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AWARENESS, PERCEPTION AND PRACTICES OF PARENTS ABOUT CHILDHOOD IMMUNIZATION IN UGHELLI SOUTH LOCAL GOVERNMENT AREA, DELTA STATE.

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ABSTRACT

BACKGROUND: To control the spread of disease in a society Childhood immunisation is fundamental. The low level of immunization uptake among children 0-5years highlights the need to investigate parents awareness, perception and practice about childhood immunization. This study evaluates parents' awareness, perception, and practice of childhood immunization in Ughelli South, Delta State.

METHOD: A descriptive cross-sectional study was conducted among 420 parents using a structured questionnaire. Data collected included awareness of immunization and its schedule, perception of vaccine importance, safety, and effectiveness, as well as parental practices regarding vaccine uptake and adherence to appointments. Descriptive statistics were applied in data analysis.

RESULTS: Awareness of childhood immunization was nearly universal (98.3%), although only 68.3% of respondents were aware of the recommended immunization schedule. Health facilities (70%) were the main source of information. Most parents (95%) considered immunization very important and 98.3% agreed it is effective in preventing diseases, though 56.7% expressed concern about vaccine safety. A large proportion (83.3%) supported mandatory vaccination for children. Regarding practice, 90% of parents had all their children vaccinated according to the recommended schedule, and 90% reported never missing an appointment. However, only 11.7% could correctly recall all the vaccines received by their children. Reported side effects were low (8.3%), and only 0.5% reported mortality related to vaccination. Access to immunization services was generally good, with 86.7% reporting no challenges.

CONCLUSION: The study shows very high awareness, positive perceptions, and strong adherence to immunization schedules among parents. However, concerns about vaccine safety and limited knowledge of specific vaccines remain significant gaps. Strengthening health education, improving communication on vaccine types and schedules, and addressing safety concerns could further enhance uptake and completion of childhood immunization in Nigeria.



KEYWORDS: Childhood immunization, parental awareness, vaccine perception, vaccination practices, Nigeria, Childhood immunization, Awareness, Perception. Practices, Ughelli South, Delta State.

INTRODUCTION

Childhood immunization stands is a landmark public health achievement of the 20th century, significantly contributing to the control and prevention of infectious diseases. The impact of immunization programs has been remarkable, leading to the global eradication of smallpox and substantial declines in the incidence of diseases like polio, measles, and diphtheria (WHO, 2025; Lindstrand et al., 2021). Vaccines contain attenuated or inactivated microorganisms, such as bacteria, viruses, or fungi, that stimulate the immune system to produce a targeted response. This immunological response enables the body to recognize and combat specific pathogens upon future exposure, conferring long-term immunity against severe and potentially life-threatening diseases (College of Physicians of Philadelphia, 2025; Wodi & Morelli, 2024). The primary objective of childhood vaccination strategies is to achieve high immunity levels within the population, thereby preventing the transmission of severe childhood diseases through comprehensive immunization coverage (WHO, 2020).

Enhancing well-child visits and immunization rates is essential for safeguarding the health and well-being of young populations. By adopting evidence-based strategies, healthcare providers can optimize preventive care, mitigate the risk of disease outbreaks, and foster healthy growth and development. This underscores the critical role of well-child visits and immunizations in maintaining robust public health (Centers for Disease Control and Prevention, 2024). Vaccine-preventable diseases can be highly contagious and pose significant risks to babies and young children, who are

particularly vulnerable to infection due to their underdeveloped immune systems. Timely vaccination is essential for protecting their health and well-being (CDC, 2025).

Despite the effectiveness of vaccines, global immunization coverage remains uneven, with significant gaps in many regions (WHO, 2020). The World Health Organization (WHO) reports a significant concern, with approximately 146 million infants and children worldwide remaining unvaccinated. The majority of these unvaccinated individuals are concentrated in ten countries, including Nigeria, highlighting the need for targeted efforts to improve vaccine access and coverage in these areas (WHO, 2020).

