



Vaccination and Immunization as Perceived by Badjao Parents in Surigao City, Philippines

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ABSTRACT: Health authorities in the Philippines are tackling emerging infectious diseases among Filipino children by implementing precautionary measures, with a focus on strengthening immune systems. The cornerstone of their efforts is the 40-year-old Expanded Immunization Program (EPI), a key initiative by the Department of Health. This descriptive quantitative study aimed to inspire provision for Filipino children with safe vaccinations, addressing diseases like measles, diphtheria, tetanus, and whooping cough. The EPI has significantly reduced death and morbidity rates associated with preventable diseases. This study delves into the knowledge, attitudes, beliefs, and confidence among Badjao parents in Barangay Canlanipa, Surigao City, regarding children's vaccination and immunization. The methodology included the utilization of researcher-made questionnaires and statistical tools such as the Frequency Count and Percentage, Mean and Standard Deviation, and Chi-Square Test. The study highlighted that despite challenges such as limited education and socioeconomic factors, many Badjao parents prioritized their children's vaccination and immunization. However, the study revealed disparities in knowledge and confidence levels, emphasizing the need for targeted information campaigns. The study recommends targeted programs to promote the EPI's benefits among the Badjao community and urges health authorities to conduct information drives. It also suggests exploring how personal experiences, like family illnesses, affect vaccination decisions. The study ultimately provides valuable insights for local stakeholders, healthcare providers, and future researchers, highlighting the importance of vaccination and immunization for children's health.

KEYWORDS: Attitudes, Beliefs, Confidence, Badjao, Immunization, Knowledge, Vaccination, Survey, Surigao City, Philippines.

INTRODUCTION

The field of health has always had its focal point on the use of different precautionary measures, especially in addressing the correct observation that will help children maximize their strong immune systems. According to Ulep, V. G. and Uy, J. (2021), it has been approximately 40 years since the Philippine Expanded Program on Immunization (EPI) was established. It is one of the Department of Health's (DOH) key initiatives to give Filipino kids access to safe and reliable vaccinations against illnesses like measles, diphtheria, tetanus, and whooping cough. The Philippine EPI has made significant progress in this area, as seen by the sharp drop in the nation's rates of death and morbidity from diseases that can be prevented by vaccination. It has been a procedural and usual act to have immunization and vaccination, which are well-known treatments that must be consistently provided by the Department of Health to the young ones. Also, these are the things that must be considered through giving enough education as to its significance to good health, especially to those mothers in the tribal group or indigenous people who need more attention when it comes to education, behavior, and perspectives, especially that some of them are not aware enough.

These treatments are directly influenced by one another in a way that when vaccination is given, children are expected to be protected against infectious bacteria and diseases to produce immunity in the body. Mothers are expected to do immunizations and vaccinations as the top consideration after a child's birth to protect and establish good health against diseases and viruses that might attack the body system.

In support of the importance of vaccination and immunization, Gualano, M. R. et al. (2019) strengthened that life-threatening infectious diseases can be controlled and eliminated with the use of vaccines, which are thought to prevent between 2 and 3 million deaths annually. They are among the most economically advantageous health investments when their target audiences are well-defined, and evidence-based approaches make them reachable to even the most vulnerable and difficult-to-reach



populations. Children, adolescents, and adults in good health are included in vaccination programs, but they are typically designed for specific populations, such as pregnant women, travelers, and those who have certain diseases or disorders. This would only mean that there is a significant difference between people who are following the prescribed treatments for the body and those who are not.

In addition, as W. Almutairi et al. (n.d.) have emphasized, one of the most significant advantages that any nation can provide is illness protection to its citizens. There is no doubt that vaccines are a vital component of a health system, an efficient tool for disease management in many nations worldwide, and the method that prevents morbidity and mortality at the lowest possible cost for humans to better safeguard themselves against specific viruses and germs. To be able to Children should receive all recommended immunizations in order to have the best possible protection against infections at the proper age and at specified intervals, vaccination of a youngster. If the right vaccines were available, the expense of disease treatment and the prevalence would increase the child's quality of life by preventing sickness.

According to the study by Sylvia E. Caingles (2018), parents still lacked knowledge concerning their children's vaccination. The outcome of the child being fully immunized depends on the availability and affordability of vaccines, as well as the willingness and effort of their parents. This would only mean that there are still parents who are not knowledgeable enough as to what vaccination and immunization are and when to provide such health practices. Parents need to be educated about these important activities for their children. This would be of big help for the child's health and development if this is taken seriously by the parents. As Kyprianidou, et al. (n.d.) mentioned, vaccine hesitancy is identified as one of the top threats to global health. A significant drop in childhood vaccine coverage has been reported worldwide. One of the critical reasons that influenced mothers' choice to postpone or avoid children's vaccination is knowledge. This would mean that knowledge, attitudes, and beliefs about vaccination and immunization play a vital role in the betterment of health consideration and proper access to such treatments.

Evidently, the Philippines has been considering the health of every Filipino. One of the most vulnerable ones is the young ones, especially people who are living in poor places and far-flung areas. Surigao City has its Badjao settlers who have been observed with more cases of pregnancy. The city is really in observance of parent mothers being exposed to the health center vaccination and immunization. It is good to know that these practices are evident to the Surigaonons. Among the concerns raised, the researchers investigated how far the level of knowledge, attitude, and beliefs of mothers toward vaccination and immunization. It is imperative to recognize the cultural nuances and unique challenges that impact vaccination and immunization practices among the Badjao community in Brgy. Canlanipa, Surigao City. The Badjao people, known for their distinct cultural identity and nomadic maritime lifestyle, often face marginalization and limited access to essential healthcare services due to their geographical isolation and cultural differences. Despite the efforts of the Philippine Expanded Program on Immunization (EPI) to provide access to vaccines for Filipino children (Ulep & Uy, 2021), there remains a significant gap in knowledge, attitude, and belief regarding immunization among Badjao parents. This gap is exacerbated by cultural factors such as traditional beliefs, language barriers, and mistrust of Western medicine.

