the current study and mothers agreed that vaccination keeps a child healthy.

For the contraindication, it was revealed that all respondents from both barangays are knowledgeable with a mean average that ranges

| | | | | | | |
|---|---|---|---|---|---|---|
| | usually given from 4-6 years of age but may be given at an earlier age with a minimum of 4 weeks interval between doses. | | | | | |
| Poblacion West | 7. A fully immunized child must have completed the doses of BCG, Pentavalent, OPV, Hepatitis B, and Measles vaccines before the 1st birthday of the child. | **143** | 4 | 0 | 2.97 | Knowledgeable |
| Malubibit Norte | | 85 | 0 | 0 | 3 | Knowledgeable |
| Poblacion West | 8. Diseases can be prevented through Immunization | **139** | 8 | 0 | 2.95 | Knowledgeable |
| Malubibit Norte | | 85 | 0 | 0 | 3 | Knowledgeable |
| Poblacion West | 9. Children Immunization prevents disease and its complications. | **140** | 7 | 0 | 2.95 | Knowledgeable |
| Malubibit Norte | | 85 | 0 | 0 | 3 | Knowledgeable |
| Poblacion West | 10. The child's body develops protection against viruses or bacteria through Immunization. | **142** | 7 | 0 | 2.95 | Knowledgeable |
| Malubibit Norte | | 85 | 0 | 0 | 3 | Knowledgeable |
| Poblacion West | 11. Vaccination lowers the risk of a child's death or disease. | **137** | 10 | 0 | 2.93 | Knowledgeable |
| Malubibit Norte | | 76 | 2 | 7 | 2.81 | Knowledgeable |
| Poblacion West | 12. Do not vaccinate child when a severe allergic reaction occurs (e.g., anaphylaxis) after a previous dose of a vaccine component. * | **136** | 0 | 11 | 2.85 | Knowledgeable |
| Malubibit Norte | | 81 | 0 | 4 | 2.91 | Knowledgeable |
| Poblacion West | 13. Diarrhea is a contraindication for vaccination. | **141** | 6 | 0 | 2.96 | Knowledgeable |
| Malubibit Norte | | 79 | 6 | 0 | 2.93 | Knowledgeable |
| Poblacion West | 14. Do not give any vaccine to your child when he/she is severely sick. * | **147** | 0 | 0 | 3 | Knowledgeable |
| Malubibit Norte | | 85 | 0 | 0 | 3 | Knowledgeable |
| Poblacion West | 15. Children with delayed vaccination will be unprotected from the vaccine- preventable diseases at a time when they are most at risk. | **134** | 1 | 12 | 2.83 | Knowledgeable |
| Malubibit Norte | | 79 | 0 | 6 | 2.86 | Knowledgeable |
| Poblacion West | 16. Delays may contribute to diminished herd immunity or the indirect protection received by the unimmunized population when a large proportion is immunized. | **147** | 0 | 0 | 3 | Knowledgeable |
| Malubibit Norte | | 85 | 0 | 0 | 3 | Knowledgeable |
| Poblacion West | 17. Delayed vaccination increases the risk of failing to achieve full immunization of the child. | **147** | 0 | 0 | 3 | Knowledgeable |
| Malubibit Norte | | 85 | 0 | 0 | 3 | Knowledgeable |

*Legend Knowledgeable- 2.34- 3.00; 1.67- 2.33; Slightly Knowledgeable -2 points; 1-1.66 -No knowledge at all.*

from 2.85% to 3%. Respondents from both barangays are knowledgeable that diarrhea is a contraindication for vaccination, that children who are severely sick and have severe allergic reactions prevent the child's vaccination. Similar findings were found in a study conducted by Wani et al. (2017), majority of mothers believed that their child should not get vaccinated in conditions like cold and fever. However, it is a myth that you must avoid or delay your child's vaccination if they have a mild illness without a fever, such as a cough or cold, or an allergy, such as asthma, hay fever or eczema. In a study conducted by Singh et al.

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(2019), it was subsumed that 37% of mothers believe that vaccination is contraindicated during common colds, ear, and diarrheal infections and become a reason for vaccine denial or delay. The guide for contraindications to childhood vaccination suggests that vaccination delay based on misconceptions about contraindications puts an infant or a child at health risk.

For the effects of delayed vaccination, with a mean average that ranges from 2.83% to 3% respectively, respondents are knowledgeable that delays of the vaccine may contribute to diminished herd immunity, or the indirect protection received by the unimmunized population when a large proportion is immunized which may also be brought to the increase of the risk of failing to achieve full immunization of the child.