Nigeria has experienced a worrying decline in vaccination coverage in recent years, compromising the country's ability to control vaccine-preventable diseases. The proportion of children receiving the third dose of the pentavalent vaccine (Penta 3/DPT3), a key indicator of routine immunization performance, dropped significantly from 52% in 2014 to 33% in 2016, falling far short of the WHO-recommended target of 90% (Global Alliance for Vaccines and Immunization, 2020). In 2019, 19.7 million infants worldwide missed out on essential routine immunization services, with 60% of these unprotected children residing in ten countries, including Nigeria (WHO, 2020). Nigeria has made notable progress in vaccination coverage over the past decade, according to the 2018 National Demographic and Health Survey. The proportion of children aged 12-23 months who received all basic vaccinations increased significantly from 23% in 2008 to 31% in 2018. Additionally, the percentage of children who did not receive



any basic vaccinations decreased from 29% to 19% during the same period. While this trend indicates improvement in childhood vaccination coverage, it still falls short of the Sustainable Development Goal 3 target of achieving over 90% coverage. The vaccination coverage varies widely across states, with Anambra leading at 76% and Sokoto lagging behind at 5%, while Ebonyi State's coverage ranges between 34-48% (National Population Commission, 2019).

When it comes to childhood immunization, parents' awareness, perception and practice play an important role. However, there is a dearth of information on the specific awareness, perception and practice of parents regarding childhood immunization in Ughelli South local government area. This knowledge gap hinders the development of effective strategies to improve vaccination rates and prevent Vaccine preventable diseases.

The Conceptual framework of this study has two primary concepts that grounds the study which are "awareness and perception" and "practices related to childhood immunization." These core ideas allow us to understand the underlying themes that shape how parents engage with immunization in the Ughelli South Local Government Area.

This study draws on two key theories: the Health Belief Model (HBM) (Glanz et al., 2021) and the Theory of Planned Behavior (TPB) (Ajzen, 2020). These theories provide insight into how parents' beliefs, attitudes, social influences, and perceived barriers shape their actions concerning childhood immunization.

Ughelli South Local Government Area (LGA), situated in the western part of Delta State, Nigeria, serves as the focal point for this research. Created in 1996, Ughelli South LGA is one of the 25 LGAs

in Delta State (according to Delta state government, 1996). Geographically, it is bounded by; Ughelli North LGA to the north, Isoko North LGA to the east, Patani LGA to the south, Udu LGA to the west. With its headquarters in Otu-Jeremi, Ughelli South LGA is characterized as a rural area, with a population comprising predominantly rural dwellers engaged in agriculture, fishing, and small-scale trading (National Population Commission, 2020). The LGA covers a total area of approximately 786 square kilometers, with a diverse terrain featuring swampy and upland regions (Federal Republic of Nigeria, 2020).

METHODS

STUDY DESIGN: A cross-sectional descriptive survey was adopted and carried out in Ughelli South local government area of Delta state for this study. This is appropriate because it allows for the collection of data from a large population at one point in time, focusing on awareness, perceptions, and practices of parents who have children between the ages of 0-5years. Questionnaire were designed in English and was translated in pidgin for those that don't understand English, and data were collected between December 2024 and January 2025. The data were analyzed using SPSS (Stand for statistical product and service solutions) version 24.

STUDY POPULATION: The population of Ughelli South LGA is approximately 213,576 people (NPC, 2020). The inhabitants are predominantly, Urhobo ethnic group (60%), Isoko ethnic group (30%) and Other ethnic groups (10%) (according to Urhobo historical society, 2020).

SAMPLE SIZE CALCULATION

A sample size of 422 respondents was obtained using the Cochran's formula. The



sample size estimation formula from the projected 213,576 people (NPC, 2020).

$$n_0 = \frac{Z^2 \cdot P \cdot (1 - p)}{e^2}$$

n_0 = minimum sample size, Z = Z-value (the number of standard deviations corresponding to the desired confidence level, e.g., 1.96 for 95% confidence), p = estimated proportion of the population (if unknown, 0.5 is often used as it maximizes the sample size), e = margin of error (desired level of precision) (Singh & Masuku, 2021).

$$z = 1.96, p = 0.5, e = 0.05$$

$$n_0 = \frac{(1.96)^2 \cdot 0.5 \cdot (1 - 0.5)}{(0.05)^2}$$

$$n_0 = \frac{(3.8416) \cdot 0.5 \cdot 0.5}{0.0025}$$

$$n_0 = \frac{(3.8416) \cdot 0.5 \cdot (1 - 0.5)}{0.0025}$$

$$n_0 = \frac{0.9604}{0.0025}$$

$$n_0 = 384.16$$

Since population of 213,576 is finite, applying the finite population correction formula:

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}}$$

N = population size (213,576), n = calculated sample size for large population (384)

$$n = \frac{384}{1 + \frac{(384 - 1)}{(213,576)}}$$

$$n = \frac{384}{1 + 0.0018}$$

$$n = \frac{384}{383} (213,576)$$

$$n = \frac{384}{1 + 1.0018}$$

$$n = \frac{384}{1.0018}$$

$$n = 383.31$$

$$10\% \text{ non-response rate: } 10/100 \times 384 = 38.4 = 38$$

Therefore, the final sample size is $384 + 38 = 422$ participants.