This study focused on the perception of Badjao Parents regarding Badjao children's immunization and vaccination when it comes to age, educational attainment, occupation, and source of information. This emphasized how parents considered and gave importance to immunization and vaccination. This will help the community, specifically the barangay health centers know how far the information was taken by the parent. Also, this study focused on the level of beliefs of parents in doing the said activities for their children.

Framework

This study was anchored on the study of Caingles et.al (2018) conducted in Davao Region, which found that despite the success of the Expanded Program of Immunization or EPI, many vaccine-preventable diseases remain prevalent in the region. The abovementioned interrogates show that parents' responses still lack knowledge about their children's vaccination and immunization. It also examined the relationship between social- and personal-related factors and the intention to vaccinate as major drivers towards knowledge, attitude, and beliefs of parents in terms of vaccination and immunization.

The following independent profile variables were considered in the survey: age, sex, educational attainment, employment status, socio-economic status, and intention to get vaccinated. Age was considered in the study which may show a difference between young and aged parent-respondents. Sex was included as Male and Female parents may have different perceptions. The Educational Attainment was also considered as to the educational record of the respondents. Employment Status was considered as to whether the respondents were employed or not. The Socioeconomic Status was considered as to the respondents' level of income. Intention



to get vaccinated was considered as the personal intention of getting a vaccine may affect their perception towards the vaccination process.

The dependent variables described the knowledge, confidence, and beliefs of mothers on children's immunization and vaccination. Knowledge is the measure of information level gained by the respondents on children's vaccination and immunization. Attitudes is the measure of valuing and/or behavioral level done by the respondents on children's vaccination and immunization. Beliefs are the measure of the principle level practiced by the respondents on children's vaccination and immunization. While Confidence measures the trust of respondents towards children's vaccination and immunization reliability.

Research Questions

This research attempted to analytically investigate the level of knowledge, attitude, beliefs, and confidence levels among Badjao mothers toward children's vaccination and immunization. Specifically, it sought to find answers to the following questions:

1. What is the profile of the participants in terms of:
 - 1.1 age;
 - 1.2. sex;
 - 1.3. educational attainment;
 - 1.4. employment status;
 - 1.5. socio-economic status, and
 - 1.6 intention to get vaccinated?
2. What is the level of knowledge on vaccination and immunization among the Badjao parent respondents in Brgy. Canlanipa, Surigao City?
3. What is the level of attitude towards vaccination and immunization among the Badjao parent respondents in Brgy. Canlanipa, Surigao City?
4. What is the level of belief in vaccination and immunization among the Badjao parent respondents in Brgy. Canlanipa, Surigao City?
5. What is the level of confidence towards vaccination and immunization among the Badjao parent respondents in Brgy. Canlanipa, Surigao City?
6. Is there a significant degree of difference on the knowledge, attitude, beliefs and confidence towards vaccination and immunization among the Badjao parents when they are grouped according to their profile?
7. Based on the findings of the study, what recommendations may be proposed?

METHODS

This study used a descriptive quantitative research design employing a descriptive survey approach. This research design enabled the researchers to collect quantifiable information for statistical analysis of the population sample. Quantitative research design is a systematic investigation of phenomena through gathering quantifiable data and performing statistical and computational techniques. The design was utilized to assess the perceptions of Badjao parents in Brgy. Canlanipa, Surigao City, regarding vaccination and immunization, focusing on their knowledge, attitudes, beliefs, and confidence. Additionally, the design aided in identifying any significant differences in adherence to vaccination and immunization practices among the surveyed parents with respect to their demographic backgrounds. The methodology included the utilization of researcher-made questionnaires and statistical tools such as the Frequency Count and Percentage, Mean and Standard Deviation, and Chi-Square Test. Ethics in the conduct of this research were strongly considered for the academic integrity of this study. Ethical research practices in educational institutions are strongly followed since it is always the goal of educational research to contribute to the general welfare of the academic community and to generally create measurable information or data that will eventually add to the increase of human knowledge (Ederio et al., 2023) such as the essence depicted by this study.



RESULTS AND DISCUSSION

I- Profile Distribution of the Badjao Parent Respondents

Table 1.1 Distribution of the Parent Respondents

Profile Variables		f (80)	%
Age	13-20 years old	13	16.3
	21-30 years old	24	30.0
	31-40 years old	16	20.0
	41 years old and above	27	33.8
Sex	Male	33	41.3
	Female	47	58.8
Educational Attainment	No Formal Education	48	60.0
	Under Elementary Graduate	29	36.3
	Elementary Graduate	2	2.5
	Secondary Graduate	1	1.3
Employment Status	Unemployed	80	100.0
Socio-Economic Status	Low Income	80	100.0
Intention to get Vaccinated	Interested	27	33.8
	Not Interested	53	66.3

Table 1.1 presents the demographic profile of the respondents who are the parents belonging to the indigenous group, Badjao, in Brgy. Canlanipa, Surigao City. Specifically, the demographic data taken were the respondents' age, sex, educational attainment, employment status, and socioeconomic status, and the respondents' intention to get vaccinated. It can be observed that among the 80 respondents, the largest age group consisted of individuals aged 41 years old and above, comprising 27 (33.8%) individuals. The age groups of 13-20 and 31-40 represented 13 (16.3%) and 16 (20%) individuals, respectively, implying a slightly lower representation of teenagers and individuals in their thirties. The majority also of the respondents, 47 (58.8%), were female, while 33, or 41.3%, were male. This indicates a slightly higher representation of females in the sample. Trends also indicate that while young parents might have more energy to keep up with their active kids, they might also face delayed adjustment to their kids' social development and might be more prone to depression. Older parents may benefit from their experience and knowledge, but they are also at risk of their children developing relatively small neurocognitive deficits (Cherry, 2020).