During the interview, some respondents from both barangays are slightly knowledgeable when asked if vaccines can be given anytime, some mentioned that they don't know the immunization schedules and others said that they lost their child's immunization card that's why they can't keep track with the said dates. Aside from those statements, other have mentioned that immunization should be administered accordance with the child's age and health condition. Furthermore, when asked if children immunization prevents disease and its complications, most of the respondents are knowledgeable. According to them, vaccines can protect their children from diseases and thus comply with the orders from the pediatricians. They describe it to safeguard a child from devastating childhood diseases and to ensure that the child is healthy. This in line with the study of Kagoné (2018) that when it comes to the necessity of childhood vaccination, most interviewees said that their children's mothers are aware of the importance of vaccines. However, few of the mothers are unsure if vaccines can truly prevent disease and

**Table 3.** Mean Average on mother's Attitude towards children immunization

| Barangay | Attitude towards children immunization | Score | | | | Mean | Descriptive Value |
|---|---|---|---|---|---|---|---|
| | | 4 | 3 | 2 | 1 | | |
| Poblacion West | 1. Children immunization is essential and more beneficial than harmful. | 142 | 5 | 0 | 0 | 3.97 | Strongly Agree |
| Malubibit Norte | | 81 | 4 | 0 | 0 | 3.95 | Strongly Agree |
| Poblacion West | 2. It is essential to comply with the recommended immunization schedule. | 127 | 20 | 0 | 0 | 3.86 | Strongly Agree |
| Malubibit Norte | | 78 | 7 | 0 | 0 | 3.92 | Strongly Agree |
| Poblacion West | 3. Even if my child seems to be healthy, he must be immunized. | 137 | 10 | 0 | 0 | 3.93 | Strongly Agree |
| Malubibit Norte | | 74 | 11 | 0 | 0 | 3.87 | Strongly Agree |
| Poblacion West | 4. I raise openly raise my concerns about vaccination with a healthcare provider. | 128 | 19 | 0 | 0 | 3.87 | Strongly Agree |
| Malubibit Norte | | 75 | 10 | 0 | 0 | 3.88 | Strongly Agree |
| Poblacion West | 5. Our religion does not restrict me from vaccinating my child. | 1 | 146 | 0 | 0 | 3.02 | Agree |
| Malubibit Norte | | 1 | 84 | 0 | 0 | 3.01 | Agree |
| Poblacion West | 6. I encourage other parents in our community to comply and complete all the recommended vaccines for our children | 110 | 32 | 5 | 0 | 3.71 | Strongly Agree |
| Malubibit Norte | | 67 | 17 | 1 | 0 | 3.78 | Strongly Agree |
| Poblacion West | 7. I watch outside effects of vaccination and raise my concerns to the health worker when it worsens. | 134 | 1 1 | 2 | 0 | 3.90 | Strongly Agree |
| Malubibit Norte | | 70 | 15 | 0 | 0 | 3.82 | Strongly Agree |
| Poblacion West | 8. I am satisfied with the friendly environment in our vaccination facility. | 116 | 3 0 | 1 | 0 | 3.78 | Strongly Agree |
| Malubibit Norte | | 65 | 20 | 0 | 0 | 3.76 | Strongly Agree |

*Legend: 1.0 – 1.49: Strongly Disagree; 1.50 – 2.49: Disagree; 2.50 – 3.49: Agree; 3.50 – 4.0: Strongly Agree*

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its complication as well as death. Lastly, mothers surely answered that discontinued and unfinished immunization for their child will not protect them from the vaccine preventable diseases at a time when they are at most risk.

Based on table 3, the level of the attitude 1, 2, 3, 4, 6, 7, and 8 of the respondents from both barangay which ranges from 3.71% to 3.97%, significantly shows that the respondents strongly agreed to the following attitude findings- children immunization is essential and more beneficial than harmful, it is essential to comply with the recommended immunization schedule, even if my child seems to be healthy, he must be immunized, I raise openly raise my concerns about vaccination with a healthcare provider, I encourage other parents in our community to comply and complete all the recommended vaccines for our children, I watch outside effects of vaccination and raise my concerns to the health worker when it worsens, and I am satisfied with the friendly environment in our vaccination facility. Meanwhile, regarding the respondent's attitude towards religion not restricting the respondents from vaccinating their children, with a mean average ranging from 3.01% to 3.02%, respondents from both barangays agreed to it. Similar findings were found in the study conducted by Alagsam et al. (2007); most parents agreed that children's vaccination is essential and children should be vaccinated regularly according to schedule. A study conducted by Singh et al. (2019) shows that most parents either strongly agreed or agreed that child immunization is important. Most of them considered immunization more beneficial than harmful and strongly agreed or agreed that vaccines are safe. Parents strongly agreed that child immunization is not prohibited in religion, and the administration of vaccines is associated with side effects.

