

RESEARCH ARTICLE



Unveiling and addressing implementation barriers of vaccination communication strategy: Perspectives from government officials at national and provincial levels

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ABSTRACT

Communication strategy is one of the support of primary health care (PHC) that can address demand-side barriers and socio-cultural factors to promote better services. Conversely, communication strategies have not been a distinct emphasis of vaccination research in the country until now. Therefore, this study aimed to find the elements that influence the provision of vaccination communication in Pakistan. Twenty-two semi-structured interviews with key stakeholders in vaccine communication were conducted using qualitative methodologies (Jan 2022–March 2022). The interviews revolved around factors affecting the implementation of communication. Interviews were transcribed and analyzed using thematic analysis. By using the SURE framework, numerous factors that affect vaccination communication were identified under three major themes such as organizational-level, constitutional, and community-level factors. Five subthemes marked the organizational-level factors such as constrained budget, infrastructure deficits, inconsistent comprehensive strategy, health workforce, and inadequate training. Two subthemes are derived regarding constitutional and community-level factors, respectively, such as governance and leadership, health communication interventions not a policymaker's priority, community perceptions and practices, and formal partnership lacking between national and local stakeholders. Additionally, employment of established communication committees, improved money allocation, engagement of traditional and religious institutions, and political backing were identified as solutions for improvement. Communication activities are an important part of immunization programs in order to increase vaccination coverage. To be able to execute communication interventions more successfully, national and provincial stakeholders must work together to identify the elements that affect vaccine provision. Additional rigorous implementation studies could aid in the development of clearer knowledge of the system-wide constraints obstructing the program's efficiency.

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Introduction

Expanding vaccine coverage is a fundamental goal of immunization programs since it broadens the spectrum of health benefits while reducing inequalities in outcomes among underserved communities.^{1,2} Vaccination-uptake-increasing strategies include both supply-side and demand-side components, such as appropriate health systems to facilitate delivery, health staff to administer vaccines, and the availability of efficient vaccinations.³ The demand-side components include individual and household contributing factors (e.g., individuals' knowledge and agency to use such programs to their advantage are being developed).^{3,4} In terms of policy and research, the demand-side techniques acknowledged less attention while supply-side techniques have received increased consideration.^{5,6} Communication strategy is one of the support of primary health care (PHC)⁷ that can address demand-side constraints such as parental awareness and other socio-cultural variables while simultaneously engaging the community to commend for improved services.^{8,9}

Children's immunization demand is stifled by a lack of awareness and misunderstanding, particularly among the poor and underprivileged.^{10,11} Specifically, in Pakistan, the under-coverage of immunization is driven by both demand and supply variables, such as poverty, competing family priorities, perceived benefits from health care, acceptance of immunization programs, problems with outreach efforts, and availability of services.¹¹ According to Pakistan's National Communication Strategy for Routine Immunization 2015–2018, some immunization hurdles can only be addressed by good communication with the community through group involvement and social mobilization. Vaccination programs can only be effective if people have enough information to make an informed decision about whether or not to receive vaccines.^{12,13} It is vital to assess the best practices and weaknesses in the execution of vaccination communication techniques.

Despite recent developments in the strategic environment for immunization, such as new vaccinations and decentralization, Pakistan still faces basic problems that impede the

vaccination program's effectiveness.¹³ In Pakistan, the fully vaccinated child rate stayed at 54% in 2012–2013, lacking in terms of the national target of 90%.¹³ There have been findings that a larger geographic area, linguistic division, gender disparity, conflict zones (urban/rural residency), population relocation, security, affluence, and socioeconomic status (e.g., multidimensional poverty) may have an impact on immunization coverage.¹⁴ Furthermore, vaccine hesitancy – characterized as “a delay in the adoption or rejection of vaccines notwithstanding the availability of vaccine services” – is also a critical challenge for Pakistan.¹⁵

The polio eradication program in Pakistan has profited immensely from communication strategies such as public advocacy, media campaigns, political and social activism, interpersonal communication, and societal mobilization, which have backed decreased polio incidences.¹⁶ Previous study demonstrates that civic discussion with vaccine-hesitant individuals is a critical step to alleviate their doubts regarding the efficacy of vaccinations.^{15,16} But putting these communication initiatives into practice has been difficult. Therefore, this study aimed to address implementation factors of vaccination communication strategy in Pakistan, as well as to gain detailed insight into how information about vaccination is being communicated.