As to educational attainment, the majority of respondents, 48 (60%) individuals, reported having no formal education. This implied a relatively low level of educational attainment within the sample since they are indigenous people who mostly did not experience formal education. Additionally, 29 (36.3%) individuals had education up to under elementary graduation, while a negligible percentage had either elementary or secondary graduation. This suggested that there may have been few official and informal educational programs available to the Badjaos and that they may have benefited from these programs only occasionally. Because local providers (such as LGUs, CSOs, and some public and state educational institutions) did not take a closer look at the social being, characteristics, and—most importantly—the financial capacity of Badjao families to send and support their children to attend both formal and non-formal education, and educational interventions provided by those local providers appeared to be ineffective (Abelgas, 2019).

Surprisingly, all (100.0%) respondents reported being unemployed and classified as low-income in terms of their employment and economic status. According to Demecillo (2017), several factors have contributed to unemployment among Badjaos in the Philippines. One of these is the Badjao tribe's fishing industry being threatened by marine sanctuaries. This has resulted in an over 60% unemployment rate, resulting in severe social and economic disadvantages. In addition to these challenges,



the Badjao tribe has a number of integration obstacles, including prejudice from the larger community, which exacerbates their fight for human rights, education, employment, housing, and social services.

As to the intention to get vaccinated, the majority of respondents, 53 (66.3%), expressed disinterest in getting vaccinated, while the remaining 27 (33.8%) individuals were interested. This implies that despite the abundance of natural resources around them, the indigenous peoples (IPs) in the Philippines, like their global counterparts, are ranked among the poorest and most disadvantaged sectors. (International Labour Organization, 2022)

Table 1.2. Age distribution of the children of the Parent respondents

According to age	f (80)	%
3-5 years old	15	18.6
1-2 years old	10	12.5
3-11 months old	13	16.3
0-2 months old	42	53

In relation to the age distribution of children among the parent respondents: 42 children (53%) are 0-2 months old, 13 children (16.3%) are 3-11 months old, 10 children (12.5%) are 1-2 years old, and 15 children (18.6%) are 3-5 years old.

Table 1.3. Vaccination and Immunization Status of the Children of the Parent respondents

Vaccination and Immunization status	f (80)	%
Vaccinated and Immunized	36	45
Not vaccinated and Not Immunized	44	55

Based on the data presented in Table 1.3, among the children pertained in Table 1.2, only 36 children (45%) were vaccinated and immunized, and 44 (55%) were not vaccinated or immunized. This further strengthens the fact that only a few parents are interested in and adherent to vaccination and immunization as shown in Table 1.1.

II – Level of Knowledge Among the Badjao Parents About Children’s Vaccination and Immunization

Table 2.1 Level of Knowledge Among the Badjao Parents About Children’s Vaccination and Immunization

Knowledge Indicators	M	SD	VR	I
I know that immunization and vaccination protect me and my child from any serious and potentially deadly disease.	0	4	λ	∅
I know that immunization and vaccination protect other people in my community.	4	7	λ	∅
I know that immunization and vaccination help stop diseases from spreading to people who cannot have vaccines.	9	1	λ	∅
I know that immunization and vaccination reduce or even get rid of some diseases- if enough people are vaccinated.	3	5	λ	∅
I know that the benefits of immunization far outweigh the risks of any potential side effects.	1	5	λ	∅
Average	3	6	Slightly Agree	Less Knowledgeable



Scale	Interval	Verbal Response	Code	Interpretation	Code
4	3.25-4.00	Strongly Agree	SA	Highly Knowledgeable	HK
3	2.50-3.24	Moderately Agree	MA	Moderately Knowledgeable	MK
2	1.75-2.49	Slightly Agree	StA	Less Knowledgeable	LK
1	1.00-1.74	Disagree	D	Not Knowledgeable	NN

Table 2.1 presents the knowledge of the Badjao parents in Brgy. Canlanipa, Surigao City about children's vaccination and immunization. Generally, the Badjao parents are Less Knowledgeable about vaccination and immunization (M=2.13; SD=1.06). Although the Standard Deviation seems to depict extreme responses among the respondents, the average still prevails in telling that the Badjao parents are less knowledgeable about children's vaccination and immunization. The Badjao parents in Brgy. Canlanipa, Surigao City might not have enough resources or information regarding the importance of vaccination and immunization. One factor that may also be considered from this finding is the fact that the majority of these people don't have any formal education.

Specifically, the Badjao parents slightly know that immunization and vaccination protect them and their children from any serious and potentially deadly disease (M=2.20, SD=1.24). The present study somewhat contradicts the claims of Capili, et. al (2022) which revealed that parents on average are moderately knowledgeable about vaccination. Whether slightly or moderately knowledgeable, the lack of knowledge about vaccination and immunization is due to a lack of awareness of vaccine-preventable diseases, language barriers, a lack of specific promotional/campaign materials, and a lack of media literacy. Despite the fact that there are current Information Education Communication (IEC) resources produced in the Philippine language (Filipino), they appear to be ineffective especially since only a few IP mothers can read.

