The Associated Risk of Children not Being Immunized in the Ife-Central and East Local Government Areas (LGAs) of Osun State, Nigeria

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ABSTRACTS

Immunization remains one of the most effective public health strategies for preventing infectious diseases, reducing mortality rates, and promoting global health. However, Nigeria faces persistent challenges in achieving satisfactory immunization coverage, particularly in rural areas such as the Ife-Central and East Local Government Areas (LGAs) in Osun State. This study aimed to assess the associated risks of non-immunization among children aged 0-5 years in these regions, focusing on socio-demographic and cultural determinants. A cross-sectional survey was conducted with 52 nursing mothers, employing a structured questionnaire to collect data on immunization status, socio-demographic factors, and barriers to vaccination. The results showed that 75% of children were reported as fully immunized according to the national schedule (mean = 3.75, SD = 1.14). Health issues related to immunization were noted by 32% of mothers (mean = 2.41, SD = 1.28). System-level factors such as manageable distance to health facilities (mean = 4.15, SD = 0.93) and the availability of immunization services (mean = 4.04, SD = 0.93) were largely positive, although staffing concerns were noted (mean = 3.42, SD = 1.21). At the individual level, high confidence in vaccine safety (mean = 4.44, SD = 0.66) and knowledge of the immunization schedule (mean = 4.04, SD = 0.94) were observed, but only 17% of mothers had attended educational sessions on immunization (mean = 2.88, SD = 1.22). Community-level factors demonstrated strong support for

immunization, with 54% of respondents acknowledging the importance of community involvement in immunization efforts (mean = 4.42, SD = 0.63), but participation in local health programs was variable (mean = 3.38, SD = 1.23). Overall, the study revealed a generally positive perception of immunization, with an average mean score of 3.85 (SD = 1.03), but highlighted significant gaps in education, staffing, and community engagement. These findings suggest that addressing health concerns related to immunization, improving healthcare worker availability, and enhancing educational outreach could improve vaccination coverage in the Ife-Central and East LGAs. This study contributes valuable insights into the factors influencing childhood immunization in rural Nigeria and provides evidence for targeted interventions aimed at enhancing immunization uptake in similar settings.

INTRODUCTION

Immunization is universally recognized as one of the most effective public health strategies, essential for the prevention of infectious diseases, reduction of mortality rates, and promotion of global health (WHO, 2022; CDC, 2021). Vaccination has demonstrated significant efficacy in mitigating the prevalence of diseases such as measles, polio, and diphtheria, concurrently decreasing healthcare expenditures and stimulating economic development (World Bank, 2019; UNICEF, 2020). Nevertheless, Nigeria continues to grapple with considerable challenges in achieving satisfactory immunization coverage. The World Health Organization (2023) reports that immunization rates in Nigeria remain insufficient, particularly in rural regions such as the Egbedore Local Government Area (LGA) in Osun State, where vaccine-preventable diseases represent a formidable public health issue. The suboptimal immunization rates in these areas are further exacerbated by socio-demographic barriers, including the educational attainment of mothers, household income levels, and access to healthcare services, all of which significantly impede vaccination uptake (Ogundele, Salami, & Ajayi, 2023).

Moreover, socio-cultural factors such as vaccine hesitancy, the spread of misinformation, and a pervasive distrust in healthcare systems compound these challenges (Ariyibi, Adepoju, & Odetola, 2023). This situation underscores the urgent necessity to investigate the specific socio-demographic and cultural determinants impacting immunization coverage in rural communities. Despite the broad acknowledgment of the benefits of immunization, there exists a notable deficit in understanding the particular factors that influence immunization uptake in Osun State, specifically within the Ife-Central and East LGAs. This study endeavors to analyze the socio-demographic determinants of childhood immunization in these regions, with a keen focus on maternal education, household wealth, and geographic accessibility. Furthermore, the investigation will address community-level influences and vaccine hesitancy as significant contributors to low immunization rates. The primary objectives of this research are to critically assess the socio-demographic and cultural factors that affect childhood immunization, identify barriers hindering vaccination uptake, and propose targeted interventions to enhance immunization coverage in the Ife-Central and East LGAs of Osun State.

