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# Qualitative assessment of caregiver experiences when navigating childhood immunisation in urban communities in Sierra Leone

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## ABSTRACT

**Objective** To gain in-depth understanding of the caregiver experience when navigating urban immunisation services for their children.

**Design** An exploratory qualitative assessment comprising 16 in-depth interviews using an interpretative phenomenology approach.

**Setting** Caregivers were purposively recruited from slums (n=8) and other urban communities (n=8) in the capital city of Sierra Leone.

**Participants** Caregivers of children ages 6–36 months old who were fully vaccinated (n=8) or undervaccinated (n=8).

**Results** Emotional enablers of vaccination were evident in caregivers' sense of parental obligation to their children while also anticipating reciprocal benefits in children's ability to take care of their parents later in life. Practical enablers were found in the diversity of immunisation reminders, information access, information trust, getting fathers more involved, positive experiences with health workers and postvaccination information sharing in the community. Underlying barriers to childhood vaccination were due to practical constraints such as overcrowding and long waiting times at the clinic, feeling disrespected by health workers, expecting to give money to health workers for free services and fear of serious vaccine side effects. To improve vaccination outcomes, caregivers desired more convenient and positive clinic experiences and deeper community engagement.

**Conclusions** Health system interventions, community engagement and vaccination outreach need to be tailored for urban settings. Vaccine communication efforts may resonate more strongly with caregivers when vaccination is framed both around parental responsibilities to do the right thing for the child and the future benefits to the parent.

## STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This qualitative assessment describes the caregiver experience in navigating childhood immunisation services in urban settings in a low-income country to gain insights for improving vaccination outcomes.
⇒ The sample composed of caregivers of fully vaccinated and undervaccinated children who were purposively recruited to help understand how the two outcomes may be shaped by differences in the caregiver experiences.
⇒ The rarity of experiencing serious side effects among children in our sample limits the ability to have a rich understanding of such experiences on subsequent vaccination uptake.

## INTRODUCTION

There have been efforts to understand urban immunisation challenges in low-income and middle-income countries (LMICs), including in urban slums and informal settlements.[1] Assessment of immunisation barriers in urban areas in LMICs identified a range of practical and social issues, such as population mobility, inaccurate denominators of children due to out-of-date population estimates and poorly defined geographical catchment areas, the lack of trust in the health system among vulnerable groups, overburdened health facilities, and weak community engagement and outreach.[2]

In Sierra Leone, the 2014–2016 Ebola epidemic disrupted the delivery of essential health services, including immunisation services, especially in urban areas.[3 4] Barriers that affected routine health services included the fear of contracting Ebola in health facilities, stigmatisation of health workers and shifting of resources to the epidemic.[5] As the Ebola epidemic waned, measles outbreaks became more frequent due to the decline in measles vaccination.[6] In the aftermath of the Ebola epidemic, the Government of Sierra Leone and its partners made major investments to rebuild health systems and restore public confidence in the healthcare system.[7 8] However, challenges in access to

and the uptake of essential immunisation services persist, including in urban areas.[9]

UNICEF and partners developed the Caregiver Journey Framework to guide countries in understanding the experiences, processes and structures that shape how caregivers seek and receive health services for their children, including essential immunisation.[10] In 2018, we operationalised the Caregiver Journey Framework through a qualitative approach in the Western Area Urban district (WAU) in Sierra Leone. Implementation experiences from operationalising the framework in the context of urban immunisation has been described elsewhere.[11] The framework was operationalised into several domains to understand decision making and preparation for vaccination visits, making the journey to clinics, experiences during vaccination visits and postvaccination experiences. Building on these domains, we aimed tounderstand the real-world experiences of caregivers of vaccine-eligible children as they navigate urban immunisation services in Sierra Leone to identify vaccination enablers and barriers.

## METHODS

We developed the Immunisation Caregiver Journey Interviews (ICJI) approach[11] based on the Caregiver Journey Framework using principles of interpretative phenomenology,[12 13] which focuses on elucidating the essence of common experiences to explain, interpret and make sense of a phenomenon.[14] We used a phenomenological approach to explore the lifeworld of caregivers in how they navigate childhood immunisation for their children repeatedly in low-resource, urban settings.[11] A semi-structured ICJI guide was used to explore the following domains: Decision making and preparation, making the journey, experiences during vaccination visit, postvaccination experiences, intentions to return and perceptions of immunisation promotion activities in the community.