Study rationale

A persistent key component of the global polio eradication program has been communication interventions. These communication techniques, particularly in Pakistan, have boosted polio immunity levels.^{14,17} The planning of communication initiatives and their adaptation to local contexts might be aided by policy-makers having a thorough awareness of these elements. It is also considered to be able to improve policy-making, strengthen state-society ties, and encourage the building of social capital.¹⁸

Furthermore, no research has been done on the difficulties associated with implementing communication treatments. As a result, the purpose of this study was to fill a knowledge gap. In order to increase vaccination coverage and achieve high immunization levels, the causes of low immunization must be identified and addressed. Understanding these factors can help policymakers develop communication programs and adjust them to local circumstances.

Methods

Study design & setting

A qualitative approach was used to document the views of vaccination program stakeholders working at various levels of policy and program implementation under the Expanded

Programme on Immunization (EPI) in the country. The qualitative research design allowed for a thorough examination of complex realities, both hidden and manifest, that people create in the context of everyday interactions.^{19–21} The survey was conducted in entire Pakistan, including Punjab, Sindh, Khyber Pakhtunkhwa (KPK), Balochistan, Gilgit-Baltistan, and Azad Jammu Kashmir.

The EPI, the Government of Pakistan, Islamabad, is in charge of controlling vaccine-preventable diseases through providing vaccines and immunization protocols. This EPI organization assisted in the provincial-level selection of the research areas in Punjab, Sindh, KPK, Balochistan, Gilgit-Baltistan, and Azad Jammu Kashmir.

Sampling

We purposely choose only those participants who actively participated in the development or execution of vaccine communication strategies at various levels of health care provision and who might potentially give rich, relevant, and diverse data relevant to the study's objective. Policymakers and program administrators at various levels were among these stakeholders. We invited all those who fulfilled our criteria from the National Health Ministry, federal level and provincial governments, EPI programs, the development sector, civil society, and representatives from key organizations such as World Health Organization (WHO), United Nations Children's Fund (UNICEF), and Global Alliance for Vaccines and Immunization (GAVI). Due to time and resource constraints, district-level operators and frontline staff were omitted. Out of a total of 28, we interviewed 22 key informants (Table 1) who agreed to participate. The workplace was quite busy therefore the refusal was justified.

Data collection, processing, and analysis

The data was collected from January through March 2022. We used a semi-structured interview guide to learn about the obstacles to the communication strategy's implementation in Pakistan. Based on the results of the first four interviews, the interview guide was modified. The interviews were done at the respondent's convenience at a time and location of his or her choosing, in a combination of Urdu and English, and lasted 30–45 minutes on average. Once informed consent had been sought and secured, we taped each interview session. We transcribed the recorded sessions verbatim at the end of each interview and saved them in a file that included the date, location, and research topics that the interview addressed. We attempted to maintain anonymity as much as possible, but due to the fact that many respondents held very senior positions, complete anonymity was difficult to achieve. All data files were kept in a secure location.

Table 1. Study participants and their characteristics.

| Category | Number (%) | Participants' Characteristics |
|-------------------------------------|------------|---|
| National | 6 (27%) | Senior communication staff at UNICEF, WHO, GAVI and the National manager EPI and EPI team members |
| State/Provincial | 14 (63.6%) | Team members at provincial directorate health, managers and team members of EPI |
| Civil society, Development partners | 2 (9%) | Technical assistance teams and Social Mobilization Officer (State Health Educator) |

Table 2. Themes and subthemes derived through thematic analysis.

| Themes | Subthemes |
|----------------------------------|---|
| Organizational-level factors | Constrained budget Infrastructure deficits Inconsistent comprehensive strategy or policy Health workforce Inadequate training |
| Political/constitutional factors | Governance and leadership Health communication interventions not a priority among policy-makers |
| Community-level factors | Community perceptions and practices Lack of formalization of partnerships between national and local stakeholders (religious leaders, clubs, women's groups) |
| Solutions to major challenges | |

Principal Investigator (FA) used a framework thematic analysis approach to analyze the data, which included four steps: familiarization, indexing/coding, charting, and mapping/interpretation^{22–24} First, we became familiar with the data by listening to the audio recordings and reading the transcripts several times. This allowed us to get a sense of the whole collection of information and identify key concepts and recurring patterns. The next stage was to find data segments that meet the specified theme (indexing or coding). After that, we individually coded each interview transcript before combining our findings. We examined over each interview transcript and retrieved data on factors that could influence the implementation of childhood vaccine communication programs. The SURE (Supporting the Use of Research Evidence) Framework, a theory-informed conceptual framework, presented us with a thorough list of probable elements that could influence the successful implementation of interventions, which served as a valuable starting point for our investigation.²⁴ When we looked over the data, we found a few themes that we grouped into different subthemes using the SURE framework (Additional file 2). The ‘health system constraints’ domain included financial constraints, health resources, inadequate infrastructure, and equipment; the ‘social and political’ domain included issues related to politics; and community-level factors brought together the SURE framework domains of recipients of care and providers of care.

