

Individual Factors Influencing Vaccine Hesitancy Among Parents At Sokoto Metropolis, Nigeria

¹Yusuf H. A., ²Naab F. and ²Asedua E.

¹School of Post Basic Paediatric Nursing, Usmanu Dan Fodiyo University Teaching Hospital, Sokoto; ²School of Nursing and midwifery, University of Ghana, Legon.

Corresponding author:

Yusuf H. A., School of Post Basic Paediatric Nursing, Usmanu Dan Fodiyo University Teaching Hospital, Sokoto

Email:

habeeb.yusufarg@gmail.com

Abstract

Background: Vaccine hesitancy has become a global public health concern, impacting vaccination coverage and potentially resurgent disease outbreaks. Understanding the roots of this hesitancy, especially among parents, is crucial for targeted interventions. This study explored individual determinants of vaccine hesitancy among parents in Sokoto metropolis, Nigeria.

Methods: A mixed-methods research design was employed, combining qualitative interviews with quantitative surveys among a representative sample of parents in the Sokoto metropolis. Factors explored included past vaccination experiences, interpersonal dynamics with healthcare workers and government officials, and the perceived risk-benefit analysis of vaccinations.

Results: Three core themes emerged: 1. Previous negative vaccination experiences were a prominent reason for hesitancy. Parents with such histories were more likely to refuse vaccines for their children; 2. Interactions between parents and vaccination providers were crucial. Misunderstandings or perceived threats from healthcare or government officials led to increased hesitancy. Conversely, positive interpersonal relationships promoted vaccine acceptance; 3. Parents' internal risk-benefit assessment played a decisive role. Those who perceived higher risks than benefits were more hesitant, even in the face of established scientific evidence supporting vaccination.

Conclusion: Vaccine hesitancy among parents in Sokoto is influenced by a complex interplay of personal experiences, interpersonal relationships, and risk-benefit perceptions. Addressing this requires multifaceted strategies that are both empathetic to parental concerns and rooted in evidence-based practices.

Keywords: Vaccine hesitancy, Sokoto metropolis, interpersonal dynamics, risk-benefit assessment, parental perceptions.

Introduction

Vaccine hesitancy, an evolving concern, is marked by the delay in acceptance or refusal of vaccines despite availability of vaccination services[1]. Globally, it contributes to suboptimal vaccination coverage, increasing the risk of disease outbreaks[2]. For instance, in the United States, outbreaks of some

childhood diseases were significantly linked to unvaccinated children[3], while in the UK, hesitancy among parents correlated with refusal of the influenza vaccine[4]. Misinformation, especially from traditional and newer media sources, has been identified as a significant influencer of vaccine hesitancy in countries like Italy[5] and Romania[6].

In the African context, a variety of factors, including mistrust in vaccine efficacy and alternative belief models, contribute to vaccine hesitancy[7]. Such hesitancy is complex and multidimensional, encompassing personal experiences, feelings, knowledge sources, risk perceptions, and trust[8]. Particularly in Nigeria's Sokoto Metropolis, understanding these individual factors is crucial. This study aims to shed light on the specific reasons parents in Sokoto Metropolis may be hesitant to vaccinate their children and how these factors compare to global trends.

Methods

Design and Approach

A mixed-methods research design was employed, combining qualitative interviews with quantitative surveys among a representative sample of parents in the Sokoto metropolis. An exploratory descriptive design was employed to study individuals within the Sokoto Metropolis. Variables explored included past vaccination experiences, interpersonal dynamics with healthcare workers and government officials, and the perceived risk-benefit analysis of vaccinations. This approach was deemed suitable due to the limited academic discourse on the specific factors influencing

vaccine hesitancy in the region. The study aimed to identify individual factors based on participants' responses and behaviors.

Study Setting

Sokoto, located in the northwest zone of Nigeria, is known for its historical and cultural significance, especially in Islamic learning. With a population of approximately 3.7 million in the metropolis, the region is predominantly inhabited by the Hausa-Fulani ethnic group, primarily involved in farming and cattle rearing[9].

Sampling Technique and Size

A purposive sampling technique was adopted, targeting parents in the Sokoto Metropolis showing vaccine hesitancy. The initial aim was to interview 25 parents, but only 17 participated.

Tool for Data Collection and Ethics

The primary tool for data collection was an interview guide, structured to extract relevant information aligned with the study's objectives. Demographic data were also collected with a structured questionnaire that obtains participants' sociodemographic information, including age, gender, marital status, religious affiliation, tribe, educational

level, number of children, and employment status.