### Setting

The WAU district in Sierra Leone comprises most of the capital city of Freetown with approximately 1.2 million inhabitants.[15] The district was heavily affected by the Ebola epidemic, partly due to high population movements and crowded housing conditions.[16] On average, there is less than one medical doctor per 10 000 population.[17] The Government of Sierra Leone introduced the Free Health Care Initiative in 2010 to remove cost barriers for essential health services for pregnant and lactating mothers and under-5 children.[18] Childhood immunisation services are delivered through the Expanded Programme on Immunisation using fixed sites that are supplemented by community outreach services to be conducted five times monthly.[19] Each catchment community has 10 community health workers (CHWs) who support the promotion of health services on a voluntary basis.[20] A coverage survey in 2019 estimated 86% coverage for three doses of diphtheria–pertussis–tetanus vaccine in slums and 92% coverage in non-slum urban areas in the WAU district. However, coverage of the second dose of measles-containing vaccine was very low in the district (33% in slums and 29% in non-slum urban areas).[9]

### Sampling and data collection

The sample size for this qualitative assessment was guided by an approach that focuses on qualitative information power.[21] The concept of information power posits that researchers should determine the sample size in a qualitative assessment based on the aim (narrow vs broad), sample specificity (targeting specific group vs multiple groups), theoretical underpinning (application of theory or no theory), quality of dialogue (weak or strong) and analysis strategy (within-case only or cross-case). Sample size burden increases when the aim is broad, multiple groups are targeted in the sample, the assessment is theory driven, the quality of the dialogue is weak and transcripts are analysed using cross-case analysis. In our assessment, the aim was narrow, the sample targeted a specific group, we applied theory to guide the assessment, the transcripts contained rich information, and we conducted both within-case and cross-case analyses. Against these considerations, we interviewed 16 caregivers and progressively reviewed debrief notes from the interviews to assess information power. In analysing the transcripts, we concluded that we reached saturation with the 16 interviews and likely could have stopped interviewing after the 12th interview.

We purposively recruited the caregivers from eight communities in the WAU district, four of which were slums and four were other urban areas in the district to maximise variation in the sample. Within each community, two caregivers of children ages 6–36 months were selected to capture a breadth of experiences of caregivers with vaccine eligible children—one whose child was fully vaccinated for age and another whose child had missed at least one scheduled vaccination visit. CHWs supported data collection teams in visiting households to identify and recruit eligible caregivers in the selected communities. Snowball sampling was used as a secondary sampling strategy when the first identified caregiver declined to interview but knew of other caregivers in the community with vaccine-eligible children or when CHWs were only successful in identifying just one eligible caregiver. In this form of snowball sampling, a previously visited household with an eligible child would point data collectors to other households with potentially eligible children (ie, vaccine eligible children). Data collectors visited such households to screen for eligibility. This process continued until two caregivers of eligible children were successfully recruited and interviewed from a particular community. Interviews were conducted on the same of day of recruitment after obtaining informed consent from the caregiver.

We recruited data collectors (interviewers and note-takers) who were fluent in English and the predominant local language in the WAU district (Krio). The data collectors had postsecondary educational training in social sciences and were experienced in conducting qualitative

data collection in Sierra Leone. Two behavioural scientists trained the facilitators for a week on the assessment protocol. One of the trainers was from Sierra Leone and had experience conducting social science research in Sierra Leone. During the training, the English version of the guide was translated into Krio by locally hired staff together with the facilitators and trainer. The data collectors were trained on how to probe on the spot to obtain additional pertinent information from caregivers. Data collection occurred in August–September 2018. All interviews were audiorecorded with permission from participants; they were then transcribed and translated into English by the local team. Interviews lasted about an hour on average and were conducted in the vicinity of the homes of the caregivers. Data collection teams were trained on choosing suitable interview locations to enable caregivers to speak freely. The facilitators conducted debriefing sessions immediately after each interview to make note of key experiences and observations. The debriefing notes were not part of the formal analysis. However, during the field work, the debriefing notes were used to progressively assess data saturation and to identify key insights emerging from the interviews. We used the insights from the debrief notes to develop a preliminary report that was mostly in a descriptive, narrative form. The deidentified preliminary report was shared with the Sierra Leone Ministry of Health and Sanitation. We have previously documented practical lessons learnt from implementing the assessment in Sierra Leone.[11]

