

# Factors Influencing Infant Immunization Uptake in the Yoruba Community of Southwestern Nigeria

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## Abstract

**Background:** The recurrent incidence of immunizable diseases is an indication that the current immunization campaign is failing. This paper, therefore, examined the factors affecting the use of immunization and how Yoruba parents perceive immunization in the relation to beliefs and practices about child protection.

**Methods:** A variety of qualitative methods of data collection were used to obtain information in two Yoruba communities (Moniya and Onidudu). Eight (8) Focus Group Discussions (FGDs) and 10 Key Informants Interviews (KIIs) were conducted, while special cases were observed during the study using unstructured observation technique. Content analytical approach was adopted to explain the data.

**Results:** Data showed that though there was high patronage of immunization services, some mothers still defaulted because of delay in vaccine supply, clashes of immunization days with the economic activities of mothers, especially the market days, and the negative attitude of some clinic staff members. Perceived side effect of vaccine did not have strong negative influence on the patronage of immunization. Mothers reported that delay occurred as a result of time it takes to receive immunization supplies from the central store in Ibadan and lack of assurance of getting supply at all.

**Conclusion:** It is, therefore, concluded that attitude towards immunization uptake has improved tremendously with high demand for it over the years when data were compared with the earlier findings in the same study location a decade ago. However, this enthusiasm was still being discouraged by supply-related factors. Hence, it is recommended that sustainable cold chain system should be maintained in the local communities, using freezers powered by solar energy. Also, public engagement is necessary to address the need of the mothers. Finally, there is need to train the clinic staff in clinical ethics to be able to relate well with patients.

**Keywords:** Infant; Vaccination; Immunization; Community; Health technology of clinic staff on vaccination patronage. The paper finally makes conclusion and recommendations.

## Introduction

The recurrent vaccination preventable diseases in Nigeria are public health challenge despite all attempts to address the situation [1]. Efforts at improving immunization uptake dated back to the establishment of the Expanded Programme of Immunization (EPI) in 1979. The programme transformed to National Programme on Immunization (NPI) in 1997. It was charged with the responsibility of controlling preventable diseases through immunization by the end of 2005. Despite this effort, this goal is yet to be realized due to many setbacks.

The challenges facing immunization coverage, coupled with a dramatic resurgence of preventable diseases, suggested that current strategies are failing [2]. For instance, recent data indicate incidence of polio in some states of the country, and this has introduced some elements of skepticism that the campaign is effective [2]. Supply of vaccine has been the main reason attributed by policy documents to the problem of low vaccination in Nigeria. Also, problems of finance, procurement, cold chain maintenance and weak or collapsed primary health care system were indicated in the reports [3]. Demand for vaccination was considered to be mere knowledge and education issues [4-6]. In fact, vaccination demand is often reduced to narrow issues of knowledge and education while neglecting the role of culture of the people. What is actually Lack of in-depth understanding of the role of cultural practices about use or non-use of vaccine was a major gap in knowledge. There was poor understanding of how culture influences how people relate to vaccine delivery. Therefore, the study attempted to fill the gap in south western Nigeria by examining reasons for use and non-use of vaccination services. It discusses the nature of demand for immunization in the study area, immunization as social event, reasons for non-attendance at vaccination clinics and the effect of the attitude

## Methodology

The study employed an anthropological method of data collection about current demand and acceptance of vaccination and how people relate to delivery of services [7]. Specifically, it examined cultural beliefs, concepts and use of child vaccination services.

As described in an earlier paper, the anthropological research on which this paper is based focused on two contrasting sites of Moniya and Onidudu Yoruba speaking communities of Oyo State in the southwestern part of Nigeria [8]. Moniya is a peri-urban area with a fast growing population and relatively strong infrastructure, while Onidudu is a rural community about five kilometers away from Moniya with comparative serenity, but it lacks basic infrastructure. The reason for choosing Moniya was to understand how immunization was affected by cultural changes linked to urbanization. The two sites are within the areas covered by the authors' on-going and past health research activities: The principal researcher conducted his PhD thesis research on immunization in the area in 1993 [9] and has maintained a research link with the setting since then. The present study provided

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an opportunity to follow up on specific issues explored in 1993, and to know whether, they had changed, some decades later.