Much less that these same respondents know less that immunization and vaccination reduce or even get rid of some diseases- if enough people are vaccinated (M=2.03, SD=1.15). The findings support the study of Graham (2021), where most of their respondents were cautious of vaccines but had not decided whether they would be vaccinated due to a lack of understanding and resources concerning the importance of vaccines and immunization. Key themes were vaccine safety and the benefits of immunization. Respondents stated that they were concerned about the vaccines because they were not certain that the vaccines were safe to receive based on their prior knowledge. Their comments expressed concern that vaccinations had been developed too hastily and had not been sufficiently evaluated, which was why they had heard accounts of significant side effects, including death. In the Philippines, decisions to get vaccinated, particularly for highly sought-after vaccinations such as COVID-19, are influenced by Filipinos' concerns about having more knowledge about the numerous vaccines accessible to them. (Tejero, 2023)

III – Attitudes Among the Badjao Parents Toward Children's Vaccination and Immunization

Table 2.2. Attitudes of the Respondents Toward Children's Vaccination and Immunization

Indicators	M	SD	VR	I
I feel that immunization and vaccination are not the best options my child needs to prevent diseases.	2.86	1.11	MA	FA
I feel that immunization and vaccination are not important.	2.91	1.09	MA	FA
I feel that immunization and vaccination is not my priority.	2.79	1.21	MA	FA
I feel that immunization and vaccination take so much of my time.	2.89	1.09	MA	FA
I feel that immunization and vaccination take a lot of effort to avail.	3.11	1.07	MA	FA
Average	2.91	0.95	Moderately Agree	Fair Attitude



Scale	Interval	Verbal Response	Code	Interpretation	Code
4	3.25-4.00	Strongly Agree	SA	Strong Attitude	SAt
3	2.50-3.24	Moderately Agree	MA	Fair Attitude	FA
2	1.75-2.49	Slightly Agree	StA	Weak Attitude	WK
1	1.00-1.74	Disagree	D	No Attitude	NA

Table 2.2 presents the attitudes of the Badjao parents in Brgy. Canlanipa, Surigao City toward children's vaccination and immunization. Generally, the Badjao parents have Fair Attitudes toward vaccination and immunization (M=2.91; SD=0.95). Studies have shown that knowledge provided by different healthcare professionals plays a critical role in parents' attitudes toward vaccination. Despite physicians' recommendations to vaccinate, the anti-vaccination movement's misinformation is driving people in Romania to question the value of timely immunization. However, it is anticipated that increasing vaccine knowledge will result in a shift in positive attitudes and increased coverage rates (Graham, 2021).

Specifically, the Badjao parents feel with a fair attitude that immunization and vaccination take a lot of effort to avail (M=3.11, SD=1.07). While many people in cities around the Philippines have been immunized against diseases such as COVID-19, to mention a few, a considerable number of those living in indigenous communities' hinterlands have yet to get vaccinated. Surveillance has not consistently recorded data on persons obtaining vaccinations or immunizations based on their racialized identification or ethnicity, making it difficult to assess discrepancies in vaccination access within and across such communities (Sangacala, 2022). On the other hand, the same respondents also feel with a fair attitude that immunization and vaccination are not a priority (M=2.79, SD=1.21) but it is in this indicator that the parents rated lowest for themselves. The finding shows that the majority of this group of people see vaccination or immunization as a low priority, generally ignoring it. Vaccine hesitancy is a critical issue, with the COVID-19 pandemic providing a stark reminder of its urgency. In comparison to the study of Pinho (2022), their study intends to examine cognitive and emotional representations of vaccination, as well as their influence on vaccination reluctance, in addition to analyzing COVID-19 vaccine acceptance in a sample of Portuguese adults leading to people regarding immunization as the least priority.

However, statistically speaking, in the Philippines, COVID-19 vaccination intent increased by approximately 10 percentage points across all priority groups from September to December 2020, with adults aged 65 years experiencing the most significant increase in intent to be vaccinated; vaccination non-intent decreased by 6 percentage points across most sociodemographic groups. Despite increases in vaccination intent since September, only about half of people aged 18-64 reported being very likely to receive COVID-19 vaccination in December, even among essential workers and people aged 18-64 with underlying medical conditions (Williams, 2021).

Younger adults, women, Black people, adults residing in nonmetropolitan areas, and those with lower educational attainment, lower income, and no insurance were the most likely to say they did not expect to get vaccinated against COVID-19. Several studies have discovered similar percentages and trends in vaccination intent, as well as a low likelihood of receiving a COVID-19 vaccine among groups disproportionately affected by COVID-19, such as Black people and those with lower educational attainment. COVID-19 vaccination is critical for maintaining the health of these communities and reducing health disparities since many of these groups are at elevated risk for COVID-19-associated morbidity and mortality (Nguyen, 2021).

IV – Beliefs Among the Badjao Parents About Children’s Vaccination and Immunization

Table 2.3. Beliefs of the Respondents About Children's Vaccination and Immunization

Indicators	M	SD	VR	I
I believe that it is better to be immunized through disease than through vaccines.	2.51	1.18	MA	FB
I believe that many people who were not immunized in the past led long and healthy lives.	2.61	1.18	MA	FB



I believe that vaccinated children experience more allergic and respiratory diseases compared to unvaccinated children.	2.64	1.16	MA		FB
I believe that immunization and vaccination is not needed as diseases will not spread if we just ensure proper hygiene and sanitation.	2.85	1.19	MA		FB
I believe that natural immunity is healthier and more effective than vaccine-induced immunity.	2.88	1.22	MA		FB
Average	2.70	0.95	Moderately Agree		Fair Belief
Scale	Interval	Verbal Response	Code	Interpretation	Code
4	3.25-4.00	Strongly Agree	SA	Strong Belief	SB
3	2.50-3.24	Moderately Agree	MA	Fair Belief	FB
2	1.75-2.49	Slightly Agree	StA	Weak Belief	WB
1	1.00-1.74	Disagree	D	No Belief	NB

Table 2.3 presents the beliefs of the Badjao parents in Brgy. Canlanipa, Surigao City about children's vaccination and immunization. Generally, the Badjao parents exhibited Fair Beliefs about children's vaccination and immunization (M=2.70; SD=0.95). It revealed that the Badjao parents in Brgy. Canlanipa, Surigao City fairly believed in the importance of having their child vaccinated and immunized but only to a moderate level of agreement. In an article published by Georgetown University (2018), the researchers explored the beliefs of indigenous people regarding children's vaccination and immunization. Indigenous communities have a variety of cultural, social, and historical settings that affect how they view and react to health care. Designing successful immunization programs that are also sensitive to cultural norms requires an understanding of these beliefs. According to the study, parents still view vaccination and immunization as a crucial part of their children's growth and development, regardless of their sociocultural upbringing.