### Data analysis

Two analysts (one male, one female) read all transcripts and created analytic memos and then analysed the transcripts using both within-case and cross-case analysis. In the within-case analysis, we developed a narrative profile for each caregiver to bring key aspects of their lived experiences to the foreground. In the initial part of the cross-case analysis, each analyst coded three different transcripts (six total), using an inductive approach to identify and interpret meaning units within the text. To gain alternative interpretations of the coded meaning units, three of the coded transcripts were shared with a third qualitative expert, who was not involved in the previous stages of the assessment, for independent 'blind' coding of the transcripts. Feedback from the third analyst was discussed by the two primary analysts and incorporated into the coding scheme. The analysts used an iterative process to review their codes, discuss their interpretations of the manifest content and harmonise the initial set of codes that were used for coding the remaining manuscripts. NVivo software (QSR International-2018, V.12) was used for the final organisation and coding of the transcripts. Manifest categories of meaning units were grouped to reflect latent content that was developed into cross-cutting themes via a consultative process. Throughout the process, the analysts exercised reflexivity regarding subjective interpretations and iteratively re-examined the transcripts to identify alternative interpretations until consensus was reached with additional inputs from the co-authors.

### Patient and public involvement

No patient involved.

## RESULTS

All respondents were the biological mothers of the sampled children except for one female guardian. The median age was 9 months for the children included in the assessment. At the time of the interviews, half of the children had missed at least one scheduled vaccine dose. Three themes emerged from the interviews around vaccination enablers (table 1), vaccination barriers (table 2) and direct recommendation to improve vaccination uptake (table 3). There were no notable differences in themes between slums and other urban communities.

### Enablers of childhood vaccination

Our analysis identified emotional and practical enablers related to childhood vaccination. Emotional enablers were evident in how caregivers portrayed their parental obligation to their children, wanting to do the right thing for their children's health and anticipating reciprocal benefits in children's ability to take care of the parents later in life. Practical enablers were the diversity of immunisation reminders, information access, information trust, getting fathers more involved, positive experiences with health workers and postvaccination information sharing at the community level (table 1).

#### Parental responsibility

A sense of parental responsibility was a major motivating factor for caregivers to seek vaccination services for their children. Caregivers viewed vaccination as 'doing the right thing' for their children. Even caregivers who had missed scheduled vaccination visits felt responsible for getting their children caught up with their scheduled vaccine doses, which often required deprioritising other income-generating activities.

> It is my duty to take my baby to the hospital for immunisation. It is my responsibility as [a] mother to ensure that my baby completes the rounds of immunisation without defaulting.—Caregiver whose child had missed a scheduled vaccination

#### Wanting a strong and healthy baby

In addition to the affective responses regarding a sense of duty to the child, appreciating the overall health benefits of vaccination to their children was another major driving force in motivating caregivers to seek vaccination services. Caregivers consistently expressed that immunisation has essential health benefits to the child and that missing scheduled vaccination would 'risk the baby's life.' Moreover, they valued having a 'strong and healthy baby' and felt that completing the vaccination schedule would positively impact the baby's health.