After that, we extracted the indexed data from its original textual context and displayed it in charts that divided the themes into subthemes. To highlight crucial findings, we used interesting data segments and central themes verbatim. Themes that arose from the interviews were analyzed and compared to themes from other interviews. Finally, we performed a mapping and interpretation, which included an examination of the important characteristics as presented in the charts.

Establishing trustworthiness

To confirm the trustworthiness of this research, interviews and field notes were compared. Lincoln and Guba (1985) proposed procedures were used to boost the reliability of the study's findings.²² Member checks were used during and after interviews to strengthen the credibility, validity, and transferability of the study results and to reduce any personal bias on the outcomes. An audit trail was produced by detailing how data were collected, categories were derived, and judgments were made throughout the investigation to promote dependability.

Consistent testing and data comparability boosted conformability.

Results

A total of 22 key informants participated in this study (Table 1), including officials from the Ministry of National Health Services, Regulation and Coordination and provincial departments of health, federal and provincial EPI managers from all five provinces and Gilgit Baltistan, AJK regions of the country, and key informants belonging to partner organizations. The main themes and subthemes emerging from these discussions are summarized below (Table 2). We supplement our structural interpretations of the participants' comments with textual descriptions (quotes) to substantiate the point.²³

Organizational-level factors

Constrained budget

All respondents interviewed at different levels of the health care system consistently mentioned that inadequate funding was the main barrier to the implementation of vaccination communication interventions. However, The Government of Pakistan, with assistance from development partners, finances the immunization services in the country. The bulk of resources comes from GAVI/UNICEF for purchasing vaccines, while the government takes care of salaries of EPI staff, supplies and stationery, and other requirements like vehicle fuel and maintenance. Bottlenecks are usually faced in securing the government's share. Most respondents confirmed that poor funding had been found to disrupt all aspects of the vaccination program; he also pointed out that communication is usually worse hit. The respondents reported that funding gaps led to poorly implemented communication activities in terms of coverage and frequency of messaging.

Some respondents pointed out that communication activities around immunization were particularly limited in frequency and range. This gap was attributed by most respondents to the absence of donor or partner involvement in communication activities. Some respondents, however, argued that communication activities were never given priority attention when immunization programs were planned.

A national stakeholder commented:

We don't have actual communication budget that's why no proper setup for it. we either piggyback with the LHW program, some other CBOs (Community based organizations, CSOs, and all the

field staff. sometimes it is the LHW house where they do outreach. communication always receives the least budget. So, if this does not change – because one thing in communication is that what you give in is what you get out and communication is not something you do once and you stop. (Decision maker, national level)

Another participant said

Well, this communication strategy is an important part of any project but the issue is that we don't have budget for its implementation. when we make the micro plans for example I'm working for the immunization program right. So in this immunization program, we develop the micro plans. these micro plans are the service delivery such as communication kind of plans. due to the shortage of budget we can't make it. (Policy maker, national level)

At state or provincial level, this budgetary issue for immunization communication intervention was played in two ways. First, at state levels, they confirmed that funding gaps contributed to delays in implementing activities and sometimes to a failure to implement these activities at all due to the late release of funds for communication activities. This was observed to delay disbursement of needed materials (printed posters and other information, education and communication materials), especially to hard-to-reach areas. Second, in some cases, materials remained in storage at the state level and were not distributed to local government areas.

Probably in governance structure as such it is not reflected enough funding for our planned communication or mobilization activities. Ultimately it affected many related activities for communication. I think in my opinion and my organization more or less are quite the same but quite often this part I wouldn't say this part missing but it's difficult to implement. (Focal person, Baluchistan)

Actually, when you talk about child survival, mother survival and we are working to promote healthy activities, promote healthy behavior. Unfortunately, in our organization no any planned activity. Sometime we try to do by ourselves for example if you come to my area please come now or evening time because I'll arrange people gathering before you coming here. (Provincial-level communication officer 1)

Infrastructure deficits

Most participants at the state level highlighted the inadequate overall structure of the immunization program for community mobilization. Inadequate human, operational, and other resources, as well as a lack of clarity in the micro plans for the outreach strategy for vaccination. Challenges with forecasting, purchasing, storing, and distributing to the provinces and districts, as well as with the mobilization of units and other equipment are needed for communication activities.