When asked if respondents' religion restricts them from vaccinating their child, all of them

**Table 4.** Mean Average on the Practices of mothers towards children immunization

| Barangay | Practices on Vaccination | Score | | | | Mean | Descriptive Value |
|---|---|---|---|---|---|---|---|
| | | 4 | 3 | 2 | 1 | | |
| Poblacion West | 1. I make sure that my child receives adequate care and rest after Immunization | 139 | 8 | 0 | 0 | 3.95 | Strongly Agree |
| Malubibit Norte | | 76 | 9 | 0 | 0 | 3.89 | Strongly Agree |
| Poblacion West | 2. I use the immunization card to keep track of my child's immunization schedules to ensure completeness | 127 | 20 | 0 | 0 | 3.86 | Strongly Agree |
| Malubibit Norte | | 76 | 9 | 0 | 0 | 3.89 | Strongly Agree |
| Poblacion West | 3. I practice going to the health center during my child's immunization schedule. | 133 | 12 | 0 | 0 | 3.86 | Strongly Agree |
| Malubibit Norte | | 78 | 7 | 0 | 0 | 3.92 | Strongly Agree |
| Poblacion West | 4. I do ask the health care worker personnel for the following immunization schedule. | 131 | 16 | 0 | 0 | 3.89 | Strongly Agree |
| Malubibit Norte | | 69 | 16 | 0 | 0 | 3.81 | Strongly Agree |
| Poblacion West | 5. I follow the instructions of nurses/healthcare professionals when it comes to my child's Immunization. | 136 | 11 | 0 | 0 | 3.93 | Strongly Agree |
| Malubibit Norte | | 76 | 9 | 0 | 0 | 3.89 | Strongly Agree |
| Poblacion West | 6. I make an effort to ensure that my child is fully immunized. | 136 | 11 | 0 | 0 | 3.93 | Strongly Agree |
| Malubibit Norte | | 78 | 7 | 0 | 0 | 3.92 | Strongly Agree |
| Poblacion West | 7. Even though I missed the scheduled Immunization date, I continue to visit the health center. | 30 | 3 | 11 | 0 | 2.43 | Disagree |
| Malubibit Norte | | 9 | 10 | 4<br>66 | 0 | 2.33 | Disagree |

*Legend: 1.0 – 1.49: Strongly Disagree; 1.50 – 2.49: Disagree; 2.50 – 3.49: Agree; 3.50 – 4.0: Strongly Agree*

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strongly disagreed on it. They mentioned that their religion is not involved during decision making regarding their child's immunization. And some stated that their religion supports them from getting their child immunized especially that this concerns their child's health. Some of the mothers also mentioned their religious belief is that God will heal their children from any sickness.

Moreover, when asked if they are satisfied with the friendly environment in their vaccination facility, most of them strongly agreed and stated that health workers from their respective barangay approach them well and politely ask and entertain the respondents' concerns.

The table above revealed that mean values of practices 1, 2, 3, 4, 5, and 6 from both barangays respectively strongly agreed that mothers should make sure that their children received adequate care and rest after immunization and that immunization card must be used by the mothers to keep track of their children's immunization schedules to ensure completeness. Also, going to the health center uring their children's immunization schedule is a must. The respondents from both barangays also strongly agree that the mother should ask health care work personnel for the following immunization schedule and follow their instructions, and both strongly agreed that mothers should make an effort to ensure that their children are fully immunized. On the other hand, in practice 7 regarding continuing to visit the health care upon missing the scheduled immunization date, both barangays disagreed.
A study conducted by Eyesus et al. (2019) shows that 77.9% of the parents were informed about the current vaccine, parents were getting information about the type of vaccine their infant took, whereas informed only some of the parents about the dose of the vaccine. Among the study, participants informed most of the parents about the next immunization schedule of their infant, and the infants developed problems after vaccination. A similar study conducted by Hamid et al. (2012) found that all the mothers considered that immunization is important and should be completed as per schedule, as per the instructions of the health workers.
Majority of the respondents who did not encountered any hindrances disagreed to visit the health center other than scheduled dates because they did not miss any of the immunization schedule for their child. However, some respondents who met hindrances in both barangays agreed that they continue to visit the health center when they missed the scheduled immunization date. Few of the mother also mentioned that when they missed immunization schedule due to some important events and forgot to visit the health center, the Barangay Health Worker assigned to their Purok follows them up. While some of them said that one missed immunization schedule does not affect the well-being of their child. They have also mentioned that when they don't have someone to attend to their other children, husband's takes over in order to for them to proceed with their scheduled child immunization.