Inclusion criteria: Study participants were parents/caregivers who have a child aged 0-5 years, reside in Ughelli South local government area, and parents willing to participate in the study

Exclusion criteria: Individuals excluded were parents/ caregivers who are not residents of Ughelli South local government area, who do not have a child aged 0-5 years, parents who are not willing to participate in the study, and parents with communication barriers, such as severe cognitive or mental health conditions, that would prevent effective participation in the study (Creswell & Creswell, 2023).

Sampling Technique: A simple random sampling technique was adopted to select the four hundred and twenty (420) respondents that constituted the sample for the study.

STUDY INSTRUMENTS

The primary instrument was a structured questionnaire divided into three sections and the statistical analysis that was used is Ordinal coding: Awareness: Questions assessing parents' knowledge about childhood immunization. Perception: Likert scale items exploring parents' views on the benefits, risks and necessity of immunization. Practice: Questions related to the immunization practices of parents (e.g., adherence to schedules, missed vaccinations). The questionnaire comprises two parts. Part 1: The socio-demographic characteristics of the parents,



and Part 2: Data on parents' Awareness, perception and practice of parents towards childhood immunization. The parents' awareness was explored with a structured questionnaire of questions, on a three-point Likert scale, ranging from "I do not know" or "No", and "Yes". For the purpose of analysis, parents who answered "No" or "I do not know" were considered an indicator of lack of awareness, and were combined and coded with a "0" score, and "Yes" answers were coded with a score of "1". A five-point Likert scale ("Strongly Agree", "Agree", "Not Sure", "Disagree", and "Strongly Disagree") were used to assess parents' perception towards childhood immunization. Strongly agree was coded (5), Agree (4), Disagree (3), Strongly disagree (2), and not sure (1). For the purpose of analysis, the "Strongly Agree" and "Agree" were combined and "Disagree" and "Strongly Disagree" were combined and "Not Sure" will stand alone. If the statement was correct, Strongly Agree and Agree were used to identify the percentage of people who have the awareness of immunization. For wrong statements, Disagree and Strongly Disagree were combined for lack of awareness. At the end, mean analysis was used to make a decision. The total score of awareness, perception and practice were ranged. The threshold median score for the questionnaire was considered 2 for awareness, 3 for perception and 2 for practice of immunization. A score of ≥ 2 was considered good awareness, ≥ 3 was considered a positive perception, and ≥ 2 for good practice, respectively.

Reliability of study instruments was tested using Cronbach's alpha to measure internal consistency. A reliability coefficient of 0.7 or above was considered acceptable. The pilot study data was also used to test the reliability of the

RESULTS

Socio-demographic characteristics of Ughelli South parents

instrument. Test-retest reliability of study questionnaires was determined.

DATA ANALYSIS

A total of 420 questionnaires were retrieved, representing a response rate of approximately 99.5% of the initial target of 422. Descriptive Statistics was used to summarize and measure the data collected from the questionnaire such as mean, and frequencies. In Inferential Statistics, Chi-square test was used to examine relationships and differences between variables. This was done to determine whether there is a significant association between parents' educational level and their awareness of childhood immunization. Furthermore, logistic regression was applied to assess the effect of various predictors, such as socioeconomic status, on the likelihood of parents vaccinating their children. SPSS version 24 was used to analyze all data including chi-square analysis of variables. Percentage was useful for summarizing and describing the frequency of responses or the distribution of categorical data.

ETHICAL CONSIDERATION

Ethical approval and clearance certificate was obtained from the Ethics and Research Committee of the Ministry of Health Delta state hospitals management board. Participants were provided with the details of the study like the purpose of the evaluation and voluntary nature of participation. Only those who provided verbal consent were recruited in the study. Confidentiality of participants were upheld to ensure that information shared did not pass on to third parties without their consent. Privacy of all participants were ensured. Data collected were anonymous..