Specifically, the Badjao parents fairly believed that natural immunity is healthier and more effective than vaccine-induced immunity (M=2.88, SD=1.22). This implies that respondents tend to agree that innate immunity or acquired immunity provides protection against specific pathogens than the immunity given by other vaccines. The findings above somehow contradict an article published by Cohen (2022), which claims that it is not accurate to claim that natural immunity is universally more effective than vaccine-induced immunity. Several key points were stressed that affect the effectiveness of vaccines which include vaccine consistency and predictability, reduced risks and complications of children, herd immunity, eradication and control of diseases, and the reduction of transmission. Moreover, Biggs (2022), in his paper, stated that it is essential to rely on scientific evidence and expert consensus when assessing the effectiveness of natural immunity versus vaccine-induced immunity. While natural immunity can protect against specific pathogens, vaccines are developed to provide safe and effective immunity to a wider population, minimizing the risks associated with natural infections. Vaccines have proven to be highly successful in preventing and controlling infectious diseases, significantly improving public health worldwide.

On the other hand, the Badjao parents fairly and almost least believed that it is better to be immunized through disease than through vaccines (M=2.51, SD=1.18). It is important to understand that various people have a perspective favoring natural infection over vaccination for immunization. However, it's important to note that this viewpoint contradicts the overwhelming scientific consensus and the recommendations of public health organizations. Various articles also contradict the present finding, emphasizing the effectiveness of vaccines over disease immunity. Moreover, the Office of Infectious Disease and HIV/AIDS Policy (2021), explains that vaccines undergo extensive testing and regulation to ensure safety and effectiveness. They are developed with careful consideration of potential risks and side effects. In contrast, natural infection carries the risk of complications, severe illness, and even death. Vaccines provide a safer alternative by allowing the immune system to develop a protective response without the associated risks of natural infection. Vaccination has successfully led to the eradication or control of many infectious diseases. Smallpox, for example, has been eradicated worldwide through vaccination efforts. Diseases like polio and measles, which were



once widespread, have been significantly reduced due to widespread immunization campaigns. While natural infection may provide immunity to specific diseases, relying solely on natural immunity can lead to unnecessary risks, increased disease transmission, and potential outbreaks. Vaccination offers a safer and more controlled way to develop immunity and protect both individuals and communities.

V – Confidence Among the Badjao Parents On Children’s Vaccination and Immunization

Table 2.4. Confidence Among the Badjao Parents On Children’s Vaccination and Immunization

Indicators	M	SD	VR	I
I am confident that immunization and vaccination very safe and effective.	2.19	1.21	StA	LC
I am confident that immunization and vaccination undergo rigorous safety testing before being introduced.	2.23	1.06	StA	LC
I am confident that immunization and vaccination constantly monitored for side effects after being introduced.	2.13	1.01	StA	LC
I am confident that immunization and vaccination will help keep you healthy.	2.18	1.25	StA	LC
I am confident that immunization and vaccination cannot cause the disease instead they are designed to prevent it.	2.09	1.13	StA	LC
Average	2.16	1.02	Slightly Agree	Low Confidence

Scale	Interval	Verbal Response	Code	Interpretation	Code
4	3.25-4.00	Strongly Agree	SA	High Confidence	HC
3	2.50-3.24	Moderately Agree	MA	Fair Confidence	FC
2	1.75-2.49	Slightly Agree	StA	Low Confidence	LC
1	1.00-1.74	Disagree	D	No Confidence	NC

Table 2.4 presents the confidence level of the Badjao parents in Brgy. Canlanipa, Surigao City on children's vaccination and immunization. Generally, the Badjao parents have low confidence when it comes to children's vaccination and immunization (M=2.16, SD=1.02). Vaccine hesitancy (VH) is considered a top-10 global health threat according to the World Health Organization (WHO) in 2019. In the past decade, VH among children has become a key topic of research in various fields with emphasis on areas where ethnic groups are situated, following rises in vaccine-preventable diseases, the introduction of new vaccines, the spread of misinformation, and lagging vaccination coverage. Moreover, the COVID-19 pandemic has drawn further attention to the role of VH in limiting the uptake of vaccines and failure to achieve collective immunity. This has led to the proliferation of scientific literature on VH in the public health, biomedical, and social science research fields.

Specifically, the Badjao parents are less confident that immunization and vaccination undergo rigorous safety testing before being introduced (M=2.23, SD=1.06). This implies that respondents somehow are not sure whether these vaccines are really of help or not. The aspects of the vaccination campaign differed from routine vaccines, including emergency use authorizations, the prioritization of access, and the politicization of messaging. Subsequently, many parents reported lower vaccine confidence relative to routine vaccines, and vaccination coverage stalled below targets (Michel, 2022).

