

## Polio Disease and Immunization: Knowledge and Attitude of Filipino Mothers in a Rural Community

### Abstract

**Background:** In response to the 2019 Polio outbreak in the Philippines, it is crucial to examine the current understanding and beliefs about the disease. This study assessed the knowledge and attitudes of mothers towards Polio and Polio vaccination in a rural community. **Materials and Methods:** Sixty-two mothers in a selected rural barangay in Negros Occidental, Philippines, participated in this cross-sectional study using a survey questionnaire in July 2021. Descriptive statistics and correlation analysis were employed. **Results:** The results showed that 43.50% of mothers had a high level of knowledge and 74.20% had a favorable attitude towards Polio and Polio immunization. There was a significant relationship ( $p = 0.05$ ) between knowledge and attitude towards Polio and Polio immunization. **Conclusions:** This study underscores addressing knowledge gaps through public health campaigns may improve beliefs and perceptions about immunization programs.

**Keywords:** Disease outbreaks, poliomyelitis, rural population, vaccination

### Introduction

Poliomyelitis or Polio is an infectious disease caused by the Poliovirus. It is transmitted person-to-person through the fecal-oral route and fecal-contaminated food and water, posing a threat to children under 5 years old.<sup>[1]</sup> Although there is no cure, it can be prevented through immunization.<sup>[2]</sup> Unfortunately, there has been a recent decline in immunization coverage.<sup>[3]</sup> The Philippines, Malaysia, and 20 other African and Western Mediterranean countries face reinfections from imported wild Poliovirus or vaccine-derived Poliovirus.<sup>[2]</sup> On September 14, 2019, the first case of Poliomyelitis re-emerged in Lanao del Sur, Philippines, since the country was declared “Polio-Free” in 2000.<sup>[4]</sup> Vaccine hesitancy is suspected to be a significant factor contributing to this decline, exacerbated by the controversy surrounding the Dengvaxia vaccine in 2018, which significantly undermined vaccine confidence.<sup>[3]</sup>

To regain the Philippines’ “Polio-Free” status, understanding mothers’ awareness and perceptions is crucial for achieving high vaccination coverage. Mothers play a critical role in the decision to vaccinate

their children. Research indicates that improving parental knowledge about vaccination enhances the success of immunization programs.<sup>[5,6]</sup> However, limited data on knowledge and attitudes in the Philippines exist despite extensive research in Polio-endemic countries, with rural communities facing barriers to healthcare access, including vaccination services.<sup>[7]</sup> This study assessed mothers’ knowledge and attitudes towards Polio and Polio vaccination in a Philippine rural community.

### Materials and Methods

A cross-sectional survey design was utilized and conducted in July 2021. The participants in this study were 62 mothers with children below 5 years old residing in a rural barangay in Negros Occidental, Philippines. Using a sample size calculator,<sup>[8]</sup> the minimum sample size for a population of 80 with a margin of error of 5% was 67. However, despite efforts to reach the desired sample size, only 62 or 77.50% of the population of eligible mothers responded to the survey. Data gathering was challenging due to the constraints imposed by the surge of the COVID-19 Delta variant.

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Data for this study were gathered using a three-part questionnaire: Part One included socio-demographic characteristics, Part Two assessed knowledge with 15 true/false/don't know questions, analyzed based on Bloom's cut-off points,<sup>[9]</sup> and Part Three evaluated attitudes using 17 items rated on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree). The questionnaire items were developed from a literature review and validated by a panel of four experts. It was translated into the local dialect, pilot-tested, and yielded reliability scores of Kuder-Richardson = 0.82 for knowledge and Cronbach's alpha = 0.94 for attitudes.

Permission to conduct the study was requested from the Captain of the Barangay, and health protocols were strictly adhered to during data collection. Participants were briefed on the study's purposes and informed consent forms were provided and signed. Barangay Health Workers, oriented and trained about the study, distributed questionnaires for participants to complete in July 2021.

Data were analyzed using IBM SPSS version 26. Descriptive statistics were used to summarize the data. Pearson's *r* and linear regression were employed to assess relationships between variables, with a significance level (alpha) set at  $\leq 0.05$ .

### Ethical considerations

This study received approval from the West Visayas State University Unified Research Ethics Review Committee (WVSU.URERC-2021.CONNS\_003).

### Results

In this study, 62 mothers participated. The majority of the mothers were in the younger age group (62.90%), married (46.80%), Roman Catholics (88.70%), attained college-level education (62.90%), and had a monthly family income of below 5000 pesos (54.80%), held associate/non-professional occupations (43.50%) and had 1–2 children (74.20%) with only 71% percent of their children received complete doses of vaccination against Polio. Table 1 indicates that only 43.50% of mothers in rural communities had a high level of knowledge about Polio. Furthermore, a majority (74.20%) exhibited a favorable attitude towards polio and polio immunization. The study found a significant relationship ( $r = 0.25$ ,  $P = 0.05$ ) between

mothers' knowledge and attitudes [Table 1]. Regression analysis indicated an  $R^2$  of 0.065.

### Discussion

The study revealed that more than half of mothers had moderate-to-high knowledge about Polio and Polio immunization, although 21% exhibited low knowledge. Misconceptions regarding the treatment, diagnosis, and vaccines against Polio persisted among some participants. Knowledge gaps were also observed in studies from affected regions in Pakistan.<sup>[10,11]</sup> Some misconceptions were also noted in the semi-urban areas of South India.<sup>[12]</sup>

Moreover, this study found that a significant proportion of mothers held a favorable attitude toward Polio and its immunization. Similar positive attitudes were observed in a study from Nigeria.<sup>[13]</sup> Awareness campaigns and national immunization efforts may have contributed to a general awareness and positive outlook among mothers regarding Polio and its prevention. Conversely, other studies still reported negative attitudes towards polio immunization, citing religious and social beliefs as barriers hindering disease eradication.<sup>[10]</sup>

This study found a significant but low correlation between mothers' knowledge and their attitudes. This positive correlation suggests that as knowledge increases, so does a favorable attitude. Previous research has similarly shown a significant correlation between mothers' knowledge of Polio and acceptance of the polio vaccine.<sup>[13]</sup> Other studies highlighted that poor knowledge is a major barrier to polio immunization.<sup>[10]</sup> Mothers' health literacy significantly enhances the likelihood of vaccinating their children.<sup>[14]</sup> Vaccine hesitancy, associated with inadequate disease-specific knowledge, plays a crucial role in decision-making regarding vaccination.<sup>[15]</sup>

This study is limited to a single rural barangay in the Philippines with limited samples. Researchers recommend caution when using and extrapolating the findings of this study.

### Conclusion

This study emphasizes that while mothers generally hold a favorable attitude towards Polio and its immunization, there are still some knowledge gaps and misconceptions that persist about it. Moreover, this study underscores that mothers' knowledge influences their attitudes toward Polio and its immunization. Addressing knowledge gaps through public health campaigns may improve beliefs and perceptions about immunization programs.

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**Table 1: Level of knowledge and attitude about polio and polio immunization**

Knowledge	Mean (SD) 10.90 (2.74) n (%)	Attitude	Mean (SD) 3.93 (0.78) n (%)
High	27 (43.50)	Favorable	46 (74.20)
Moderate	22 (35.50)	Ambivalent	11 (17.70)
Low	13 (21.00)	Unfavorable	5 (8.10)

$r=0.25$ ,  $P=0.05$ ,  $R^2=0.065$ ,  $\beta=0.073$ ,  $p=0.046$

## Conflicts of interest

Nothing to declare.

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