Upon receiving ethical clearance, the researcher approached local authorities to identify vaccine-hesitant parents. Each participant was informed of the study's purpose and given the choice to participate. Interviews were scheduled at their convenience.

Data Collection Procedure

Upon agreement, each participant received an information sheet outlining the study's objectives and confidentiality measures. Consent forms were provided, and the interviews were audio-recorded, ranging between 25 to 35 minutes.

Inclusion and Exclusion Criteria

The study included parents with children under five, showing vaccine hesitancy, residing in Sokoto, and speaking Hausa or English. Exclusion criteria encompassed parents not vaccinating due to medical reasons or unwilling to participate.

Data Analysis

Data analysis was concurrent with collection. Thematic content analysis was utilized to identify common themes from the interview transcripts[10]. Multiple readings of the

transcripts facilitated the identification of patterns, concepts, and notions.

Results

Sociodemographic Variables of Participants

A total of 17 participants from Sokoto Metropolis, Nigeria, were recruited for the study. The sample comprised 15 males and 2 females, with ages ranging from 25 to 57 years. All participants were affiliated with the Islamic religion and spoke Hausa as their mother tongue (See Table 1).

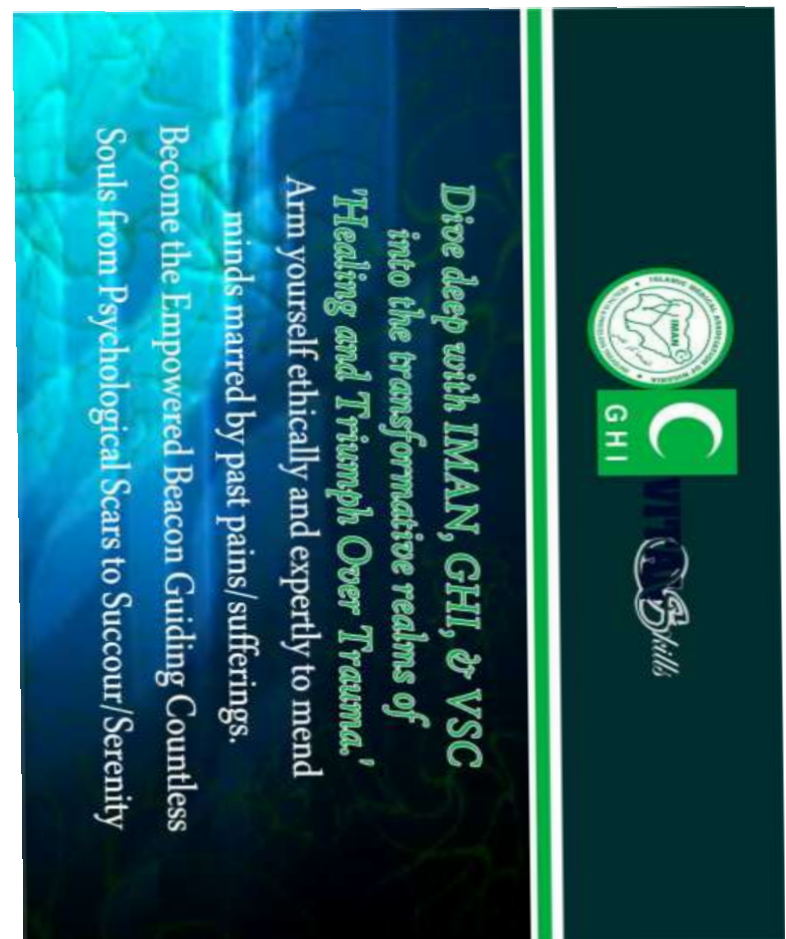


TABLE: 1 DEMOGRAPHIC CHARACTERISTICS OF THE PARTICIPANTS

S/N	FICTITIOUS NAME	GENDER	AGE	MARRIETAL STATUS	RELIGION	TRIBE	EDUCATIONAL LEVEL	NUMBER OF CHILDREN	EMPLOYMENT STATUS
1	BALA	MALE	57	MARRIED	ISLAM	HAUSA	N.C.E	7	CILVIL SERVANT
2	BASHARI	MALE	45	MARRIED	ISLAM	HAUSA	S.H.S	7	SELF-EMPLOYED
3	BUBA	MALE	42	MARRIED	ISLAM	HAUSA	S.H.S	6	SELF-EMPLOYED
4	COACH	MALE	40	MARRIED	ISLAM	HAUSA	N.D	1	CIVIL SERVANT
5	DAUDA	MALE	39	MARRIED	ISLAM	HAUSA	NURSING CERTIFICATE	2	CIVIL SERVANT
6	GARBA	MALE	-	MARRIED	ISLAM	HAUSA	NONFORMAL EDUCATION	4	SELF-EMPLOYED
7	HABIBA	FEMALE	25	MARRIED	ISLAM	HAUSA	S.H.S	5	SELF-EMPLOYED
8	HASSAN	MALE	38	MARRIED	ISLAM	HAUSA	N.C.E, Bed	8	CIVIL SERVANT
9	ILYA	MALE	45	MARRIED	ISLAM	HAUSA	Bed	3	CIVIL SERVANT
10	JARI	MALE	52	MARRIED	ISLAM	HAUSA	Bed	8	CIVIL SERVANT
11	JOSEPHINE	FEMALE	28	MARRIED	ISLAM	HAUSA	S.H.S	6	SELF-EMPLOYED
12	MUSA	MALE	42	MARRIED	ISLAM	HAUSA	PRIMARY SCH.	3	SELF-EMPLOYED
13	SANS	MALE	36	MARRIED	ISLAM	HAUSA	BNSC,PGDE	3	CIVIL SERVANT
14	SHAMSU	MALE	-	MARRIED	ISLAM	HAUSA	NONFORMAL	8	SELF-EMPLOYED
15	SOLOMON	MALE	-	MARRIED	ISLAM	HAUSA	N.C.E, Bed	4	CIVIL SERVANT
16	USMAN	MALE	41	MARRIED	ISLAM	HAUSA	N.D	3	SELF-EMPLOYED
17	YUSUF	MALE	37	MARRIED	ISLAM	HAUSA	BNSC	2	CIVIL SERVANT

Theme and Subtheme Data Analysis

Participants' experiences and perceptions related to vaccine hesitancy were categorized into three main subthemes: experience with past vaccination, personal experiences with vaccine hesitancy, and personal views on vaccine risk and benefits (See Table 2). Data was qualitatively analyzed using thematic analysis.

Table 2: Theme AND Subthemes

Main Theme	Subthemes