Table 1 Enablers of childhood vaccination–Western Area Urban, Sierra Leone, 2018

| Meaning unit | Category | Sub-themes | Theme |
|---|---|---|---|
| Responsibility to ensure full vaccination | Parental responsibility | Emotional enablers of childhood vaccination | Enablers of childhood vaccination |
| Obligation to do the right thing | | | |
| Immunisation as a requirement | | | |
| Immunisation is important for baby's health | Wanting a 'strong and healthy baby' | | |
| Wanting 'strong baby' | | | |
| 'Health is wealth' | | | |
| Defaulting on vaccination risks baby's life | | | |
| Vaccination benefits the parent later in life | Parental anticipation of reciprocal benefit | | |
| Taking care of parents when old | | | |
| Immunisation card is important | Diversity of immunisation reminders | Practical enablers of childhood vaccination | |
| Campaign as reminder | | | |
| Reminders by health workers at vaccination visit | | | |
| Husband as reminder | | | |
| Immunisation card as reminder | | | |
| Other family member as reminder | | | |
| Nurses should lead | Information access and information trust | | |
| Nurses more trusted than CHWs | | | |
| Same information from different sources | | | |
| Immunisation promotion through radio/tv | | | |
| Immunisation promotion by health workers | | | |
| Immunisation promotion through leaders | | | |
| Immunisation promotion by NGOs | | | |
| Mothers take the child to the clinic | Getting fathers more involved | | |
| Fathers rarely involved | | | |
| Father received an award for involvement | | | |
| Cordial relationship with nurses | Positive experiences with health worker | | |
| Good care by nurses | | | |
| HWs encourage seeking care at HF | | | |
| Giving money to health worker as token of appreciation | | | |
| Husband asking about the visit | Post-vaccination information sharing | | |
| Informing husband of next visit | | | |
| Telling husband about visit expenses | | | |
| Immunisation is a 'learning process' | | | |
| Sharing experiences with neighbours or friends | | | |
| Other family members asking about the visit | | | |

CHWs, community health workers; HF, Health facility; HWs, Health workers; NGOs, Non-governmental organisations.

> I think [the] vaccine is good for our children. It is important and it helps to build their immune system to keep them strong and healthy; it fights against many things in the body…—Caregiver whose child was fully vaccinated

### Parental anticipation of reciprocal benefit

Perceptions of vaccination benefits went beyond the direct health benefits to children and extended into domains of benefit to the parent. The notion that vaccinated children will be healthier and in turn live longer and be able to take care of their parents later in life emerged as a dimension of vaccination benefit to the parent. This duality of vaccination benefit was grounded in the cultural context of parents expecting reciprocal care from their children when the parents can no longer care for themselves.

> It is very difficult for me to be absent for immunisation or not to take my baby to the hospital when sick. Sometimes people think I'm mad but I'm not.

Table 2 Barriers related to childhood vaccination–Western Area Urban, Sierra Leone, 2018

| Meaning unit | Category | Subthemes | Themes |
|---|---|---|---|
| Asking husband for money | Preparing for the journey and getting to the clinic | Practical constraints | Barriers related to childhood vaccination |
| Juggling different household duties | | | |
| Competing priorities | | | |
| Time taken to get to the clinic | | | |
| Wasting time at the clinic | Inconveniences at the clinic | | |
| Rush to arrive first and seen first | | | |
| Crowding at the clinic | | | |
| Very long wait at larger health facilities | | | |
| Spent a day and nothing happened | | | |
| Wasting caregiver's time | | | |
| Not respecting caregivers | Feeling disrespected by health workers | Negative experiences with health workers | |
| Shouting at caregivers | | | |
| Paying for the card | Monetary expectations | | |
| Paying for free drugs | | | |
| Paying for weighing | | | |
| Payment as punishment | | | |
| Bad care without payment | | | |
| Health workers should stop demanding money | | | |
| Health worker don't appreciate less than Le 2000 | | | |
| Health workers withholding free drugs | | | |
| Baby crying throughout the night | Vaccine side effects | Safety concerns | |
| Baby gets 'lazy' for few hours | | | |
| Fever in baby | | | |
| Swelling at injection site | | | |
| Side effects only for some vaccines | | | |
| Rub onion on swollen injection site | | | |
| Avoiding abnormalities from vaccine | | | |
| Afraid of vaccine side effects | | | |

> I'm trying to bring up my children in a way that they will benefit me when I'm old.—Caregiver whose child had missed a scheduled vaccination

### Diversity of immunisation reminders

Caregivers were exposed to numerous reminders and cues to vaccinate their children, including information from the immunisation cards, health workers, community campaigns and family members. However, the child's immunisation card stood out as the most important reminder that caregivers and families relied on to remember the dates of the scheduled vaccination visits.