Inefficiencies and stalled immunization performance due to lack of mobility. Transportations is a big challenge, we don't have enough transport system to do this mobilization and interrupted supply of vaccines has been reported from time to time. Inadequate maintenance of cold chain is another issue. It is nearly all of the operational levels after the devolution of 2011. (Mobilization officer 3)

Although we have structured policy but practically something we can say neglected area. Because we mostly use this strategy during campaigns like measles campaigns, rubella campaigns, typhoid campaigns and recently measles-rubella campaigns which were organized mostly one or two times only within 2–3 years. I mean

you can say we do mobilization activity temporary bases sometime according to resources. (Immunization officer 2)

Inconsistent comprehensive strategy or policy

The participants discussed several policy issues that implicate the immunization system. More than half of the participants reported a lack of any dedicated policy document on communication strategy and the absence of village-level communication plans. A lack of clarity on the roles and responsibilities of federal and provincial tiers of the government resulted in a vacuum in governance and weak stewardship at decision-making levels.

If policy is a statement of intent, resource allocation is a practical reflection of that policy. There is ambiguity in rules and regulation of immunization programs particularly mobility activities. The comprehensive Multi Year Plans along with operational plans for each year should be developed in each province to ensure better planning and implementation of the programme. (Technical officer 1)

Health workforce

Most Participants stated the issues related to significant maldistribution of vaccinators at the facility and community level. Their main concern, however, was about the lack of capacity-building mechanisms for the foot soldiers of immunization.

Although EPI policy mentions the number of vaccinator per union, there is no clarity about the on-going training, capacity-building and results-based monitoring. Only one-time training of vaccinators provided at the time of induction is not enough; refresher trainings are required. The lack of performance reviews of the vaccinators and other staff is a key bottleneck and needs to be examined. (Immunization officer 3)

Lack of human resources and capacity appears even bigger at the federal and provincial levels. Managers at these levels have gigantic tasks, including country- or province-wide planning, procurement, logistics, leveraging funds, addressing community perceptions, and managing hostile media. Inadequate number of staff and capacities at these levels pose huge impediments.

There is significant shortage of staff so they are multi-tasking personal. multitasking in a sense that vaccinators who are basically recruited to administer the vaccine, to have the data, to maintain the cold chain, to do the [inaudible word] management so his capacity now in the last 6 months we work to the interpersonal communication capacity on that vaccinator so we are capacitating the same person who can engage within his union counsel with his area of restriction of working to start the community engagement related interventions. (Technical officer 2)

Inadequate training

Some respondents highlighted that there is no regular and formal training program for the community mobilization cadres, and learning is mostly self-directed and on the job. They highlighted the lack of well-trained communication personnel as a barrier to the effective mobilization of communities. Staff service training is not held on the basis of any planning and programming, rather it is conducted whenever the donor funding is available. One respondent was also of the view that health workers had poor communication and

negotiation skills and were not able to communicate the purpose of their visit well, especially when they visited resistant households. This, the respondent noted, may have contributed to their poor performance in the field.

The thing is that the appropriately trained and equipped with the material are very supportive and because when they are very clear about what we introducing and why convincing it and they need to be very up to date on facts. if they do that they will be able to convince the community and that is how we'll be working. for instance, if you going to introduce to measles-rubella vaccine find people who ok with the measles vaccine so if they know that they'll be able to promote that that is going to be sensitized to the community as well. but if somebody only knows that rubella is a self-resolving illness whether to get vaccinated or not they will not very have promoted to that. (Technical officer 3)

Another respondent described how the 'cascade' model of training was partly responsible for the training gap. He explained that before a campaign, state social mobilization officers or health educators are trained directly at the national level to deliver training to the local Social Mobilization Officers (CBO). The local Social Mobilizer is then expected to train "unqualified community members" at the ward level. The respondent described how dilution occurred, with the quality of the training declining at each stage, leading to poor training outcomes:

"There are no scheduled trainings, HRD activities, or refreshers." These are uncommon and only happen when a new vaccine is released or something similar. no budget for this. (Immunization officer 4, Provincial level)

Well trained staff is very necessary to convince community for immunization. Although we make proper planning or framework for training purposes. Even at National level we arrange training from provincial level high authorities and teach them how to train local level people. Similarly, local personal train community volunteers but, at every level their training capacity reduce. As a result, poor trained staff form and ultimately poor communication skills cause poor outcome. (Senior immunization officer 5, National level)

Political/Constitutional factors

Almost all respondents viewed the presence of political support as a major facilitator, while the absence of political support was seen to undermine the delivery of health interventions.