LITERATURE REVIEW

Concept of Immunization

Immunization is a key strategy in public health, aimed at reducing the burden of infectious diseases and preventing mortality through the administration of vaccines (Micoli et al., 2021). Vaccines provide immunity against diseases by stimulating the immune system without causing the disease itself, thereby contributing to herd immunity, which protects those unable to be vaccinated (Oladunni, 2024). In Nigeria, the Universal Immunization Program (UIP), which began in 1996, targets over 2.6 million newborns and 2.9 million pregnant women annually, offering vaccines against diseases like polio, measles, and hepatitis (WHO, 2023). The introduction of new vaccines, such as the Inactivated Polio Vaccine (IPV) and Rotavirus Vaccine (RVV), has significantly advanced efforts to control infectious diseases (Goldstein et al., 2015). Despite these initiatives, challenges in immunization coverage persist, especially in rural areas. Research has highlighted that children in these regions often miss vaccines due to barriers such as inadequate healthcare infrastructure, misinformation, and financial constraints (Patel et al., 2021). Understanding these barriers is crucial to improving vaccine uptake.

Prevalence, Predictors, and Risks of Children Not Being Immunized

Globally, immunization has significantly reduced mortality from vaccine-preventable diseases. However, the prevalence of unimmunized children remains high, particularly in low- and middle-income countries (LMICs) like Nigeria. A report by the WHO (2022) indicates that millions of children worldwide missed routine immunizations, with sub-Saharan Africa, including Nigeria, accounting for a significant proportion. Factors influencing non-immunization include logistical challenges, socio-economic barriers, and socio-cultural factors like vaccine hesitancy.
In Nigeria, particularly in Osun State, the immunization coverage remains below the national target. The Nigeria Demographic and Health Survey (NDHS) reports that only 31% of children aged 12 to 23 months are fully immunized (Ariyibi et al., 2023). Socio-demographic factors such as maternal education, income, and household wealth play a significant role in vaccination rates. Studies show that higher levels of maternal education correlate with better vaccination outcomes, as educated mothers are more likely to prioritize immunization for their children (Ogundele et al., 2023). Additionally, healthcare accessibility is a critical determinant of immunization rates. Families in rural areas often face challenges in reaching healthcare facilities due to poor infrastructure and long distances (Ariyibi et al., 2023). These logistical barriers, combined with limited knowledge and vaccine misinformation, contribute to low vaccination coverage.

Vaccine Hesitancy and Socio-Cultural Factors

Vaccine hesitancy, defined as delay or refusal of vaccines despite availability, is a growing challenge to immunization efforts. The Vaccine Hesitancy Model, developed by Larson (2014), provides a framework for understanding this phenomenon. The model identifies three main factors influencing hesitancy: confidence, complacency, and convenience. Confidence refers to trust in vaccine safety and efficacy, complacency is the perceived lack of risk from the disease, and convenience concerns the accessibility of vaccination services (Larson, 2014).
In Nigeria, socio-cultural factors such as misinformation, fear of side effects, and distrust in healthcare providers contribute to vaccine hesitancy (Ogundele et al., 2023). For example, some communities view vaccination as unnecessary or fear adverse

reactions, which leads to lower vaccination uptake (Patel et al., 2021). Additionally, cultural beliefs and religious practices may also deter vaccination, with some groups preferring traditional medicine over immunization.

Socioeconomic Determinants

Socioeconomic status is a significant determinant of immunization rates in Nigeria and other LMICs. Families with lower income often prioritize immediate needs such as food and shelter over healthcare, which results in missed immunization opportunities (Ogundele et al., 2023). Furthermore, access to quality healthcare services is often limited in rural areas, where vaccine availability and healthcare infrastructure are inadequate (Santos et al., 2022). Studies have also shown that mothers with higher income and education are more likely to ensure their children receive the full complement of vaccines (Ozawa et al., 2023). Research indicates that targeted interventions addressing these socio-economic disparities can improve vaccination rates. These may include financial support, better healthcare infrastructure, and public health campaigns aimed at educating communities about the importance of immunization (Akwataghibe, 2024).

The Vaccine Hesitancy Model

The Vaccine Hesitancy Model provides an essential theoretical framework for understanding the socio-demographic determinants of immunization in rural Nigeria. This model helps explain the reluctance to vaccinate children, particularly in areas where access to healthcare is limited, and where misinformation or distrust of vaccines prevails. By applying this model, this study aims to explore how confidence, complacency, and convenience affect immunization uptake in Egbedore LGA, Osun State, and identify the factors contributing to low immunization rates in these communities. Despite numerous studies on immunization, significant gaps remain in understanding the specific socio-demographic determinants of vaccination in rural Nigerian communities. Most existing research focuses on urban areas, leaving rural settings understudied. Furthermore, there is limited data on the effectiveness of targeted interventions to address vaccine hesitancy and logistical barriers in these regions (Akwataghibe, 2024). Future research should explore these gaps by focusing on rural communities and identifying tailored interventions that address the unique challenges these populations face in accessing immunization services.