**Table 5.1** Significant difference on the mother's Level of Knowledge towards children immunization

| Knowledge | Profile | Chi Square | df | p-value |
|---|---|---|---|---|
| **Vaccination Benefit** | Residence | 4.17 | 1 | **0.0411*** |
| | **Religion** | **11.88** | **5** | **0.0365*** |

Table 5.1 shows the comparison of the knowledge in comparison with the profile of the respondents. The researcher found out that the respondents' knowledge under vaccination benefit revealed that residence with a p-value of 0.0411 and religion with a p-value of 0.0365 has a significant difference compared to the respondents' knowledge regarding vaccination benefits. In the study, Mahalingam et al. (2014) discovered a statistically significant difference between the area of living and immunization awareness score. When tested vaccine

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knowledge, it also showed that all mothers in the urban region were aware of childhood immunization, whereas 6.4 percent of rural moms were unaware of childhood vaccination, a statistically significant difference. In a separate study by Yousif et al. (2013), it was discovered that parental knowledge and attitude on immunization are strongly linked to where they live. Meanwhile, the respondents' religious affiliation, as one of the socio-demographic characteristics of the respondents, was critical in the study since people's religious faith may influence how they see the importance and benefits of childhood immunization. According to previous findings from a comparative study done by Zagminas et al. (2007), most respondents disagreed and strongly disputed that child immunization is moms were unaware of childhood vaccination, a statistically significant difference. In a separate study by Yousif et al. (2013), it was discovered that parental knowledge and attitude on immunization are strongly linked to where they live. Meanwhile, the respondents' religious affiliation, as one of the socio-demographic characteristics of the respondents, was critical in the study since people's religious faith may influence how they see the importance and benefits of childhood immunization.

According to previous findings from a comparative study done by Zagminas et al. (2007), most respondents disagreed and strongly disputed that child immunization is prohibited in their religion, while only a tiny number agreed. However, in the study by (Mwambete & Joseph, 2010), the analysis revealed that there were no significant ($p>0.05$) correlations between respondents' religion and parental immunization awareness, as well as no significant ($p>0.05$) relationships between respondents' religion and immunization perception.

In the interview, most of the respondents have mentioned that their area of residence was convenient with that of their vaccination facility or barangay health center Most of the mothers walk as they visit the health center because according to them the availability of public tricycle and jeep is a limited and some of the houses are far along the highway. In addition, they stated that their religion has no affiliation with that of their decision regarding their child's immunization instead, their religion supports them in getting their child immunized for they believe that immunization will protect their child from various diseases.

**Table 5.2.** Significant difference on the Attitude and Practices of the respondents with that of their Demographic Profile

| Marital Status | SS - Effect | MS - Effect | SS - Error | df - Error | MS - Error | F | P |
|---|---|---|---|---|---|---|---|
| Practice 7. Even though I missed the scheduled Immunization date, I continue to visit the health center | 6.42 | 2.14 | 160.85 | 228 | 0.71 | 3.04 | 0.0300* |
| Attitude 7. I watch outside effects of vaccination and raise my concerns to the health worker when it worsens. | 1.44 | 0.48 | 28.69 | 228 | 0.13 | 3.80 | 0.0109* |
| **Educational Attainment** | | | | | | | |
| Attitude 8. I am satisfied with the friendly environment in our vaccination facility. | 2.04 | 0.41 | 40.21 | 224 | 0.18 | 2.27 | 0.0486* |
| **Attended Seminar** | | | | | | | |
| Practices 6. I make an effort to ensure that my child is fully immunized. | 0.73 | 0.37 | 15.87 | 229 | 0.07 | 5.29 | 0.0057* |

**-significant at 0.05*

The table above shows the practices and attitudes of the two barangays in connection to their demographic profile. Based on the data presented above, marital status showed a significant difference to practice 7 of the mothers, which is "I only the continuation of visiting the health center upon missing the scheduled immunization." As well for attitude 7, "watching outside effects of vaccination and raising concerns to the health worker when it worsens" has a significant difference to that of the marital status of the respondents with a p-value of 0.0109. The findings are similar to Al-lela et al. (2014), who revealed a p-value of 0.036 for a significant difference between immunization knowledge and practices and marital status. This result is unsurprising because one of the parents may share knowledge with another parent, expanding the number of information sources.

Similarly, Muathe et al. (2020) found that marital status was statistically substantially associated (p=0.046) with vaccine schedule adherence. Furthermore, in Chris-Otubor et al. (2013) study, the mothers' marital status had a substantial impact. Married women had considerably better immunization knowledge (p=0.001) than their single, divorced, widowed, or separated peers.

The educational attainment on its attitude 8 "only on the satisfaction with the friendly environments in the vaccination facility" showed a significant difference with a p-value of 0.0486. Regarding the relationship between mothers' educational attainment and their views, Yousif et al. (2013) found that parental knowledge and attitude regarding immunization were significantly connected to educational level (p value= 0.002) in their study. This implies that a mother's education is linked to a positive attitude toward child immunization.