Meanwhile, the same Badjao parents are less confident that immunization and vaccination cannot cause the disease instead they are designed to prevent it (M=2.09, SD=1.13). The findings have consistently expressing the hesitancy of the subjects of having their child vaccinated thus leading to low rate of vaccinated children among indigenous people. Vaccine decision making is complex, especially for parents deciding for their children rather than themselves. Hesitancy to vaccinate is a major public health concern, and U.S. parents are hesitant about specific childhood vaccines. (Shen, 2022)

Ultimately, the vaccination and immunization adherence decisions are influenced by multiple factors, including individual factors such as personal experiences, group-level influences such as social norms, vaccine product-specific characteristics such as



the safety and efficacy profile of the vaccine, and attributes of the vaccination program design (i.e., mass vaccination) that are influenced by contextual factors including politics and policies. These factors influence parent's motivation and intentions to vaccinate (e.g., making an appointment) and ultimately the decision to vaccinate or delay vaccination (Kaiser Family Foundation, 2022).

VI – Significant Degree of Difference in the Respondents’ Knowledge, Attitudes, Beliefs, and Confidence on Children’s Vaccination and Immunization with Respect to the Parents’ Profile Variables

Table 3.1 Significant Degree of Difference in the Respondents’ Knowledge About Children’s Vaccination and Immunization with Respect to the Parents’ Profile Variables

Profile Variables	Dependent Variables	Chi-square	df	p-value	Decision	Interpretation
Age	Knowledge	4.946	3	0.176	Do not reject Ho	Not Significant
Sex	Knowledge	0.527	1	0.468	Do not reject Ho	Not Significant
Educational Attainment	Knowledge	20.780	3	0.000	Reject Ho	Significant
Employment Status	Knowledge	There is only one non-empty category (Unemployed)				
Socio-Economic Status	Knowledge	There is only one non-empty category (Low income)				
Intention to get vaccinated	Knowledge	53.363	1	0.000	Reject Ho	Significant

Decision: Reject Ho: $p < 0.05$

Table 3.1 presents the significant differences in the knowledge of the Badjao parents about children's vaccination and immunization with respect to their profile variables. It was found out however that regardless of the age and sex of the Badjao respondents, their knowledge level on vaccination and immunization do not differ, hence closely similar. The present findings oppose the study of Borrás (2009), stressing the importance of maternal age and sex as determinants of pediatric vaccination compliance. According to their study, mothers aged ≥ 30 years vaccinated their children more. This may be due, in part, to older mothers being influenced more by memories of the benefits of vaccination and less by current controversies. Whether the mother worked or not did not affect vaccination coverage. As to sex, the same researchers found that children of mothers with higher levels of education had higher coverage of vaccination among their children.

On the other hand, a significant difference was observed in the knowledge of the Badjao parents when they were grouped according to educational attainment and intention to get vaccinated. These findings suggest that parents' knowledge of children's vaccination and immunization is associated with their educational attainment. It is seemingly implied that if one's educational attainment is higher, then the knowledge level on immunization and vaccination tends to be high as well. On the other hand, if one's educational attainment is low, then the knowledge level on vaccination and immunization is low as well. This is evident in the findings of Tables 1.1 and 2.1, where most of the respondents have no formal education and are less knowledgeable. The second implication shows that the intention to get vaccinated is associated with their knowledge of vaccination and immunization. This means that if one's knowledge of vaccination and immunization is high, then the intention of parents for their children to get vaccinated may be high as well. Conversely, if one's knowledge of vaccination and immunization is low, then the intention of parents for their children to get vaccinated is low as well. This is evident in Tables 1.1 and 2.1, which respectively present that the respondents mostly have low levels of knowledge, while the majority of the respondents also do not have the intention of submitting their children to vaccination and immunization. Furthermore, the educational attainment and intention to get vaccinated may impact the knowledge of Badjao parents regarding children's vaccination and immunization.



In general, the findings simply imply that knowledge affects the willingness of Badjao parents to submit their children to vaccination and immunization. This implies that the profile of the respondents directly impacts their knowledge regarding immunization and vaccination of their children. This is supported by the findings, Navarro (2017), in his study titled Parental knowledge of pediatric vaccination, concluded that the demographic profile of the respondents directly affects parent's knowledge regarding vaccination, hence compliance to vaccination. The results of their study reinforce the importance of the level of parental knowledge of vaccines and vaccination. Trust between pediatricians and mothers, with clear, concise information provided in a language that parents can understand and assimilate is essential.

Table 3.2 Significant Degree of Difference in the Respondents’ Attitudes Toward Children’s Vaccination and Immunization with Respect to the Parents’ Profile Variables

Profile Variables	Dependent Variables	Chi-square	df	P-value	Decision	Interpretation
Age	Attitude	1.078	3	0.782	Do not reject Ho	Not Significant
Sex	Attitude	1.514	1	0.218	Do not reject Ho	Not Significant
Educational Attainment	Attitude	13.170	3	0.004	Reject Ho	Significant
Employment Status	Attitude	There is only one non-empty category				
Socio-Economic Status	Attitude	There is only one non-empty category				
Intention to get vaccinated	Attitude	37.553	1	0.000	Reject Ho	Significant

Decision: Reject Ho: $p < 0.05$

Table 3.2 presents the significant differences in the attitudes of the Badjao parents toward children's vaccination and immunization with respect to their profile variables. The analysis revealed that when the respondents are classified according to their age or their sex, their attitudes do not vary at all. On the other hand, a significant difference was observed in terms of educational attainment and intention to get vaccinated suggesting that parents' attitude towards children’s vaccination and immunization is associated with their educational attainment. It is seemingly implied that if one’s educational attainment is higher, then the attitude towards vaccination and immunization tends to be positive as well. Oppositely, if one’s educational attainment is low, then the attitude towards vaccination and immunization is negative as well. This is evident in the findings of Tables 1.1 and 2.1, where most of the respondents have no formal education and exhibit less favorable attitudes towards vaccination and immunization. The second implication shows that the intention to get vaccinated is associated with their attitude toward vaccination and immunization. This means that if one’s attitude is positive, then the intention of parents for their children to get vaccinated is high as well. Conversely, if one’s attitude is negative, then the intention of parents for their children to get vaccinated is low as well. This is evident in Tables 1.1 and 2.2, which respectively present that the respondents mostly have less favorable attitudes towards vaccination and immunization, while the majority of the respondents also do not have the intention of submitting their children to vaccination and immunization. Moreover, the educational attainment and intention to get vaccinated may impact the attitude of Badjao parents regarding children's vaccination and immunization.