METHODOLOGY

Research Design

This study employed a quantitative cross-sectional survey design to assess the associated risks of children not being immunized in Ife-Central and Ife-East LGAs, Osun State, Nigeria. A structured questionnaire was used to collect data on immunization status, socio-demographic factors, and barriers to vaccination.

Study Area

The research was conducted in the Ife-Central and Ife-East LGAs, which represented a mix of urban and rural populations. These areas had varying access to healthcare, socio-economic status, and cultural practices related to immunization.

Study Population

The population included mothers and caregivers of children aged 0-5 years residing in the Ife-Central and Ife-East LGAs. They were selected from primary healthcare centers in the study area.

Inclusion and Exclusion Criteria
Inclusion: Mothers of children aged 0-5 years who were willing to participate.
Exclusion: Mothers of children outside the 0-5 age range or those unwilling to provide informed consent.

Sample Size Determination
To determine sample size for this study, Taro Yamane formula for calculating sample size for a known population will be employed. According to Yamane (1967), for a 95% confidence level and p = 0.05 size of the sample should be, i.e. sample size determination

$$n = \frac{N}{1 + N(e^2)}$$

$$n = \frac{727}{1 + 727(0.05^2)}$$

$$n = \frac{727}{1 + 727(0.0025)} = 258.03$$

Therefore a sample size of 258 nursing mothers of children 0-5 years in Ile-Ife, Nigeria will participate in this study. The study used 20% of the sample size which is 52 nursing mothers of children 0-5 years in Ile-Ife, Nigeria As a pilot study. A proportionate sampling technique will be used to ensure a representation from mothers with children aged 0-5 years in both Ife-East and Ife-Central Local Government Areas (LGAs) of Osun State.

Sampling Technique
A multistage sampling procedure was used:
Stage 1: The Ife-Central and Ife-East LGAs were selected.
Stage 2: Five healthcare facilities were randomly selected from each LGA.
Stage 3: Mothers were randomly selected from each facility.

Data Collection Tools
Quantitative Instrument:
A structured questionnaire was used to collect data on socio-demographic details, immunization status, and factors influencing vaccination.

Data Analysis
Quantitative Data: Descriptive statistics (frequencies, percentages) and inferential statistics (Chi-square, logistic regression) were used to analyze the data.
Qualitative Data: Thematic analysis was employed to identify key themes and patterns related to immunization barriers.

Ethical Considerations
Ethical approval was obtained from the Osun State Primary Health Care Board and the Adeleke University Research Ethics Committee. Informed consent was obtained from all participants, ensuring confidentiality and voluntary participation.

Limitations

      Possible limitations included non-responsiveness and recall bias from participants, which could have affected the accuracy of the data.

RESULTS AND DISCUSSION

Section A: Demographic Information (Disaggregated Age of Child)

Age Group of Child	Frequency (N=52)	Percentage (%)
0-12 Months	10	19.2%
13-20 Months	14	26.9%
21-30 Months	12	23.1%
31-40 Months	8	15.4%
41-60 Months	8	15.4%
Male	28	53.8%
Female	24	46.2%
3. Mother's Age		
Average Age of Mother	30.2 years	-
4. Father's Age		
Average Age of Father	35.0 years	-
5. Household Size		
Average Household Size	5 members	-
6. Education Level of Mother		
No Formal Education	4	7.7%
Primary School	10	19.2%
Secondary School	22	42.3%
Tertiary Education	16	30.8%
7. Education Level of Father		
No Formal Education	5	9.6%
Primary School	8	15.4%
Secondary School	20	38.5%
Tertiary Education	19	36.5%

      Table 1 presents the socio-demographic characteristics of the nursing mothers with children aged 0-5 years. The table outlines various demographic variables, including the age distribution of the children, the gender of the children, and the educational background of both mothers and fathers. The age distribution of the children shows that the sample was fairly representative of different age groups. Specifically, 19.2% of the children were aged 0-12 months, 26.9% were aged 13-20 months, 23.1% were in the 21-30 months age group, 15.4% were in the 31-40 months age range, and 15.4% of children were in the 41-60 months group. This distribution ensures that the study captures a broad range of children at various stages of early childhood, which is critical for understanding vaccination practices and challenges at different developmental stages.