Detailed narrative interviews in form of vaccination and research engagement 'biographies' were conducted in the study areas revealing mothers' experiences with each child. The interview was, open ended and it therefore enabled the researchers to probe for further clarifications and discussions of issues considered important to them. Eight (8) Focus Group Discussions (FGDs) held with men and women grouped by age categories. The FGDs were held separately with men and women groups. Also, 10 Key Informants Interviews (KIIs) were conducted with traditional healers, traditional birth attendants, health workers, community leaders, religious leaders, adult men and women. The FGDs were complemented by unstructured observation to explore issues surrounding infant health and the social dynamics shaping health practices.

Existing studies of mothers' engagement with vaccination in the study area have been based mainly on questionnaire surveys [9-12]. In contrast, this study's ethnographic approach helps to consider how people's engagement with vaccination unfolds, and how this is linked to broader contexts of infant care and of people's social worlds.

During this research, conducted over a short period, it was difficult to have direct observation of mothers' interactions with immunization services. That clearly placed limitations on the ability of the study to describe delivery and uptake practices. Rather, the focus was on representations of these practices as given in the narratives of both 'frontline' health workers (for instance, nurses) and community members.

The field assistants reported on daily basis to the researchers. We discussed issues arising from the field and technical support in difficult areas. The Research Assistants (RAs) were trained to moderate the discussion sessions. In most cases, the moderators and note-takers were familiar with the cluster of the study areas assigned to them. The discussions were conducted in the Yoruba Language spoken by the interviewees. This gave the participants equal opportunity to express themselves freely in their own language. Data collection lasted 10 days. Although Interviewers visited some respondents more than once before they could conclude their interview, majority of the respondents (90.0%) were interviewed during the first visit, while 5.0% and another 5.0% were conducted during 2nd and 3rd return visits respectively.

All data collected were stored in notebooks and scrutinized before storage into a computer. The RAs were monitored on the field, while data collected were checked on daily basis by the researchers. All data received were kept strictly confidential. To protect the confidentiality of the respondents, codes were used for questionnaire and interview sheets. Only the Investigators had access to the complete data set that contained the names of respondents. Confidential information relating to their health status and medical records were not released to anyone except members of the research group or those professionals who must provide them essential medical care. No information from the study was communicated or discussed with any spouse or partner of the respondents. For proper handling of qualitative data received, all tapes were reviewed at the end of each session to ensure that the recording was good. Notes taken were also reviewed by going through some of the questions randomly with the respondents or participants after every interview and focus group discussion to ensure that correct responses were recorded. Each review exercise lasted about five minutes. All tapes were transcribed verbatim. To check for validity of transcription, 5% of the tapes were re-transcribed by another person to ascertain the accuracy of the information recorded.

Data collected were transcribed from tapes and entered into computer, using the word-pad software before transferring them into texts. Responses were tagged and coded subject to similarities. After coding, data were analyzed using the open code software. Content analytical approach was adopted to explain the data. Those who collected the data from the field participated in the review of the data before the commencement of analysis and report writing.

The paper first explored how Yoruba mothers reflected on immunization in the context of broader beliefs and practices around protecting the health of their children. It then examined the concepts of immunization and immunity. These concepts and beliefs, it is shown, underlie strong demand for immunization. However, as the findings show, some people have anxiety about immunization, while there are some mothers who, despite this demand, did not attend vaccination clinics for practical reasons. The paper went on to examine people's interactions with immunization services.