For the attended seminars, practice 6, "making an effort to ensure that the child is fully immunized," is viewed as highly statistically different, having a p-value of 0.0057, which is less than 0.01. A study conducted by Efendi et al. (2020) revealed a significant difference between children who completed and uncompleted basic immunization in antenatal care. Children between 12 and 23 months of age whose mother attended fewer than four antenatal visits in the lowest economic status and delivered at non-healthcare facilities were less likely to have a child who completed immunization compared to mother who had 4 or more antenatal visits in higher economic status and delivered at the healthcare facility. In other words, those who attended the minimum standard of visit received a positive benefit or completed the immunization services. These align with the previous study in Ethiopia and Cameroon, which suggested that attending antenatal care more than three times was significantly associated with completed child immunizations uptake (Russo et al. 2015; Travassos et al. (2015).

In the interview process, according to some single mothers they mentioned that they cannot proceed with the continuation of their child's immunization if they have missed one schedule due to reason such as they don't have someone to take care of their other children especially that these are still toddlers. Meanwhile, some married mothers have mentioned that they continue to visit the health center since they have their husbands to watch over their kids and take charge on the household chores. The reason behind this association might be that married mothers may have more opportunities to understand vaccination and its benefit than single mothers and this may create a favorable attitude towards infant immunization than illiterates. Meanwhile, mothers who have attended more than two seminars have shared that these programs help them to understand the essence and benefits of children immunization thus, motivates them to fully immunize their child and fully comply with the vaccination schedules.

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**Table 5.3.** Significant difference on the mother's Attitude and Practices with that of their Socio-economic Profile

| Nature of work/Job title | SS - Effect | df - Effect | MS - Effect | SS - Error | df - Error | MS - Error | F | p-value |
|---|---|---|---|---|---|---|---|---|
| Practices 3. Center during my child's immunization schedule. | 2.03 | 4 | 0.51 | 22.69 | 227 | 0.10 | 5.06 | 0.0006** |
| Practice 5. I follow the instructions of nurses/healthcare professionals when it comes to my child's Immunization | 0.77 | 4 | 0.19 | 17.51 | 227 | 0.08 | 2.49 | 0.0443** |
| Attitude 5. Our religion restricts me from vaccinating my child. | 0.23 | 4 | 0.06 | 1.75 | 227 | 0.01 | 7.55 | 0.0000** |
| **Source of Income** | | | | | | | | |
| Attitude 8. I am satisfied with the friendly environment in our vaccination facility. | 1.49 | 3 | 0.50 | 40.85 | 228 | 0.18 | 2.78 | 0.0420** |
| **Ethnicity** | | | | | | | | |
| Attitude 5. Our religion restricts me from vaccinating my child. | 0.23 | 4 | 0.06 | 1.75 | 226 | 0.01 | 7.51 | 0.0000** |
| **Type of Family** | | | | | | | | |
| Practice 2. I use the immunization card to keep track of my child's immunization schedules to ensure completeness. | 1.94 | 3 | 0.65 | 23.42 | 227 | 0.10 | 6.27 | 0.0004** |
| Attitude 6. I encourage other parents in our community to comply and complete all the recommended vaccines for our children. | 2.02 | 3 | 0.67 | 54.40 | 227 | 0.24 | 2.81 | 0.0405** |
| Attitude 8. I am satisfied with the friendly environment in our vaccination facility. | 3.06 | 3 | 1.02 | 38.68 | 227 | 0.17 | 5.99 | 0.0006** |
| **Religion** | | | | | | | | |
| Practice 2. I use the immunization card to keep track of my child's immunization schedules to ensure completeness. | 2.18 | 5 | 0.44 | 23.18 | 225 | 0.10 | 4.22 | 0.0011** |
| Attitude 2. It is essential to comply with the recommended immunization schedule. | 1.75 | 5 | 0.35 | 15.69 | 225 | 0.07 | 5.00 | 0.0002** |
| Attitude 6. I encourage other parents in our community to comply and complete all the recommended vaccines for our children. | 2.70 | 4 | 0.67 | 54.26 | 227 | 0.24 | 2.82 | 0.0259** |
| Attitude 8. I am satisfied with the friendly environment in our vaccination facility | 2.12 | 4 | 0.53 | 40.23 | 227 | 0.18 | 2.99 | 0.0197** |

**-significant at 0.05*

Table 5.3 shows the comparison of practices and attitude according to the socio-economic profile of the respondents. As reflected on the data presented, attitude and practices only practices 3, 5, and attitude 5 has a significant difference to the nature of work or job title of the respondents. With a p-value of 0.0006, the respondents are 99% confident that "mothers make sure that my child receives adequate care and rest after Immunization," "practice going to the health center during my child's immunization schedule," and "follows the instructions of nurses/healthcare professionals when it comes to my child's Immunization" For the attitude, "our religion restricts me from vaccinating my child." According to Balbir Singh et al. (2019), occupation is one sociodemographic variable for assessing postnatal mothers' attitude about childhood vaccination. In addition, Ahizih et al. (2017) revealed in their study that most of their respondents claimed that their occupations allow them to take their children for immunization. Only a few said that their occupations did not give them much time to take their children for immunization.