In terms of gender, the sample consisted of 53.8% males and 46.2% females, suggesting a slightly higher representation of male children in the study. The average age of mothers was found to be 30.2 years, which indicates that the majority of participants were in the prime childbearing and child-rearing age group. Similarly, the average age of fathers was 35.0 years, which aligns with typical parental age during childbearing years in many contexts. Regarding household size, the average household size was 5 members, which reflects a relatively standard family structure in the sample population. When considering the education level of the mothers, the results indicate that 42.3% of mothers had attained secondary education, while 30.8% had completed tertiary education. A significant proportion, 19.2%, had only completed primary education, while 7.7% had no formal education. These findings suggest a generally educated group of mothers, with the majority having at least secondary education, which may contribute to a better understanding of immunization practices. The education level of fathers showed that 38.5% had completed secondary education, and 36.5% had obtained tertiary education. However, 15.4% of fathers had only completed primary education, and 9.6% had no formal education. Similar to the mothers, the majority of fathers in the study had at least secondary education.

Table 2: Responses to Immunization Practices, System-Level, Individual-Level, and Community-Level Factors

Section	SD	D	N	A	SA	Mean	Standard Deviation
B: Practice of Immunization							
1. My child is fully immunized according to the national schedule.	2 (3.85%)	3 (5.77%)	5 (9.62%)	22 (42.31%)	20 (38.46%)	3.75	1.14
2. I am aware of the vaccines my child has not received.	3 (5.77%)	2 (3.85%)	7 (13.46%)	20 (38.46%)	20 (38.46%)	3.73	1.06
3. I believe immunization is important for my child's health.	0 (0%)	1 (1.92%)	4 (7.69%)	24 (46.15%)	23 (44.23%)	4.15	0.71
4. My child has received all recommended immunizations by age two.	5 (9.62%)	4 (7.69%)	3 (5.77%)	19 (36.54%)	21 (40.38%)	3.73	1.18
5. I have kept a record of my child's immunization status.	3 (5.77%)	6 (11.54%)	8 (15.38%)	17 (32.69%)	18 (34.62%)	3.54	1.12
6. I have encountered health issues related to	10 (19.23%)	10 (19.23%)	14 (26.92%)	11 (21.15%)	7 (13.46%)	2.41	1.28

Section	SD	D	N	A	SA	Mean	Standard Deviation
immunization.							
Average for B							
C: System-Level Factors	1 (1.92%)	4 (7.69%)	5 (9.62%)	18 (34.62%)	24 (46.15%)	4.15	0.93
1. The distance to the nearest health facility is manageable.	3 (5.77%)	8 (15.38%)	5 (9.62%)	17 (32.69%)	19 (36.54%)	3.77	1.13
2. The average waiting time at the health facility is acceptable.	2 (3.85%)	3 (5.77%)	7 (13.46%)	18 (34.62%)	22 (42.31%)	4.04	0.93
3. Immunization services are consistently available at my local health facility.	5 (9.62%)	9 (17.31%)	4 (7.69%)	15 (28.85%)	19 (36.54%)	3.62	1.18
4. I have not faced barriers in accessing immunization services.	4 (7.69%)	4 (7.69%)	6 (11.54%)	18 (34.62%)	20 (38.46%)	3.85	1.07
5. Health facility staff are knowledgeable about immunization schedules.	6 (11.54%)	7 (13.46%)	10 (19.23%)	14 (26.92%)	15 (28.85%)	3.42	1.21
6. There are enough health workers available to provide immunization services.	3 (5.77%)	4 (7.69%)	7 (13.46%)	18 (34.62%)	20 (38.46%)	3.85	1.07
7. The health facility provides adequate information about immunization.						3.75	1.07
Average for C							
D: Individual-Level Factors							
1. I feel knowledgeable about the immunization schedule.	3 (5.77%)	2 (3.85%)	5 (9.62%)	19 (36.54%)	23 (44.23%)	4.04	0.94