## Results

### Concept of immunization

Immunization as a health technology is central to child-health care practices in the study communities. For them, it simply meant "protection". Various everyday child-care practices by themselves were seen as ways of protecting children against childhood diseases. However, formal methods of protection also exist and are widely used. Although there are some rural-urban differences in the perception of immunization, it was commonly viewed as a source of strength. For them, immunization strengthened the child and prevented diseases as indicated by eight out of the 10 uneducated women focus group discussion participants in Moniya. A common concept of immunization as preventive measure in the study communities is "ajesara", which literally means "something absorbed into the body". Absorption is not the key issue as this happens frequently with other substances, such as food nutrients. Rather, the emphasis is on things of a peculiar content or properties made specifically to prevent diseases. The prevention of diseases through absorption of certain properties may happen in different ways. First, the substances may be taken orally, like Oral Polio Vaccine (OPV). The administration of OPV was described as "atola". "Ato" means "droplet" and "la" means "licking". Droplet in this sense explains issues of volume and size, referring to a minute volume of liquid at a point in time. The perception that this small volume prevents disease runs contrary to Yoruba's view about volume and efficacy in other contexts. For example, the Yoruba will say "a kii wa l'odo ki a fi ito san owo", which literally means 'one does not use saliva to wash hands at the river bank'. This implies that one should not suffer in the midst of plenty. Equally, licking (la) was viewed differently from drinking or eating, involving a much slower digestive process. This means that whatever is licked may take some time to be absorbed. The two morphemes, combined together, suggest that "droplets" might be ineffective. This probably explains parents' preference for alternative preventive care.

Nevertheless, in the case of oral polio vaccine, everyone agreed that despite the small volume and the licking, it was efficacious as indicated by all the 10 uneducated elderly women focus group discussion participants in Moniya, saying "it is very effective! It ensures growth". Even all the 10 elderly men focus group discussion participants agreed that immunization was good, thus supporting the view that people should take the droplets. This is contrary to a Yoruba adage "opo oro ko kun agbon", which literally means "many words do not fill a basket". This shows that changes are taking place in Yoruba worldview and perception of health technologies, such as immunization.

Also, immunization is defined as “*abere iwosan*”, literally meaning ‘*healing injection*’. The word “*injection*” is central to all drugs administered using syringes and needles in health-care delivery in the study areas. This is likely to cause confusion between vaccines administered through intra-dermal process and curative medicine administered through the same process. Therefore, referring to immunization as “*abere ajesara*”, or injection absorbed into the body, provides a different layer of meaning distinct from the utilization of services for “*iwosan*”, meaning ‘*healing*’. This is also different from the common concept of “*abere ilera*”, literally meaning “*health promoting injection*.” Another concept used by respondents is “*abere agbomola*”, literally meaning “*injection that saves children*.” For them, certain injections were capable of promoting the health of children. Hence, all types of vaccination are simply described as “*protective injections*.”

### The nature of demand and anxieties about immunization

In view of the preceding discussion, how should the nature of immunization demand in the study areas be described? Data from this study support Jegede’s conclusion [9] that mothers have adequate knowledge of immunization due to the public enlightenment programme in the area. The present study confirms those findings and emphasizes further that health education neutralizes the effects of formal education on immunization demand [13]. Through experience, too, immunization has demonstrated the efficacy of child protection against diseases, as indicated by all the ten women participants in the focus group discussion in Moniya, saying “*Immunization has reduced infant death to the extent that names such as “Kokumo” are no more on Yoruba list of names again.*” Current views therefore exemplify “active demand” as observed in the existing literature on immunization (For example [14]). Secondly, the research suggests that clinic attendance is also a matter of “routine” or “community demand”, as a phenomenon that has now become a normal part of child care, and with visits to vaccination centers having become a social event.

Despite this strong active and social demand for immunization, parents sometimes express worries about it. This focuses on two issues: the perceived objective of immunization and perceived side effects. For some, immunization is perceived as a means of “*fertility control*.” For instance, an illiterate man in Moniya stated that “*people do carry rumour that immunization is a secret way of controlling population*”. Another illiterate man in Onidudu said: “*I hear people saying that immunization is another method of birth control, but I don’t know how far that may be true*”. This is similar to the finding in an earlier study in the northern part of Nigeria and to current rumours in that region. It suggests that rumours about immunization still go around and are relevant throughout Nigeria, not just in the north.