Moreover, according to Jr. et al. (2021), this high compliance rate of the mothers may be attributed to the easy access to public health facilities (such as health centers) and free vaccines in these facilities. It was evident that

employment status was significantly associated with mothers' compliance to childhood immunization. All of the non-compliant mothers were employed and tended to have a schedule conflict with their children's immunization.

For the source of income, the data revealed that attitude 8, which pertains to "I am satisfied with the friendly environment in our vaccination facility," the researchers are 95% confident that it has a significant difference with the source of income. Following the findings above, Mereena and R (2014) found a significant relationship between mothers' attitude on their children's immunization and their monthly family income in their study. This claim was backed up by Al-Zahrani et al. (2013), who discovered that a high monthly income is associated with a negative attitude. They also discovered that parents with higher incomes had more negative sentiments toward their children than parents with lower incomes. Having a high income is connected to decreased vaccination rates, consistent with previous findings. Because high-income parents can afford to treat their children and live close to medical facilities, this is the case. Some parents assume that limiting their children's exposure and adopting a healthy lifestyle can protect them. On the other hand, insufficient income has been related to a negative attitude in other research, as some low-income parents prefer to spend their money on necessary things.

As the source of income, the data under ethnicity also revealed a significant difference in "our religion restricts me from vaccinating my child" with a p-value less than 0.01. For the type of family, practices 2, which is about "using the immunization card to keep track of my child's immunization schedules to ensure completeness," with a p-value of 0.0004 is significantly different from the type of family the respondents have. In comparison to the attitude, attitude 6 and attitude 8, which are "I encourage other parents in our community to comply and complete all the recommended vaccines for our children" and "I am satisfied with the friendly environment in our vaccination facility" with a p-value of 0.0405 and 0.0006 respectively, have a significant difference in comparison to the type of family. Singh et al. (2018) revealed that vaccination coverage rises when the number of family members increases, i.e., as we shift from a nuclear to a joint family. In the study of Goyal et al. (2017) discovered that Teen from joint and three-generation households had higher immunization coverage than children from nuclear families. Meanwhile, respondents to Akwataghibe et al. (2019) reported a variety of influences outside the nuclear family that influenced immunization decisions: men were strongly influenced by their mothers, while women valued the advice of their fathers/fathers-in- law, who also happened to be community elders. In summary, even if women wanted to immunize their children, they couldn't if their husbands didn't agree, or if their husbands' mothers refused. Furthermore, the young women heeded the advice of their elders, which influenced their decision to immunize their children. However, according to Regmi (2010), in a joint family structure, even if the mother is busy, other family members like grandparents, aunties help the mother and bring the children for immunization. They even help in raising the child and not just in vaccination. If the mother has only one child and lives in a nuclear family, she comes in time to vaccinate her child. As well as there is a difference in women living alone or in a joint family. Women whose husbands live abroad and send money are financially independent, and others also help them. But it is a bit more difficult for women who are alone, and they don't get much support from the community.

Also, based on the result, nearly half of non-compliant mothers receive the lowest range of monthly income while most of the compliant mothers receive a little higher than them. Those families earning more may have the capability to bring their children to the health centers for immunization because transportation may be a

factor for not complying with immunization among children scheduled every Wednesday (National Statistics Office, 2009). For religion, practices 2 and 3 which is "using the immunization card to keep track of my child's immunization schedules to ensure completeness," "following the instructions of nurses/healthcare professionals when it comes to my child's Immunization" and attitude 2 that "it is essential to comply with the recommended immunization schedule" have a p-value less than 0.01. These results suggest that these three statements have a significant difference compared to religion. While for membership, practice 7 with a p-value of 0.0312 were recorded to be significantly different. When it comes to the relationship between mothers' religion and their practices, a study by Gentle (2019) found that religion can impact mothers' attitude on immunization. It is thought that mothers' religious views may influence their attitude about child immunization, either positively or negatively. Some religious beliefs may oppose immunization, so mothers who follow such showed that many researchers had studied the influence of religion and culture on perception and decision-making behavior. This study showed that similar trends existed in the past; however, with increasing knowledge and awareness of the community regarding the benefits of vaccination, there has been a substantial change in the perception of people, and the religion does not alter the uptake of vaccination; especially showed the Muslim community to be proactive towards the vaccination program.