With the same concept, MacDonald (2015), in his study titled SAGE Working Group on Vaccine Hesitancy, stressed the significance of parental attitudes in vaccine hesitancy. Respondents who were unsure whether or not to be vaccinated wanted more information about the vaccine. The availability of increased information with regard to the safety and efficacy of vaccines is however rivaled by the misinformation circulating on social media. Those who were categorical in their intention not to take the vaccine had a different set of attitudes which exhibited a general lack of faith in vaccines.

The attitudes of significant others were identified as being an essential factor influencing parents to have their children be vaccinated. A strong positive correlation was found between willingness to take the vaccine and giving importance to the opinion of the family as well as valuing the advice of health care professionals. Males were more likely than females to appreciate the advice



of healthcare professionals regarding the effectiveness of the vaccine. The results reflect this argument and support the Theory of Reasoned Action and the Theory of Planned Behaviour (Ajzen, 2015).

It is important to note that the employment status variable consists solely of the category "Unemployed," rendering it unsuitable for analysis due to the lack of variation. Similarly, the socioeconomic status variable only includes the category "Low income," which limits its potential for analysis.

Table 3.3 The significant difference in the respondents’ beliefs about immunization and vaccination when grouped according to their profile variables

Profile	Dependent Variables	Chi-square	df	P-value	Decision	Interpretation
Age	Beliefs	1.692	3	0.639	Do not reject Ho	Not Significant
Sex	Beliefs	0.022	1	0.883	Do not reject Ho	Not Significant
Educational Attainment	Beliefs	14.847	3	0.002	Reject Ho	Significant
Employment Status	Beliefs	There is only one non-empty category				
Socio-Economic Status	Beliefs	There is only one non-empty category				
Intention to get vaccinated	Beliefs	42.081	1	0.000	Reject Ho	Significant

Decision: Reject Ho: $p < 0.05$

Table 3.3 presents the significant differences in the beliefs of Badjao parents about children's vaccination and immunization when they are classified according to their profile variables. The analysis revealed that when the respondents are grouped according to their age or their sex, their beliefs do not vary at all. On the other hand, a significant difference was observed in terms of educational attainment and intention to get vaccinated, These findings suggest that the Badjao parents' beliefs regarding children's vaccination and immunization are associated with their educational attainment. It is seemingly implied that if one's educational attainment is higher, then the beliefs regarding vaccination and immunization tend to be more positive as well. On the other hand, if one's educational attainment is low, then the beliefs regarding vaccination and immunization are more negative as well. This is evident in the findings of Tables 1.1 and 3.1, where most of the respondents have no formal education and hold less positive beliefs towards vaccination and immunization. Another implication shows that the intention to get vaccinated is associated with their beliefs regarding vaccination and immunization. This means that if one's beliefs are positive, then the intention of parents for their children to get vaccinated is high as well. Conversely, if one's beliefs are negative, then the intention of parents for their children to get vaccinated is low as well. This is evident in Tables 1.1 and 3.1, which respectively present that the respondents mostly have fewer positive beliefs towards vaccination and immunization, while the majority of the respondents also do not have the intention of submitting their children to vaccination and immunization. Generally, the educational attainment and intention to get vaccinated may impact the beliefs of Badjao parents regarding children's vaccination and immunization.

These findings are supported by the study of Capuano (2022) titled Vaccine Hesitancy Among Religious Groups: Reasons Underlying This Phenomenon and Communication Strategies to Rebuild Trust which explains that vaccine hesitancy still represents a phenomenon that undermines the effectiveness of vaccination campaigns and population protection from vaccine-preventable diseases. Among the reasons underlying this reticence, religion-related convictions probably represent the commonest. Religious reasons underpinning the vaccine hesitancy were identified for many religious groups, including Protestants, Catholics, Jews, Muslims, Christians, Amish, Hinduists, and Sikhists. For instance, the porcine or non-halal ingredients content of vaccines was the main barrier identified in Muslim populations. Another reason for refusal among Muslims was related to the Ramadan and fasting period. Indeed, during the Ramadan fasting month, believers have to abstain from eating, drinking, perfuming, or having sexual relationships from sunrise to sunset (Padmawati, 2019).

A study carried out in Guinea revealed that 46% of Muslims and 80% of religious leaders considered that vaccination was not allowed during Ramadan. A key factor for the success of children's vaccination campaigns is parents' willingness to have their child be vaccinated once doses become accessible to them personally and their existing beliefs towards it. Vaccine hesitancy is defined by the World Health Organization (WHO) as the delay in the acceptance or blunt refusal of vaccines. In fact, vaccine



hesitancy was described by the WHO as one of the top 10 threats to global health in 2019. Conversely, vaccine confidence relates to individuals’ beliefs that vaccines are effective and safe. In general, a loss of trust in health authorities is a crucial determinant of vaccine confidence, with misconceptions about vaccine safety being among the most common reasons for low confidence in vaccines (Badur, 2020).

It is important to note that the employment status variable consists solely of the category "Unemployed," rendering it unsuitable for analysis due to the lack of variation. Similarly, the socioeconomic status variable only includes the category "Low income," which limits its potential for analysis.