On perceived side-effects, 75.0% of all women participants in the focus group discussion were quick to mention “*swelling at the point of the injection*”, while others emphasized “*body temperature*.” Corroborating this fact, a nurse explained how they responded to mothers’ complaints about such reactions, saying that “*immediately a child is immunized, we usually tell the mothers to rub the point of injection where needle entered the body very well especially when the baby takes DPT because it combats three diseases together*”. She stated further that “*after being immunized, the baby would start running temperature. As a result, mothers were always advised to give their children paracetamol to help relieve the associated pains*”. She also explained that when a mother failed to rub the point of injection, it would swell up, but “*we usually advised them to put ice block on it to reduce the pain and the swell*.” The nurse thus affirmed the views expressed by majority of the mothers about the side-effects of immunization. In the perspective of the nurses, the side-effects were normal, but for the mothers, they were worrisome.

Indeed, over the years, fear of side effects has been a major contributory factor responsible for non-use of medical technologies. In an earlier study [9], the majority of respondents reported fear of side effects as a reason why they did not allow their children to be immunized. The present study, a little over a decade later, also found traces of such bias against immunization, but with variation between urban and rural settings. Thus, in the rural areas, rumors about serious side effects influenced attitude towards immunization. For instance, in Onidudu, the entire male and all the female focus group discussion participants had heard of one rumor or the other about immunization. The situation was different in the urban area where participants said that the side effect was not enough reason for refusing to immunize a child. This suggests that in the urban setting, people used immunization regardless of the negative rumors about it. However, some factors, such as immunization as social event, non-attendance at vaccination clinics and attitude of clinic staff, may influence the use of immunization services.

### Immunization as a social event

A visit to an immunization assembly point is usually an event associated with group movement, singing and dancing and social networking. Nursing mothers engage in group visits to immunization centers as they sometimes come in company of those living in the same neighborhood, or with friends. Sometimes, it involves those who give birth to babies in the same place at the same time. This behavior promotes compliance, since mothers tend to remind one another about the need to go for immunization, while everyone sees it as an opportunity for relaxation and an outing. Women dress themselves and their babies in their best clothes, suggesting a degree of competitive behavior amongst mothers, as well as an attempt to demonstrate to the nurses how well they comply with clinic instructions about hygiene.

Singing and dancing at immunization centers stimulate the interest of nursing mothers’ attendance as a social event. Even some who may have defaulted on immunizations continue to come to the clinic as an occasion for relaxation. This suggests that not only do the singing and dancing prepare the women for the vaccination while the procedure is being prepared; it also promotes demand for it. For 25.0% of the women participants in the focus group discussion, the social aspect is a waste of time. But 75.0% of the women in the focus group discussion indicated that they enjoyed the social component of the vaccination exercise.

For men, the situation was a bit different. They claimed ignorance of what happened at the clinic. However, immunization events also promote social networking among married men. Sometimes, a husband may contact a neighbor whose wife has been going for immunization, and inquire about his experience. This, most of the time, creates a type of relationship based on a common interest.

Social networking is another important feature of visits to immunization centers. Some women indicated that they made new friends at the centers. At Onidudu, a literate young woman said: “*it is a place for making new friends. This is a small community; people going for immunization know one another*”. Similarly at Moniya, an illiterate young woman stated: “*it helps people to make new friends*”. This may in turn lead to mutual assistance. For example, a literate woman in Moniya explained: “*sometimes people engage in common spending especially when they board same public transport*”. This suggests that those who could have defaulted on the basis of transport fare may receive assistance from co-nursing mothers, whom they know at immunization centers, but are not necessarily their close friends.