During the interview, some respondents who belong to the extended family stated that they had more opportunity to immunize their child since they have they're in laws to watch over their other kids. They even said that there in laws reminds the mothers when immunization schedule of their child is approaching. While some of them stated that in such situation that they were unable to file an absent from them Government shared that weekend are the only available time for them so their in laws or parent brings their child in the vaccination facility. It was also observed in the interview that those who worked as government employee are more likely to comply with children immunization since they have mentioned that they are aware of the benefits and importance of vaccination. On the other hand, according to those who worked as laundry woman, self-employed, and housemaids they are less likely to complete their children immunization since they are

**Table 5.4.** Significant difference on the Attitude and Practices of the respondents with that of their Clinical and Health Profile

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **T-tests; Grouping: Have Maintenance? Group 1: Yes Group 2: No** | | | | | | | | |
| | | No | Yes | t-value | df | p-value | | |
| Practices6 | | 3.84 | 3.94 | -2.03 | 230 | 0.0432* | | |
| | | 3.95 | 4.00 | -3.27 | 230 | 0.0012** | | |
| **T-tests; Grouping: Taking Food Supplement? Group 1: Yes Group 2: No** | | | | | | | | |
| Practices3 | | 3.85 | 3.95 | -2.32 | 230 | 0.0213* | | |
| **T-tests; Grouping: Met hindrances? Group 1: No Group 2: Yes** | | | | | | | | |
| Practices3 | | 3.93 | 3.80 | 2.72 | 230 | 0.0071** | | |
| Practices5 | | 3.89 | 3.98 | -2.03 | 230 | 0.0433* | | |
| Practices7 | | 1.98 | 3.37 | -14.47 | 230 | 0.0000** | | |
| | Vaccination Status | SS - Effect | df - Effect | MS - Effect | SS - Error | df - Error | MS-Error | |
| Practices6 | 1.11 | 2 | 0.56 | 15.49 | 229 | 0.07 | 8.20 | 0.0004** |

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unable to attend their child because they are busy working to provide their needs so it's their parents or in laws who are obliged to bring the child to facility for its's timely immunization.

The table above shows the comparison of practices and attitude according to the Clinical and Health Profile. It was revealed that practice 7 and attitude 5 have a significant difference compared to comorbidities, with a p-value of 0.0108 and 0.0020, respectively. For Maintenance, only practices 6 and attitude 5 have a significant difference. For the practices under the taking medicine, only practice 3 with a p-value of 0.0213 made the researchers 95% confident that it has a significant difference compared to the taking of medicine. On the other, only practices 3, 5, and 7 have a significant difference compared to the met hindrances. And for practices under vaccination, the researchers are 99% confident that practice 6 with a p-value of 0.0004 has a significant difference.

Table 6.1. Association between the respondent's Attitude and Practices

Correlations

| | r(X,Y) | $r^2$ | t | p |
|---|---|---|---|---|
| Attitude Practices | 0.48 | 0.23 | 8.26 | 0.0000* |

The table above shows the association between the respondent's attitude and practices. The data revealed that with 8.26 as t-value, the computed p- value is less than 0.01, thus, the researchers find that the two variables, the attitude and practices have a significant association with each other. On the study conducted by Lamiya et al. (2019), attitude of the mother towards immunization and practice was also found to be significantly associated (chi-square 41.772; $p<0.0001$). Majority of mothers had good attitude about immunization. Immunization coverage of the locality was relatively good. Significant association was established between attitude and practices.

It showed that mother's good attitude linked to their practices results to effective children immunization. The mothers of both barangays have a positive attitude toward childhood immunization services satisfied with the service than mothers who have a negative attitude. It is also probable that mothers with positive attitude will have more opportunity to comprehend vaccinations and their importance, as well as better compliance with immunization schedules and uptakes, resulting in greater satisfaction with childhood immunization services.

**Table 6.2.** Association between the respondent's Knowledge and Attitude

| **Knowledge(X)** | | **Chi Square** | **df** | **p-value** |
|---|---|---|---|---|
| Knowledge on Vaccination Benefit | Attitude | 0.09456 | 1 | 0.7585 |
| Knowledge on Vaccination Schedule | Attitude | 0.06695 | 1 | 0.7958 |

The table above shows the association between the respondent's Knowledge and Attitude. In terms of knowledge on vaccination Benefit and vaccination schedule, the computed values are 0.7585 and 0.7958, respectively. Having these values greater than significant value which is 0.05, the researchers find that knowledge and attitude has no significant association with each other. The same result yielded to the study conducted by Kaur (2018), Chi square values of knowledge and attitude scores of mothers of under five children with all selected variable were found to be statistically no significant association at 0.005 level of significance .The findings of the study revealed that approximately 34% of mothers had good knowledge regarding immunization, 29% of mothers had below average knowledge regarding immunization, 52% of mothers had highly favorable attitude towards immunization.