> I do remind myself because they [health workers] will write at the back of the immunisation card the date for the next visit. The immunisation card will tell you the date for the next visit.—Caregiver whose child had missed a scheduled vaccination

In addition, community outreach campaigns and announcements in the community were also viewed as helpful reminders to vaccinate.

> The health workers in this community and the CHWs are doing well as they do go around telling people not to forget to take their babies to the hospital for immunisation.—Caregiver whose child had missed a scheduled vaccination

### Information access and information trust

Immunisation information sources varied, but caregivers consistently cited health workers as trusted sources of information. Nurses were more trusted than lay CHWs because caregivers viewed nurses as more knowledgeable. While waiting in line before immunisation services, most caregivers appreciated the 'health talk' they received from nurses who advised on health and immunisation.

Table 3 Recommendations to improve childhood vaccination– Western Area Urban, Sierra Leone, 2018

| Meaning unit | Category | Subtheme | Theme |
|---|---|---|---|
| Continue campaigns at repeated intervals | Improving vaccination processes and systems | Caregivers want improved vaccination processes, systems and engagement | Recommendations to improve childhood vaccination |
| Do not rely on campaigns alone | | | |
| Provision of incentives for caregivers | | | |
| Concentrate on defaulters | | | |
| Compensation/incentives for nurses | | | |
| Being considerate towards health workers | | | |
| Employ more staff | | | |
| Stop demanding money | | | |
| Promote consequences of not vaccinating | Engaging communities to boost vaccine confidence | | |
| Peer-to-peer promotion of immunisation | | | |
| Inform about importance of immunisation | | | |
| Address 'stubborn' caregivers | | | |
| Engage caregivers who do not want injections | | | |

> I trust them [nurses] because they are a team of qualified nurses … Before they come here, they know everything about the vaccines and any implications of the vaccines. They are able to explain more than the CHWs and other community workers in the area. The nurses will tell you more. There are things that the community workers do not know, and they refer you to the nurses.—Caregiver whose child was fully vaccinated

### Getting fathers more involved

Mothers desired greater involvement by the child's fathers in supporting their children's vaccination. In most instances, fathers were rarely involved in taking their children to the vaccination clinic. We uncovered only two instances when fathers actively supported their children's vaccination visits. In those instances, the mothers felt supported, and their children were fully vaccinated. In one situation, a father that routinely accompanied the child to the vaccination clinic was celebrated by health workers and given the 'best father' award.

> There was [a] time when he [my husband] was given the best father award [at the clinic] because he is always with me at the hospital. That is the name I have also given to my husband. Even when the baby is crying, I will say 'best father' take your baby.—Caregiver whose child was fully vaccinated

### Positive experiences with health workers

During vaccination visits, positive experiences with health workers encouraged caregivers to vaccinate their children. Positive experiences included having a cordial relationship with the health workers. In particular, caregivers expressed that the nurses took good care of their children, made them feel comfortable and tried to build a good rapport. Some caregivers said they would voluntarily give small amounts of money to health workers as a token of their appreciation after vaccinating the child.

> …the nurses do encourage you and will make jokes so that you will laugh at the end of the day. There is a lot of fun [interactions], which made some of us forget about our stresses.—Caregiver whose child was fully vaccinated

### Postvaccination information sharing

Information exchange at the community level with trusted community members strengthened caregiver confidence in childhood vaccination. On returning home from the vaccination visit, caregivers often discussed the clinic experience with their spouses, families and other caregivers in the community. In addition to information obtained from health workers at the clinic, caregivers also sought advice from other 'more experienced' caregivers in the community.

> Most times after immunisation, my baby will run a temperature, but the health workers always provide

drugs to counter the fever. We have caregivers in this community with vast knowledge and since this is my first baby, I love to talk to them so that we can share our experiences which will be of advantage to me as I'm very new in the field [of parenting].—Caregiver whose child was fully vaccinated

## Barriers related to childhood vaccination

Practical constraints, negative experiences with health workers and safety concerns were the underlying barriers to childhood vaccination. Practical constraints included challenges faced when preparing for and getting to the vaccination clinic and inconveniences encountered at the clinic, such as overcrowding and long waiting times. Negative experiences among caregivers included feeling disrespected by health workers while simultaneously expecting to give money to health workers for services that are supposed to be free of charge. Finally, vaccine side effects led to concerns and fears about vaccine safety (table 2).