Mother-in-law/daughter-in-law relationship sometimes comes to the fore in visits to immunization centers, especially for the first three vaccinations. It is a common practice in the study area for mothers-in-law to assist their daughters-in-law in carrying out domestic chores immediately after delivery. Most young women having their first children have their mothers-in-law carrying their babies, during their visits to the immunization centers. Sometimes, the mothers-in-law remind their daughters-in-law about the schedules of immunization. Mothers-in-law play important roles in household decision-making in the study areas; sometimes, they were able to influence their sons. Therefore, acceptance of immunization by mothers-in-law is likely to help create good demand for it.

### Reasons for non-attendance at vaccination clinics

The research explored the reasons why some mothers did not attend vaccination clinics, since no action can be understood without its latent meaning. Generally, women in the study area knew the importance of immunization, but they were constrained by certain factors, which made them sometimes miss immunization schedules. Mothers who did not usually attend vaccination clinics could be categorized into the following groups: those who travelled often; those who forgot immunization days; those whose schedules were, and those who needed the permission of their husbands. Of the 80 focus group participants, 25.0% (20) complained that they did not attend clinics for four different reasons. First, seven of the non-attendees at vaccination clinics were itinerant traders who shuttled between Ibadan city, about 20 km away, and their communities, engaging in long-distance trading. They were not against immunization, but they often claimed to have forgotten their child's immunization card at home. Second, there were four of them who forgot the date when their children were due for their next immunization. This was particularly common among illiterate mothers in Onidudu. For them, reminder was important; yet that was not available. Third, six of the non-attendees at vaccination clinics experienced tight economic schedules, many being petty traders. According to a respondent, *"I sometimes miss the appointment for immunization because of my trade. Occasionally, I find it difficult to leave the market, especially on market days."* Finally, three women said that they needed to take permission from their husbands as earlier observed [9], and as a result failed to comply with immunization schedules.

### Attitude of clinic staff on vaccination patronage

One of the major factors contributing to the low patronage of immunization services in the past was the attitude of the clinic staff [9]. In this study, we examined this in order to assess the extent to which staff's attitudes have changed over the years. The present study revealed that community members then had different views about staff. Staff/mother relationship had changed in a positive direction, so that it then contributes to the demand for immunization. It appears that both experiences with routine immunization and public enlightenment programmes had contributed to these improvements as indicated by a literate young woman in Moniya, saying: *"Before the enlightenment campaign, many people were ignorant about immunization. But with the ongoing enlightenment campaign, people have better understanding of it"*.

However, clinic staff sometimes behaved in ways that made mothers feel discouraged about coming for immunization. Such behavior often reflects aspects of the immunization supply process that is opaque to mothers. For instance, mothers complained that clinic staff was rude and that they did not treat them with respect. Also, they did not come to the clinic promptly on many occasions. This sometimes prolongs the

waiting period in the clinic, and when they eventually come, they never apologize. In reality, those staff may be in the process of procuring vaccines from a distant location in Ibadan city, which can take an hour or more, depending on traffic flow. Nevertheless, many of the mothers understood the delay and concluded: *"all things work for the good of their children"*. However, due to public enlightenment programmes about immunization, parents increasingly see it as government responsibility, shifting perceived responsibility from clinic staff to the government. The implication of this is reducing the level of community participation in vaccination delivery.

The issue of community participation is central to the acceptance of any new technology or innovation. This research suggests that, currently, immunization is less a community-centered event than one 'of the clinic'. Some respondents were of the opinion that this should change, and that immunization scheduling should be initiated by communities.

Men had no problem with clinic staff since they had no direct interaction with them. Nevertheless, they seemed to form opinions based on reports from their wives, and thus 25% of the male participants in the focus group discussion had negative perception of clinic staff. For instance, clinic staff were said to rebuke mothers publicly for coming late or not coming, or for forgetting vaccination cards at home. Mothers complained that clinic staff attended to persons they were familiar with first and disrupted the "first-come-first-served" principle which used to guide their service. In general, such negative attitudes are limited and do not really affect demand for immunization services, outweighed as they are by the perceived benefit of immunization. Therefore, it can be said that perception of clinic staff no longer had negative effects on demand for immunization services in the study areas.