Table 1 presents the gender distribution of respondents, revealing a significant disparity between male and female participants. Out of a total of 420 respondents, 49 (11.7%) are male, while 371 (88.3%) are female. This indicates that females constitute the overwhelming majority of the study's respondents. The cumulative percentage confirms that 100% of the respondents are accounted for, highlighting a gender imbalance in the sample population.

Demographic characteristics of Respondents

Table 1 below indicates that majority of the respondents were females (371; 88.3%), 25-34years (188;44.8), possess SSCE (156;37.1%), traders (140;33.3%).

Table 1:Socio-demographic characteristics of Ughelli South parents

	Demographic	Frequency	Percent
Gender	Male	49	11.7
	Female	371	88.3
	Total	420	100
Age	15-24 years	57	13.6
	25-34 years	188	44.8
	35-44 years	138	32.9
	45-54 years	37	8.8
	Total	420	100
Educational	No education	42	10
	FLSC	21	5
	SSCE	156	37.1
	OND	98	23.3
	HND	49	11.7
	BSC/BA	54	12.9
	Total	420	100
Occupation	Trader	140	33.3
	Business	70	16.7
	Engineer	70	16.7
	Hair dresser	47	11.2
	Teacher	47	11.2
	Others	46	11
	Total	420	100

Awareness about childhood immunization



Table 2 below shows parental awareness about childhood immunization. The majority of parents, 413 (98.3%) have heard of childhood immunization and 287 (68.3%) were aware of the recommended immunization schedule for children in Nigeria, of which 294 (70%) got information about childhood immunization form the hospital and health center.

Table 2: Awareness about childhood immunization

Awareness items	Yes	No	N/A
Have you heard of childhood immunization?	413 (98.3%)	0	7 (1.7%)
Are you aware of the recommended immunization schedule for children in Nigeria?	287 (68.3%)	126 (30%)	7 (1.7%)
Where did you get information about childhood immunization	n(%)		
Health worker	49 (11.7)		
Hospital/Health clinic	294 (70)		
School	21 (5)		
Family/Friends	42 (10)		
N/A	14 (3.3)		

Perception on childhood immunization

Table 3 below shows the parental perception about childhood immunization. The vast majority of the parents, 399 (95%) think that childhood immunization is very important and 413 (/98.3%), either strongly agreed or agreed that childhood immunization is effective in preventing diseases, while 238 (56.7%) of parents revealed that they are either very concerned or concerned about the safety of vaccines for their children. About 350 (83.3%) of parents think that vaccines should be made mandatory for all children. On the other hand, 378 (90%) of parents attest to the fact that their children have never had side effects after vaccination and 413 (98.3%) of the parents have not recorded childhood mortality due to vaccination. Meanwhile majority of the respondent 364 (86.7%) have not experienced challenges in accessing immunization services.

Table 3: Perception on childhood immunization

Perception items	Yes	No	N/A
Do you think that vaccines should be mandatory for all children?	350 (83.3%)	63 (15%)	7 (1.7%)
Have any of your children experienced side effects after vaccination?	35 (8.3%)	378 (90%)	7 (1.7%)
Have you or anyone around you recorded childhood mortality due to vaccination?	2 (0.5%)	413 (98.3%)	5 (1.2%)
Have you experienced any challenges in accessing immunization services?	35 (8.3%)	364 (86.7)	21 (5%)
Do you agree that vaccines are effective in preventing diseases?	413 (98.3%)	0(0%)	7 (1.7%)
Are you concerned about the safety of Vaccines?	238 (56.7%)	182 (43.3%)	0(0%)
Do you think childhood immunization is very important?	399 (95%)	7 (1.7%)	14 (3.3%)



Practices on childhood immunization

Table 4 below indicates that majority of parents 378 (90%) have had all their children vaccinated according to the recommended schedule and have never missed vaccination appointment. Meanwhile significant number of parents 91 (21.7%) and 98 (23.3%) respectively could remember and mention 3 or 4 type of the vaccines that their children have received. On the other hand, only 49 (11.7%) of the parents could remember and mention all the vaccines that their children have received.