### Preparing for the journey and getting to the clinic

Caregivers commonly cited the need to juggle 'household duties' and other income-generating activities when planning the visit as a barrier, especially in the absence of fathers' involvement in taking the child to the clinic. In addition, mothers frequently depended on their children's fathers for financial support to cover the expenses related to the vaccination clinic visit. Some caregivers recounted needing to travel long distances up to an hour by foot to get to the vaccination clinic, especially when they could not afford public transportation.

### Inconveniences at the clinic

Caregivers anticipated various inconveniences at the vaccination visit. The prolonged time spent waiting for the child to be vaccinated emerged as a substantial inconvenience that was more pronounced when seeking immunisation services, especially in larger facilities. Anticipating the long wait, caregivers usually tried to arrive early at the vaccination site to get seen first. The range of activities involved with the child health visit prolonged the visit, including weighing the baby as part of growth monitoring and other health checks.

It is painful if you waste much time at the health facility because you have other issues to attend to. To avoid that, that is why I always come early to the health facility.—Caregiver whose child was fully vaccinated

### Feeling disrespected by health workers

Caregivers often felt disrespected by health workers during the vaccination visit. A key complaint was that health workers shouted at caregivers and sometimes used vulgar language toward caregivers. In other instances, they complained that some health workers habitually arrived late to the vaccination session, which further prolonged the time caregivers spent waiting.

### Monetary expectations

Systemically hidden costs generated substantial dissatisfaction among caregivers. Caregivers needed to 'shake hands' with health workers at different times of the visit (eg, first time registering the child to get a card, before entering the facility and before weighing the baby). Shaking hands implied giving some money during the handshake. Caregivers used the money to 'fast-track' their children's vaccination. The expectations around monetary exchange discouraged caregivers who could not afford to shake hands with health workers.

Sometimes if I don't want to spend much time at the hospital, I will shake the hand of the nurse so that they can fast track the immunisation of my baby. I will give them something like two thousand Leones or whatever I have with me at that moment… Health is wealth and they [health workers] don't need us but we do [need them]. The money we give is nothing compared to the health of our children… At the end of the day, we will grumble on our way home as the services are supposed to be free for our children, yet we are paying for it. The health workers are really trying, but the idea for them to take money from us is bad. And if you don't give them money, they will talk to you carelessly.—Caregiver whose child was fully vaccinated

In a separate domain of monetary exchange, health workers demanded money as a form of 'punishment' to caregivers who missed their children's scheduled vaccination appointments.

If you failed to take your baby to the hospital on [the] stipulated date, you will definitely have to pay some amount at the end of the day in the form of punishment. You must pay five thousand or more.—Caregiver whose child was fully vaccinated

### Vaccine side effects

Caregivers cited numerous instances when their children experienced vaccine side effects such as 'fever,' 'swelling at the injection site,' and the 'baby becoming lethargic.' Fever was the most common side effect, and the caregivers knew to administer fever-reducing medication as instructed by health workers. When there was swelling at the injection site, a common practice among caregivers was to massage the swollen area, sometimes with an onion or a bar of soap to try to reduce the swelling.

Sometimes my baby's leg becomes swollen… because some nurses are heavy-handed, and I meet several nurses when I visit the hospital. Sometimes the leg gets swollen, and they treat him. I have to rub the leg to avoid swelling… I use soap to rub off the swelling and I give Panadol to stop the fever… some people say you should not allow every nurse to administer [an]injection to the child. I should have a permanent nurse that gives injection to my child without

swelling.—Caregiver whose child missed a scheduled vaccination

In one rare situation, a caregiver had a prior child who experienced fever, convulsed and died a few days after getting vaccinated. Therefore, the caregiver decided to not vaccinate subsequent children.

After the immunisation, my baby started running temperature, I administered paracetamol as I was told by the health workers. The baby convulsed and that was the end of that baby. I don't want a repeat of that in my life. I have therefore decided not to take my babies for immunisation anymore—Caregiver whose child missed a scheduled vaccination

Besides passive acceptance of the BCG vaccine at the birth of the youngest child, this same caregiver actively refused all other vaccines despite encouragement by a family member to vaccinate the child.