Individual factors of vaccine hesitancy	<ul style="list-style-type: none"> • Experience with past vaccination. • Personal experience with vaccine hesitancy. • Personal Risk/benefit.

Detailed personal experiences and opinions regarding vaccine hesitancy among parents were presented according to the identified subthemes. Each subtheme was supported with direct quotes from the participants to provide a deeper understanding of the reasons behind vaccine hesitancy in the context of Sokoto Metropolis, Nigeria. These are explored below:

Experience with past vaccination:

Previously deleterious or encouraging familiarity with a specific vaccine may impact refusal or readiness to vaccinate. Some parents refused vaccines for their children because of fatal experiences they had. Hassan, a 38 years old cement dealer shared his experience as:

My girl child that was also immunized died just few hours after vaccination. Immediately after we came back from the hospital for immunization, she began to hiccup and within three hours she was called to glory.

A 40 years old electrician refused vaccines for his children when he observed that, his first child that was immunized suffered from a lot diseases especially whooping cough which cost him a lot of money to treat:

I used to vaccinate my first child and unfortunately, she was the one that seriously suffered whooping cough. The other one that had never receive vaccine is healthier active and good looking...she frequently fell sick. I spent approximately twenty thousand naira for her drugs that is why I would not accept vaccine again (GARBA).

Similarly, some parents refused vaccines due to what they have seen in some children who were vaccinated in their family.

...someone child from my family was immunized on the thigh and almost lost the leg because the injection spoilt his leg, it was by Allah's grace the leg healed. The child suffered a lot, since then his father said that he would never agree allow his children to receive any immunization (COACH).

Personal experience with vaccine hesitancy

Some parents usually have issues with health care workers that are providing vaccination services or government officials who are trying to intimidate them if they dare resist to allow their children for vaccination. This further irritate parents in the sokoto metropolis to refused vaccines for their children. In this regard, some parents had this to say:

The children are mine; I therefore have power upon them... A stranger or any government official has no right over my children' (BUBA).

...sometimes the officials will come to my house and asked why we don't allow our children to receive vaccines? Then I tell them that it was their father's instruction and there is nothing we can do' (JOSEPHINE).

There was a time when they came to immunize our children and we resisted, then we were reported to our district head that we

refuse vaccines for our children. The district head now came down to our area and persuaded us to allow our children to received vaccines, ... He further said that if we refused, he would invite police to arrest us so that we tell them our reasons why we refused vaccines for our children...(SHAMSU).