Table 4: Practices on childhood immunization

Practice items	Yes n (n%)	No n (n%)	N/A n (n%)
Have you had all your children vaccinated according to the recommended schedule?	378 (90)	42 (10)	0(0)
Have you ever missed a vaccination appointment for your child?	35 (8.3)	378 (90)	7 (1.7)
Which vaccines have your children received that you can remember?		n (n%)	
BCG		21 (5)	
BCG, OPV		21 (5)	
BCG, OPV, Pentavalent		91 (21.7)	
BCG, OPV, Pentavalent, PCV		98 (23.3)	
BCG, OPV, Pentavalent, PCV, Measles		56 (13.3)	
BCG, OPV, Pentavalent, PCV, Measles, Deworming		21 (5)	
BCG, OPV, Pentavalent, PCV, Rota 1&2, Measles, Vitamin A 1&2		14 (3.3)	
BCG, OPV, PCV, Pentavalent, Measles, Rota 1&2, Yellow fever, vitamin A 1&2		14 (3.3)	
All vaccines		49 (11.7)	
N/A		35 (8.3)	

DISCUSSION

The study indicated that awareness of childhood immunization is very high, with 413 respondents (98.3%) having heard of it, and only 7 respondents (1.7%) reporting "No" or "N/A," indicating near-universal basic awareness of childhood immunization in the population sampled. Awareness of the specific recommended immunization schedule for children in Nigeria is lower, with 287 respondents (68.3%) aware and 126 respondents (30%) not aware. This indicates a gap where about one-third of the population lacks detailed knowledge of the vaccination

schedule. The majority of respondents reported receiving information about childhood immunization from hospital or health clinics (294 respondents, 70%), showing health facilities are the primary information sources. Health workers themselves directly informed 49 respondents (11.7%), while schools accounted for only 21 respondents (5%), and family/friends 42 respondents (10%), indicating that interpersonal and institutional sources both play roles but health clinics are dominant for information dissemination. A small proportion (14 respondents, 3.3%) reported no information source, possibly correlating



with those not aware of the immunization schedule.

This aligns with a community based study conducted in Illorin kwara state that found **98.0%** awareness (Ariyibi, et al., 2023). In Benin City, Edo State, **100%** of caregivers were aware of immunization; however their knowledge depth varied (Uwaibi, & Akhimienho, 2020). In illorin study, While general awareness was high, only **46.1%** of caregivers knew the age-timing or number of doses for vaccines like OPV ((Ariyibi, et al., 2023). Delta State (Ughelli North): Despite high education, **87.5%** demonstrated **poor knowledge** of the full vaccination schedule—especially beyond age two (Obohwemu, 2024). The observed ~68% schedule awareness represents a moderate level and aligns with evidence that while general awareness is high, specific schedule knowledge often remains limited, particularly for later or multi-dose vaccines.

In Illorin, health care providers were found to be the main information source (92.1%)(Ariyibi, et al., 2023). Media emerged as the main information source (77.8%), diverging from clinic-led communication in a study conducted in Benin city (Uwaibi, & Akhimienho, 2020). The finding that indicated that health facilities are the primary information channel is consistent with many studies, though media plays a stronger role in some urban/other settings (e.g., Benin City).

The findings that indicated that one-third lack knowledge of the immunization schedule, and the small percentage with **no** information source (~3.3%), resonates with broader patterns. Delta State study underscores poor schedule knowledge despite general awareness (87.5% poor knowledge (Obohwemu, 2024). A study that assessed mothers' knowledge in rural communities about routine immunization and acceptability of mobile phone

reminder text messages as an intervention for improving uptake and timely completion of routine immunization in six randomly selected states in Nigeria indicated that Quality and depth of understanding—i.e., dose timing, specific vaccines—are areas where gaps persist (Oladebo, et al., 2019), Barriers like limited understanding of schedule, misinformation, or lack of interpersonal channels can contribute to missed immunization opportunities (Oladebo, et al., 2019)

The data reflects very good general awareness of childhood immunization but reveals a substantial gap in awareness of the immunization schedule details. Health facilities and health workers are the most important sources of information for parents or caregivers about immunization. This suggests that strengthening communication about the immunization schedule, especially via clinics and health workers, could improve adherence and coverage. Community and school education may have room for growth as complementary channels for awareness raising.