I'm not outrightly saying it was as a result of the immunisation [that my child died]; as every death is the work of God. But from what I have gathered so far, I have personally decided not to take my baby to the health facility to be immunized. It is not that I'm tired of going to the health facility or because of the distance or money. I do get a lot of pressure from my aunt to take my baby to the health facility for immunisation, but the thing is that I just don't trust the system and what immunisation does.—Caregiver whose child missed a scheduled vaccination

From the perspective of this same caregiver, the vaccinated child died but the unvaccinated children survived and thrived, which was cited as a reason for refusing vaccination.

I believe in exclusive breastfeeding, sometimes for two years and a half and sometimes [only] two years. My baby is now two years seven months old and doing well like any of those children that are on immunisation or have completed…Just as I was saying, sometimes my heart will tell me to take the baby for immunisation but after thinking of the past experience, I would decide not to. I'm now used to that… The simple fact here is that, since the other children are doing well without immunisation, I will not take [the baby] to the health facility for immunisation and that is all.—Caregiver whose child missed a scheduled vaccination

### Recommendations to improve childhood vaccination

The direct recommendations provided by caregivers were categorised into (1) improving vaccination process and systems and (2) engaging communities to boost vaccine confidence. Implementing community outreach campaigns for immunisation at regular intervals with a focus on defaulters was recommended by participants to improve vaccination outcomes. In addition, caregivers wanted health workers and community leaders to be involved in immunisation promotion along with the CHWs. They wanted the vaccination clinic experience to improve and become more conducive to caregivers, including shorter wait time at the clinic and more positive interactions with health workers. Lastly, caregivers wanted health workers to stop demanding money from them, though they may not mind giving money, out of free-will, as a token of appreciation when they could afford it (table 3).

In addition, you should engage the Chiefs, because in each area we have Chiefs to spread out this message. You could educate them so that they in turn can educate those in the community. Let us have Town Criers go around disseminating the messages. It would be nice for them to allocate people in the health centre who move from house to house to educate the breastfeeding mothers because some of us are stubborn to come onboard.—Caregiver whose child was fully vaccinated

## DISCUSSION

Our qualitative analysis highlighted several important themes. In the backdrop of anticipated benefits to both the child and parent, vaccination intention was motivated by a feeling of parental responsibility to 'do the right thing.' Timely and trusted exchange of information together with social support and positive experiences at the vaccination clinic were important facilitators of vaccination. In contrast, vaccination was discouraged by negative interactions with health workers at the clinic, the occurrence and fear of vaccine side effects, multitude of 'hidden' costs, juggling vaccination with other responsibilities and inconveniences, such as long travelling time to the clinic and long delays at the clinic. Nevertheless, caregivers were resilient in devising ways to try to get their children vaccinated such as walking on foot up to an hour to get to the clinic when they could not afford public transportation. Lastly, caregivers wanted the vaccination experience to improve, and they desired stronger community engagement to help optimise vaccination outcomes. However, systemic issues, such as informal payments, overcrowding in health facilities and the reported overburdened health workers may require interventions at the health systems level. These themes from Sierra Leone provide in-depth insights regarding the motivations, facilitators and barriers of vaccination in an urban LMIC setting.

Moral values may shape vaccination attitudes.[22] Philosophical arguments regarding the morality of vaccination have been heavily debated.[23–26] Caregivers in our sample largely viewed vaccination via a moral lens encompassing parental duty to do the right thing for the child. In one situation, however, we found that the desire to 'do the right thing' may also translate into vaccination refusal in the backdrop of other past refusals, observing 'healthy

unvaccinated' children and having distrust of the health system. Quantitative research from high-income countries has shown that parents with unvaccinated children were more likely to perceive their children to be at low risk of vaccine-preventable diseases and were more likely to perceive low vaccine effectiveness and safety compared with parents with vaccinated children.[27] Our findings suggest that childhood immunisation communication efforts may resonate more strongly with caregivers when vaccination is framed around parental responsibilities to do the right thing for the child and the anticipated future benefits to parents. However, additional research is necessary to generate a better understanding of the morality of childhood vaccination in the Sierra Leonean context.