This indicates that high knowledge correlates with good attitude and thus, respondents who

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knowledgeable about infant immunization were more likely to have a favorable attitude towards infant immunization than their counterparts. This might be due to good knowledge, which is the most crucial and tangible factor that helps to attain a favorable attitude towards infant immunization and mothers who had better knowledge and understanding about EPI were more likely to adhere and less likely to refuse their infant's immunization. Therefore, working on enhancing mothers' knowledge on the importance and merits of children vaccination should be observed in every locality.

**Table 6.3.** Association between the respondent's Knowledge and Practices

| Knowledge(X) | | Chi Square | df | p-value |
|---|---|---|---|---|
| Knowledge on Vaccination Benefit | Attitude | 0.22455 | 1 | 0.6356 |
| Knowledge on Vaccination Schedule | Attitude | 0.15898 | 1 | 0.6901 |

The table above shows the association between the respondent's Knowledge and Practices. With regards to knowledge on vaccination Benefit and vaccination schedule, the computed values are 0. 6356 and 0. 6901, respectively. Having these values greater than significant value which is 0.05, the researchers find that knowledge and practices has no significant association with each other. However, a study conducted by Odia et al. (2015), where it was found that there was statistically significant association between knowledge of childhood immunization and its practice by the respondents.

This implies that higher the respondent's knowledge, the more of mother's uptake to immunization this may be due to the fact that the more educated respondents and the more information they were able to access and as such improve their health seeking behavior. Also, lack of education, can lead to reduced ability to find, understand, and use health information. In addition, education is an important determinant of health status in developing world; education may change mothers' knowledge and perception of the importance of modern medicine in the care of their children. Thus, it is safe to say that mother's knowledge about immunization benefits and schedule enables them to obtain immunization for their children.

## CONCLUSIONS

Based on the study's findings, the researchers concluded that Malubibit Norte has the highest record of fully immunized children since mothers are highly compliant and cooperative, especially in situations when they meet some hindrance such as when their child is not feeling well and thus ensure to bring their child to the health facility whenever resolved the child's sickness. On the other hand, it was discovered that Poblacion West recorded having the least number of fully immunized children due to uncontrolled hindrances, which were the child is not feeling well during their scheduled vaccination and had a severe allergic reaction after vaccine administration. Furthermore, results also revealed that mothers from the two barangays are knowledgeable about Immunization with a positive attitude and good practice. Thus, implying that Knowledge, Attitude, and Practices of the mothers towards Child Immunization of both barangays are eminent, especially since the programs towards Child Immunization are reinforced rigorously and properly. Findings also showed no significant relationship between Attitude and Practices of Mothers towards Child Immunization of both barangays and that there is no significant relationship between the Knowledge with that of Attitude and Practices of the mothers towards Child Immunization of both barangays.

## RECOMMENDATIONS

Based on the findings of this study, it is evident that Malubibit Norte stands out as a commendable example of successful child

immunization efforts. This success can be attributed to the high level of compliance and cooperation among mothers, who ensure that their children receive vaccinations even when facing hindrances such as illness. This dedication is laudable and sets a positive precedent for other communities.

On the other hand, the challenges faced by Poblacion West, with the lowest number of fully immunized children, highlight the importance of addressing obstacles like children feeling unwell during scheduled vaccinations and potential allergic reactions. Strategies should be developed to better manage and mitigate these hindrances to improve immunization rates in Poblacion West.

Furthermore, the study's findings indicate that both communities have knowledgeable mothers who exhibit a positive attitude and practice good immunization habits. This underscores the effectiveness of immunization programs that have been rigorously and properly reinforced.

However, it's worth noting that the study did not find any significant relationship between mothers' attitudes and their actual practices, nor between their knowledge, attitude, and practices. This suggests that there may be other factors influencing immunization rates that need to be explored further.

In light of these findings, it is recommended that local health authorities continue to support and enhance immunization programs in both Malubibit Norte and Poblacion West. Efforts should be made to address specific challenges faced by Poblacion West, such as developing strategies to ensure vaccination continuity during illness and managing potential allergic reactions. Additionally, further research is warranted to identify any hidden factors affecting immunization practices and attitudes, which could inform more targeted interventions. Overall, this study provides valuable insights that can guide efforts to improve child immunization rates in these communities and beyond.

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