Table 3.4 The significant difference in the respondents’ confidence about immunization and vaccination when grouped according to their profile variables

Profile	Dependent Variables	Chi-square	df	P-value	Decision	Interpretation
Age	Confidence	0.644	3	0.886	Do not reject Ho	Not Significant
Sex	Confidence	0.052	1	0.820	Do not reject Ho	Not Significant
Educational Attainment	Confidence	19.934	3	0.000	Reject Ho	Significant
Employment Status	Confidence	There is only one non-empty category				
Socio-Economic Status	Confidence	There is only one non-empty category				
Intention to get vaccinated	Confidence	51.802	1	0.000	Reject Ho	Significant

Decision: Reject Ho: $p < 0.05$

Table 3.4 presents the significant differences in the confidence of Badjao parents regarding children's vaccination and immunization when they are categorized according to their profile variables. The analysis indicates that when the respondents are classified according to their age or their sex, their confidence levels do not vary at all. However, a significant difference was observed in educational attainment and intention to get vaccinated suggesting that parents' confidence in children’s vaccination and immunization is associated with their educational attainment. It is seemingly implied that if one’s educational attainment is higher, then the confidence level regarding vaccination and immunization tends to be higher as well. On the other hand, if one’s educational attainment is low, then the confidence level regarding vaccination and immunization is lower as well. This is evident in the findings of Tables 1.1 and 4.1, where most of the respondents have no formal education and exhibit lower levels of confidence towards vaccination and immunization. Another implication shows that the intention to get vaccinated is associated with their confidence in vaccination and immunization. This means that if one’s confidence is high, then the intention of parents for their children to get vaccinated is high as well. Conversely, if one’s confidence is low, then the intention of parents for their children to get vaccinated is low as well. This is evident in Tables 1.1 and 4.1, which respectively present that the respondents mostly have lower levels of confidence towards vaccination and immunization, while the majority of the respondents also do not have the intention of submitting their children to vaccination and immunization. Furthermore, the educational attainment and intention to get vaccinated may impact the confidence of Badjao parents regarding children's vaccination and immunization. In connection to the findings above, the study by Brackstone (2022) titled “COVID-19 Vaccine Hesitancy and Confidence in the Philippines and Malaysia: A Cross-sectional Study of Sociodemographic Factors and Digital Health Literacy” supports the present study when they found out that significant predictors of vaccine confidence are seen both in Filipino and Malaysian samples. Factors positively associated with higher vaccine confidence among Filipino participants included higher self-reported ratings on subjective social status. Despite the fact that vaccines save 2-3 million lives worldwide every year, a percentage of children are not getting appropriately vaccinated, thus leading to disease outbreaks. One of the primary reasons for low vaccine uptake in most countries is low vaccine confidence leading to vaccine hesitancy, contributing to the recent measles outbreaks. Monitoring of vaccine hesitancy is valuable in early identification of vaccine concerns (Esso, 2019).

From the same study of Brackstone (2022), results imply that respondents probably had a high acceptance level of immunization and vaccination since 96.7% of them had completed the initial doses of pediatric immunization and vaccine program, and the average number of the vaccines they received was around 3 shots which included the initial and booster doses. Even though their children were living in an outbreak area and there were senior or at-risk family members, their findings revealed that 58% of



Thai parents had moderate to extremely low levels of vaccine confidence. Therefore, a campaign to create a positive attitude towards vaccination for themselves and increase the rate of pediatric immunization and vaccination among parents, in addition to the promotion of their child's vaccination should be conducted.

Another study conducted by Diorren (2017) revealed that vaccine confidence was higher with statistical significance among parents who previously refused any other vaccinations for their children. These parents may have misunderstandings, distrust, excessive fear, and concerns about any vaccination, especially COVID-19 vaccines, which had been manufactured by newly invented platforms for an unfamiliar emerging disease. As a result, a history of incomplete vaccination for other diseases of the children may be a screening tool for this group of parents.

It is worth noting that the employment status variable solely comprises the category "Unemployed," which renders it unsuitable for analysis due to the lack of variation. Similarly, the socio-economic status variable includes only the category "Low income," limiting its potential for analysis.

CONCLUSIONS AND RECOMMENDATIONS

Among the majority of the Badjao parents in Brgy. Canlanipa, Surigao City, the female parents or mothers were more responsible to their children in terms of vaccinations and immunizations. Most were adults who had no educational background, were unemployed and belonged to the poorest of the poor families. The Badjao parents are likely to disagree with some indicators, pointing out that they have less knowledge and confidence in submitting their child to immunization or vaccination, thereby putting them at risk of an increased number of cases of vaccine-preventable diseases among children in their population. Respondents have agreed to some indicators inferring that attitudes and beliefs are strongly inclined to their willingness to have their child be vaccinated or immunized. Lastly, the low levels of knowledge, absence of formal education, and lower interest or intention to submit children to vaccination and immunization inhibit Badjao parents from adhering to vaccination and immunization.

In light of the findings and conclusions of the study, the Local Government Unit (LGU) Surigao City in partnership with the City Health Office and Department of Health (DOH)-Surigao del Norte should implement a specific program to reinforce the significance of children vaccination and immunization emphasizing its benefits through information drive among this population. The findings of the present study highlight the vital role of concerned individuals, offices, and agencies emphasizing the need for continuous monitoring, awareness, and response plans. The possible influence of different types of healthcare providers on parental decisions demonstrated for the first time in specific survey, calls for further research. Monitoring and continuous medical education efforts aimed mainly at those professionals who might not be likely to recommend vaccination are suggested. Lastly, for future research, it is recommended to further investigate the effect of experiences such as having a family member who got sick or died of a disease and associate it with their decision to accept or delay vaccination.

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