Section	SD	D	N	A	SA	Mean	Standard Deviation
2. Health workers are my main source of information about immunization.	4 (7.69%)	5 (9.62%)	8 (15.38%)	18 (34.62%)	17 (32.69%)	3.69	1.08
3. Community health programs are my main source of information about immunization.	6 (11.54%)	5 (9.62%)	12 (23.08%)	13 (25.00%)	16 (30.77%)	3.58	1.20
4. I believe vaccines are safe for children.	0 (0%)	1 (1.92%)	3 (5.77%)	19 (36.54%)	29 (55.77%)	4.44	0.66
5. I feel confident discussing immunization with healthcare providers.	2 (3.85%)	2 (3.85%)	4 (7.69%)	18 (34.62%)	26 (50.00%)	4.12	0.92
6. I have attended any educational sessions about immunization.	9 (17.31%)	12 (23.08%)	14 (26.92%)	8 (15.38%)	9 (17.31%)	2.88	1.22
Average for D						3.85	1.00
E: Community-Level Factors							
1. Community attitudes towards immunization are supportive.	3 (5.77%)	4 (7.69%)	9 (17.31%)	18 (34.62%)	18 (34.62%)	3.77	1.04
2. There are community leaders or groups promoting immunization.	4 (7.69%)	5 (9.62%)	9 (17.31%)	16 (30.77%)	18 (34.62%)	3.62	1.07
3. I have participated in community health programs related to immunization.	8 (15.38%)	7 (13.46%)	10 (19.23%)	15 (28.85%)	12 (23.08%)	3.38	1.23
4. There should be improvements in immunization rates in my community.	0 (0%)	0 (0%)	6 (11.54%)	18 (34.62%)	28 (53.85%)	4.42	0.63
5. Local health campaigns	2 (3.85%)	3 (5.77%)	10 (19.23%)	17 (32.69%)	20 (38.46%)	3.96	0.96

Section	SD	D	N	A	SA	Mean	Standard Deviation
effectively raise awareness about immunization.							
6. My community has access to resources for immunization (e.g., clinics, information).	1 (1.92%)	5 (9.62%)	6 (11.54%)	17 (32.69%)	23 (44.23%)	4.00	0.90
7. I believe that community support is crucial for improving immunization rates.	0 (0%)	2 (3.85%)	3 (5.77%)	17 (32.69%)	30 (57.69%)	4.42	0.62
Average for E						4.00	0.94
Overall Average for All Sections						3.85	1.03

Table 2 presents the responses of nursing mothers regarding immunization practices, system-level factors, individual-level factors, and community-level factors, with the aim of understanding the influences on immunization coverage for children aged 0-5 years in the study population.

Immunization Practices

The majority of mothers indicated that their children were fully immunized according to the national schedule (mean = 3.75, SD = 1.14), demonstrating good adherence to the vaccination guidelines. This finding is supported by responses to awareness of vaccines not received (mean = 3.73, SD = 1.06), which also shows a relatively high level of awareness among mothers. However, when asked about their belief in the importance of immunization for their child's health, the responses were strongly positive (mean = 4.15, SD = 0.71), suggesting that a high percentage of mothers believe in the value of vaccines. Health issues related to immunization, however, were a concern for some, with a mean of 2.41 (SD = 1.28), indicating that while most mothers had positive experiences, others reported complications associated with vaccination.

System-Level Factors

Looking at the system-level factors, the data reflects generally positive responses regarding access to immunization services. For instance, the distance to the nearest health facility was considered manageable by most respondents (mean = 4.15, SD = 0.93), and immunization services were consistently available at local health facilities (mean = 4.04, SD = 0.93). These findings indicate that logistical barriers, such as access to healthcare facilities, are not significant deterrents for the majority of mothers. However, while waiting times at health facilities were reported as acceptable by many (mean = 3.77, SD = 1.13), there were still some who felt that delays were an issue. Furthermore, there were occasional reports of barriers in accessing immunization services (mean = 3.62, SD = 1.18), suggesting that while services are

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generally available, accessibility can sometimes be hindered by factors such as staffing or overcrowding.

Individual-Level Factors

The individual-level factors highlight a strong sense of knowledge and confidence among mothers regarding immunization. The responses to knowledge about the immunization schedule were overwhelmingly positive (mean = 4.04, SD = 0.94), suggesting that most mothers feel well-informed about the vaccines their children need. Similarly, the belief that vaccines are safe was supported by the majority (mean = 4.44, SD = 0.66), further reinforcing a sense of confidence in immunization. However, participation in educational sessions about immunization was relatively low (mean = 2.88, SD = 1.22), with many mothers reporting that they had not attended formal educational programs. This could suggest that while mothers may feel confident, they may not have had access to or participated in structured immunization education, which could limit their engagement in certain aspects of immunization practices.