Across the interviews, there was an apparent tension in the relationship between caregivers and health workers. Caregivers often expressed their appreciation of health workers and empathised with the challenging context in which they do their work. Health workers were strongly viewed as authoritative sources of trusted information regarding immunisation and the child's health, which is consistent with findings from high-income countries[28–30] and LMICs.[31 32] Our findings on the role of monetary exchange in vaccination exemplify the complex relationship between caregivers and health workers in low-resource urban communities in Sierra Leone. Some caregivers voluntarily gave money to health workers as a 'token of appreciation' while others begrudgingly gave money because they viewed it as a condition for receiving good quality service from health workers. Interventions at the health systems level are necessary to help discourage informal payments to health workers—a practice that may perpetuate vaccination inequities among poor caregivers who are unable to meet monetary expectations.

Our findings also illuminate the need for interventions at the household and family level. Fathers were rarely involved in taking their children to the vaccination clinic but were often engaged in the decision-making processes. In the few instances when fathers were involved in taking their children to the clinic, the mothers felt supported and their children were fully vaccinated. A study in Nigeria found that paternal involvement in immunisation was greater in rural settings compared with urban settings.[33] In urban areas, the same study found that paternal involvement was greater among educated fathers compared with uneducated fathers. In a separate study in Ghana, the involvement of educated fathers in the vaccination decision was associated with timelier vaccination uptake compared with the involvement of uneducated fathers in the decision.[34] More broadly, shifting from a mother–child dyad to a family triad in the care of children has proven to have positive effects on paediatric health outcomes across diverse contexts.[35] Additional assessments and interventions are needed to explore and evaluate culturally appropriate ways to enhance the involvement of fathers in childhood immunisation in Sierra Leone and other similar LMIC settings.

Existing evidence suggests that vaccine safety concerns, often linked to adverse events following immunisation (AEFI), contribute to vaccine hesitancy.[36 37] Serious AEFIs may be 'triggering events' for derailing vaccine confidence and prompting active refusal among certain caregivers and their communities—especially when the serious AEFI is perceived to be linked to the vaccine or the vaccination process.[38] Together with prior evidence, these findings emphasise the need for robust AEFI surveillance and investigations[39] to identify, counsel and follow-up with caregivers whose children experience AEFI, and therefore, are potentially at risk of missing subsequent vaccination. Health workers and CHWs may benefit from periodic in-service training on how to effectively communicate vaccine safety and address concerns about AEFIs.[40]

### Limitations

There were several limitations to our assessment. First, it is possible that some nuanced meaning may have been lost when translating the audio recordings from Krio to English—especially since the transcripts were not back-translated from English to Krio due to resource constraints. Second, we only identified one caregiver who routinely and actively refused all vaccines for her child, which may reflect the overall rarity of zero-dose unvaccinated children in Sierra Leone (approximately 3%).[41] This was the only caregiver with a child that experienced a serious AEFI in our sample, which limits our ability to have a rich understanding of such experience among caregivers more broadly and the potential linkages to vaccination refusal. Although such experiences of serious AEFI are rare, they may have the tendency to get publicised in the community when they do occur, which may negatively influence vaccination decisions among other caregivers. Taken together, our results call for additional qualitative assessments to get a deeper understanding of vaccination refusal within the Sierra Leonean context and other low-resource LMIC settings. Sampling strategies may, therefore, need to be adapted accordingly to focus on caregivers who actively refuse vaccination for their children. Lastly, our findings reflected gender dimensions that may be based on sociocultural norms in Sierra Leonean society but may also be due to sampling bias because the caregivers we conveniently recruited were mostly stay-at-home mothers.

## CONCLUSIONS

As the COVID-19 pandemic disrupts childhood immunisation globally,[42] especially in LMICs, our assessment provides a foundational understanding of the challenges that caregivers encounter in urban settings in Sierra Leone. It also sheds light on opportunities to improve vaccination outcomes in urban poor settings, which is a global immunisation priority. The findings show that health system interventions, community engagement and vaccination outreach may need to be tailored for urban LMIC settings. Vaccine communication efforts may

resonate more strongly with caregivers when vaccination is framed both around parental responsibilities to do the right thing for the child and the future benefits to the parent.

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