Personal risk/benefits

This has to do with merits or demerit of vaccination that an individual parent has seen before, which can provoke hesitancy or facilitate acceptance of vaccines for his/her children. Some parents refused their children to be vaccinated because of the risk involved. The following quotes indicates that, some parents are refusing vaccine for their children due to the menace it causes.

If a healthy child is immunized, he will become very sick like a very serious fever. So very high fever is one of the problem and is very common to all children who are immunized. And nobody want to expose her healthy children to danger in the name of prevention (HABIBA).

Whenever they come back, (from the hospital for immunization) I pity the baby. You see the body become hot and then throughout the day they are weak, they cannot even take breast

very well, they spend almost twenty-four hours like that, helpless, with weakness, and their body becomes hot (BASHARI).

The virus is most dangerous microorganism in the life, in the human body, if injected into the body, it will gradually germinate in the body and boost at once to destroy (kill) person (SANS).

However, some parents indicated that, vaccine has a lot of benefits to the children, ranging from disease prevention to reducing the effects of disease. Their words are as follows:

Vaccine reduces the strength diseases if a child is affected. Because even if the child is infected with those diseases, it will be mild (ILYA).

Those that vaccinate their children will tell you that, their children may hardly fall sick, and even if they become sick it will be minor sickness, they will not suffer too much which means that the vaccine is protecting their children (JOSEPHINE).

When you are being vaccinated, vaccine would stimulate your immune system to fight against the incoming disease (YUSUF).

In addition, Solomon and Usman particularly said that, all vaccines are beneficial to

children with exception of polio vaccine which they consider to be harmful to the children.

...the vaccine is important with exception of polio vaccine...we consider polio vaccination as a deception and evil plan by the white men to destroy us, that is why we don't allow our children to receive it (SOLOMON).

vaccines are very important with exception of the one I am refusing for my children because of what I am suspecting ...it was scientifically established that polio vaccine contain family planning which can make our children infertile in feature, that is why I don't allow my children to receive it (USMAN).

Discussion

This investigation explored individual factors impacting vaccine hesitancy among parents in the Sokoto metropolis. Our findings underscore the significance of past experiences with vaccinations, interpersonal relations with healthcare officials, and perceived risks and benefits as central elements in parental hesitancy.

We identified that negative past experiences with vaccinations significantly influenced certain parents' hesitancy. This corroborates prior research, suggesting that adverse events

following immunizations are significant contributors to hesitancy[11, 12]. Yet, in other settings, positive experiences have been reported to motivate vaccine acceptance[13,14]. Such discrepancies highlight the importance of understanding localized contexts and individual experiences.

Interpersonal dynamics, particularly between parents and healthcare providers or government officials, emerged as another determinant. A contentious relationship can exacerbate hesitancy[12,15], emphasizing the need for improved communication and trust-building measures. Notably, fostering a positive relationship has been shown to enhance vaccine uptake in other contexts[16,17].

Finally, parents' perceptions of the risks and benefits associated with vaccines significantly influenced their decision-making. This aligns with studies that identified perceived risk as a barrier[18,19], contrasting others that emphasized perceived benefits as motivators[20,21]. These divergent views emphasize the multifaceted nature of vaccine perceptions and decision-making processes among parents. In summation, to address vaccine hesitancy in the Sokoto metropolis, tailored interventions

that consider past vaccination experiences, enhance parent-healthcare provider relationships, and provide clear risk-benefit communications are imperative.

Conclusion

The landscape of vaccine hesitancy in the Sokoto metropolis is shaped by a myriad of individual factors that are deeply rooted in personal experiences, interpersonal dynamics, and risk-benefit perceptions. Our study sheds light on the profound influence of past vaccination experiences on parental decisions. Negative experiences have left indelible imprints on some parents, fueling their hesitancy, while in other contexts, positive experiences serve as catalysts for acceptance. Moreover, the relational dynamics between parents and healthcare providers or government officials are pivotal. Trust deficits and communication breakdowns have been identified as significant barriers, emphasizing the need for stronger rapport and mutual respect in vaccination campaigns. Additionally, parents' internal calculus of the pros and cons of vaccination plays a decisive role in their eventual choices. Addressing vaccine hesitancy in Sokoto, therefore, necessitates a multifaceted approach that acknowledges these individual determinants and crafts

interventions that are both empathetic and evidence-based. The future of immunization in Sokoto hinges on our collective ability to understand, engage with, and address these concerns holistically.

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