### Discussion

In this study, vaccination was defined in two ways. First, it was viewed as an injection for preventing diseases, and second, it was considered as treatment enhancement procedure. It has been argued that the way a people perceive a particular phenomenon will determine their attitude towards it [15-20]. Hence, the perceived meanings of immunization influenced receptivity to vaccination, as those who view it as disease prevention technique used it for that purpose, and those who considered it as treatment enhancement procedure behave as such.

Furthermore, the study showed that there was strong social demand and culturally-grounded active demand for immunization in this part of Nigeria contrary to the earlier findings of low use of immunization services in the study area [9,21]. Nevertheless, there were some mothers who defaulted. It was not that defaulters did not accept vaccination; rather, most of them started the use of the technology but dropped out for some reasons, whether due to time constraints, forgetting appointments, travelled, economic activities or gender dynamics. These factors thus played significant roles in the immunization uptake. Earlier data in the study area also highlighted these problems [9], suggesting that the problems still persisted even a decade later. Studies from other parts of the world have also emerged with similar findings [22,23]. This suggests that common factors affect immunization uptake worldwide with the exception of some cultural practices localized to specific environment which may complicate the process of resolving the problems [24].

However, the social aspect of the immunization exercise plays a significant role in motivating mothers to attend regularly. This is because those who could have forgotten the schedules were reminded by their friends and neighbours. Ordinarily, human beings have the

tendency of group behaviour. This aspect of the exercise produced a kind of group behaviour and commonality among the women, thereby bridging the gulf of social distance between them. As a result, they tended to encourage one another and share experiences.

Community members viewed immunization as generally good, with many denying the existence of any side effects. This is an improvement over the earlier findings in the study area [9] and elsewhere [22,23]. Previous data from the study area showed that immunization was perceived as having side-effects, and as a result, many mothers did not want to vaccinate their children. In fact, recent studies still emphasize the negative role of perceived side effects of vaccines on immunization uptake [25,26]. However, some people observed negative side-effects, such as swelling and fever - reactions confirmed by health workers as common - but these side effects barely hinder demand for immunization, since mothers are now taught how to treat them. This is similar to the data from other parts of the world where perception of side effects of vaccine plays a significant role in the patronage of immunization services [25]. At the same time, however, rumors circulated that immunization inhibited fertility, while some people viewed it as a method of family planning. Although mothers were sometimes displeased with the attitudes of staff, this was generally outweighed by their perception of the positive benefits of immunization for their children.

## Conclusion

In summary, the study discovered that although high patronage of immunization services existed in the study area, some mothers still did not attend vaccination centers because of delay in vaccine supply, clashes of immunization days with their economic activities, especially the market days, and the negative attitude of some clinic staff. Perceived side-effects of vaccine did not have strong negative influence on patronage of immunization. Nevertheless, mothers' recurring experiences of delay due to the length of time it took to get immunization supplies from Ibadan cold chain store, and uncertainty of those supplies, perception of vaccination, and the role of the significant others like the mother-in-law and husbands and immunization schedules might increase the rate non-attendance at vaccination clinics which might lead to declining vaccination rate. The consequence of this is very crucial because declining vaccination rates have been associated with outbreaks of preventable diseases, especially measles and polio, in many places [26]. Therefore, there is a need to supplement an understanding of demand-supply dynamics with efforts to address problems associated with vaccine supply and its links with the wider context of primary health-care financing and delivery in Nigeria. To address the problem of supply of vaccine, government should establish sustainable cold chain facility in the local communities. For instance, solar-energy powered freezers will be appropriate in such communities. Clinic staff should be trained in ethical conduct of health-care delivery to enhance their relationship with mothers. Public engagement strategy will be necessary to tackle the problem of clashes between immunization schedules and mothers' personal programmes. This will help to produce immunization schedules acceptable to both the clinic staff and the mothers. Finally, there is need to train the clinic staff in clinical ethics to be able to relate well with patients.

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