This study investigated parents' perceptions of childhood immunization, encompassing their beliefs, attitudes, and concerns. Findings indicated that 95% of parents consider childhood immunization **very important**, 98.3% **agree or strongly agree** that immunization is effective in preventing disease and 83.3% of parents believe vaccines **should be mandatory** for all children. Only **8.3%** of parents reported challenges in accessing immunization services; 86.7% had no such issues. This aligns with a study a study involving 1,477 parents that found **97% agreed** with the national immunization program and **93.2% perceived vaccination as essential** for children (Nassar et al., 2023). A study conducted In Jigawa, Nigeria, also indicated that **92.8%**



of parents believed that all children should receive routine immunizations (Sabo et al., 2025). These deeply held beliefs can significantly influence parents' choices regarding vaccination (Zhang et al., 2023).

However, 56.7% (about 238 parents) expressed concern or strong concern about the safety of vaccines. The same Jigawa study reported that **70.5% perceived vaccines as unsafe**, though **85.8% were still willing** to immunize their children despite safety concerns. Globally, **11% of parents** believed childhood vaccines are less safe—highlighting varying degrees of hesitancy (Cagnotta, et al., 2025). While safety concerns are widespread, the study's figure (56.7%) is somewhat lower than the 70.5% reported in Jigawa—but still significant, aligning with broader patterns of cautious optimism (Sabo et al., 2025). In Osun State, positive perceptions correlated strongly with maternal education, ANC attendance, and facility-based delivery (Adedire, et al., 2021). While the study shows a low incidence of access difficulties, other contexts within Nigeria still highlight logistical and systemic hurdles.

On the practice of respondents, findings also indicated that 90% of parents reported that all their children were vaccinated according to the recommended schedule, and likewise, 90% had never missed a vaccination appointment. A study in Kano (Aminu Kano Teaching Hospital) found that **all respondents** were willing to accept and complete the immunization schedule, though knowledge gaps about vaccine names persisted (Aliyu et al., 2019). Another study in North-West Nigeria noted that many parents **forget to get their children immunized**, indicating missed opportunities though not quantified similarly (Bello et al., 2017). The high compliance rates align with strong willingness among caregivers, but recall and forgetfulness challenges in other areas

underscore the importance of reminders and follow-up systems.

21.7% of parents could recall and mention three vaccine types (e.g., BCG, OPV, Pentavalent); 23.3% could recall four types (adding PCV); and only 11.7% could recall *all* vaccines their children received. In Kano, study also indicated that only **11.4%** of respondents could correctly list the vaccines in the national program, with the vast majority (88.6%) unable to do so (Aliyu et al., 2019). The findings are closely aligned with these results—both show poor recall of specific vaccine names among parents, even when immunization uptake is high. This highlights persistent informational gaps.

CONCLUSION

This study reveals that the majority of parents in Ughelli South local government area have awareness of childhood immunization. It also reveals that there is significant association between educational qualification and immunization awareness, suggesting that higher education levels are positively correlated with greater awareness.

STRENGTH OF THE STUDY

This study's findings can inform the development of targeted interventions, education programs, and policies to improve childhood immunization rates in the area. Also, focusing on Ughelli South LGA of Delta state will allow for a targeted and in-depth examination of the issues, making the findings more relevant and applicable to the local context. Additionally, the study can contribute to the existing body of knowledge on childhood immunization, particularly in Nigeria, and provide insights into the cultural, social, and economic factors influencing parents' decisions.



LIMITATION OF THE STUDY

This study is limited to Ughelli South LGA of Delta state, which may not be representative of other areas in Nigeria. This study is limited by the sampling method used, which may not ensure a representative sample of all parents in the study area. This study is limited by time constraints, which may not allow for an exhaustive examination of the research topic.

RECOMMENDATIONS

Develop and Implement Effective Communication Strategies: Healthcare providers should educate parents more on the benefits and risks of immunization, addressing their concerns and misconceptions and learn to talk to parents politely and with respect.

Strengthen Immunization Services: Government should ensure that immunization services are accessible, affordable, and of high quality, with

adequate vaccine supply and employ more trained healthcare workers.

Establish Community-Based Outreach Programs: Government should implement outreach programs to reach remote or hard-to-reach areas, ensuring that all children have access to immunization services.

Awareness: Government should ensure that more awareness are carried out through TV, radio, social media etc. They should also implement more ways to give reminders to parents for their next immunization visits, such as sending emails and text messages.

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CONFLICT OF INTEREST: There is no conflict of interest

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