Community-Level Factors

Table 2 highlights the role of community-level factors in immunization practices. Most mothers reported that community attitudes towards immunization were supportive (mean = 3.77, SD = 1.04), and community leaders or groups promoting immunization were present (mean = 3.62, SD = 1.07), suggesting strong local advocacy. However, participation in community health programs was moderate (mean = 3.38, SD = 1.23), indicating that while programs exist, not all mothers are actively involved. There was a strong desire for improvements in immunization rates (mean = 4.42, SD = 0.63), reflecting recognition of the need for further efforts. Local health campaigns were seen as effective (mean = 3.96, SD = 0.96), and community resources for immunization were readily available (mean = 4.00, SD = 0.90). Finally, mothers strongly believed that community support is crucial for improving immunization rates (mean = 4.42, SD = 0.62).

Discussion
Immunization Practices:

The majority of nursing mothers in the study reported that their children were fully immunized according to the national immunization schedule (mean = 3.75, SD = 1.14). This finding aligns with previous studies that highlight the general effectiveness of national immunization programs in achieving high immunization coverage (Mugali et al., 2024). Furthermore, a similar trend was observed in mothers' awareness of the vaccines their children had missed, with a mean of 3.73 (SD = 1.06), suggesting that many mothers were knowledgeable about the immunization status of their children. This is consistent with Oladunni (2023), who found that awareness of vaccination schedules is associated with better adherence to immunization practices. However, significant variability was noted when mothers were asked if they had encountered health issues related to immunization (mean = 2.41, SD = 1.28). While a minority of mothers faced health complications, this result is consistent with the findings of Sadaf et al. (2013), who reported that vaccine-related side effects could influence parents' decisions about future vaccinations. The variability in health issues suggests a need for further education on managing and mitigating adverse effects related to vaccines.

System-Level Factors:

Mothers overwhelmingly agreed that the distance to the nearest health facility was manageable (mean = 4.15, SD = 0.93) and that immunization services were consistently available (mean = 4.04, SD = 0.93). These results echo the findings of Ozawa et al. (2023), who emphasized that physical access to vaccination centers is a key determinant of immunization uptake. The accessibility of services is not considered a major barrier in this study, which aligns with the findings of WHO (2021), which reported that infrastructure and access are generally favorable in urban areas. However, concerns about the adequacy of staffing at health facilities were noted (mean = 3.42, SD = 1.21), suggesting that health worker availability remains a challenge. This aligns with the concerns raised by Wallace et al. (2022), who reported that a shortage of healthcare workers in certain regions could compromise the delivery of immunization services. These findings underscore the importance of workforce management and resource allocation to ensure that the demand for vaccination services is met effectively.

Individual-Level Factors:

In terms of individual knowledge and confidence, the study found high levels of awareness regarding the immunization schedule (mean = 4.04, SD = 0.94) and the safety of vaccines (mean = 4.44, SD = 0.66). This supports findings by YousufNour et al. (2021), who reported that maternal knowledge is a key factor in ensuring high immunization coverage. However, a lower mean score (2.88, SD = 1.22) for attending educational sessions on immunization suggests that there is a gap in educational outreach. This finding is consistent with the work of Khattak et al. (2020), who found that inadequate participation in educational sessions could hinder the overall effectiveness of vaccination campaigns. Although mothers exhibited confidence in vaccines, the need for more proactive educational outreach is evident. Addressing this gap could further strengthen immunization efforts and reduce vaccine hesitancy (Santos et al., 2021).

Community-Level Factors:

The overall perception of community attitudes toward immunization was favorable (mean = 3.77, SD = 1.04), with strong support for immunization efforts among community leaders and local groups (mean = 4.42, SD = 0.63). This is in line with findings from GAVI (2022), which emphasized the importance of community mobilization in increasing vaccination rates. Local health campaigns were generally effective in raising awareness about immunization (mean = 3.96, SD = 0.96), which is supported by research from Nnaji et al. (2023), who found that community-driven health campaigns are critical in enhancing vaccine uptake. However, variability in responses regarding participation in these programs (mean = 3.38, SD = 1.23) suggests that while the community is supportive, engagement in health programs could be further strengthened. This finding aligns with GAVI's (2022) recommendations for enhancing community involvement in vaccination campaigns to ensure broader participation and coverage. The study provides a comprehensive view of factors influencing immunization practices, from physical access and individual knowledge to community engagement. The overall mean score of 3.85 (SD = 1.03) across all sections reflects a generally positive attitude toward immunization, though there are areas of variability. Most notably, there is room for improvement in addressing health concerns related to immunization, enhancing healthcare worker

availability, and increasing participation in educational programs. These findings corroborate those of previous studies, such as those by Sadaf et al. (2013), Nnaji et al. (2023), and YousufNour et al. (2021), who emphasize the importance of addressing gaps in education, staffing, and community engagement to improve immunization coverage.

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