That looks like the community facilitator. As you know but there are two ways of engagement or mobilization activity one is a paid engagement where you hire some communication guy, you hire some local resident area. The second way is the same you engage the community or communication interventions under the leadership of some. Political leadership under union counsel level have significant positive effects. we include all the political leadership that is health minister, federal level. Provincial-level, district minister, and chief Secretary so this is one like we do for new vaccine introduction. (Technical officer 4)

Some participants noted that political leaders failed to provide funds to carry out communication interventions. The reasons given by some respondents included an over-dependence on development partners and the fact that political leaders are usually more interested in committing their resources to more visible infrastructures, such as roads and schools.

Governance and leadership

The participants discussed the overall structure of the immunization program organized within the wider governance system. Coordination issues seemed particularly important in this wider governance system and it is very necessary because state governments do not have their own vaccination programs.

Bottlenecks in governance include the lack of transparency, accountability and regular programme reviews. As you see higher levels, tasked with programme planning and capacity-building, is conveniently ignored. Moreover, as we discussed lack of human resource and capacity, no separate staff for communication intervention activities. It is a big challenge for immunization coverage rate. (Senior immunization officer 5)

At the national level the states are asked to develop their communication interventions and thereafter they don't have money to implement, and expect funds from the national to implement this and that hardly happens except for the funding that UNICEF sends because UNICEF is the mandate agency for polio communication. (Immunization officer 6, National level)

Polymakers do not prioritize health communication interventions

Most respondents reported that this is a neglected area by policy-makers. One of the factors contributing to this problem seemed to be the assumption by policy-makers that health care workers do not require any training in communication skills but do require more training on technical components of the immunization program. No key informant was able to provide examples of decision-making entities engaging with communities at an individual-level except home visits for polio vaccination and investigation of serious cases post-vaccination.

In our strategic framework communication is not one of those areas that attract by high authorities. Even in our budget plan no funds allotted for communication so if we want we can't implement this communication intervention. most workshops and training sessions on the provision of immunization services paid very little attention to the acquisition of communication skills and focused more on technical components of the programmes. (Development officer 1)

In most workshops I attend, the emphasis is usually on the vaccines to be administered, site of administration, storage and maintenance of vaccine potency, while communication is usually limited to the types of communication that can be used and the content to mothers bringing their wards for immunization. The actual act of communication is not demonstrated. (Social mobilization officer 1)

Only two senior health workers from AJK shared their experience about training on vaccination communication, including the different methods that could be used in various settings.

Community level factors

Community perceptions and practices

Almost all the participants talked about the demand-side issues and highlighted the need for addressing community misperceptions and facilitating their immunization behaviors. Low community awareness and misbeliefs that vaccines cause disease and the doubts about vaccine safety and effectiveness have been reported as important factors, impeding the uptake of immunization. They also discussed

the attitudes of community stakeholders in certain communities where community members demand money from health workers in exchange for immunization services and some members having insisted that the government provide basic necessities such as accessible roads, schools, and health services before these campaigns could take place.

These people do not usually have enough knowledge of the purpose and benefits of vaccines; providing this information usually proves helpful. That misperceptions may not be the same across provinces so exploring the local factors and perceptions that may be acting as a barrier and integrating this with other public health communication is required. (Senior immunization officer 7, federal EPI level)

Religious beliefs and lack of knowledge about the benefits of the vaccines still dictate many pockets of this highly diverse and populated country. Targeted community awareness programs, a robust surveillance network, and engagement with the dominant religious entities can help to root out the issue. (Technical officer)

If you go to the community now they believe you came with money to give them. If you don't give them they will sabotage your activities so that is why we have problems. Because you need people to come and get immunization sometimes we have to give them some incentives before they help in delivery of vaccination messages. (Senior health officer 1)

Myths or misconceptions about the vaccinations are the main hurdles or barriers like foreign agenda about new vaccines if it is donated by a foreign country people have myths it is for something. As you know recently about COVID vaccine foreign countries insert a chip into our body through this vaccination so people were hesitating even still so many hesitancy cases due to this myth. (Technical officer 5)

Lack of formalization of partnerships between national and local stakeholders (religious leaders, clubs, women's groups)

The participants expressed their reliance on local youth committee like task force, faith-based networks, and women's self-help groups to facilitate their community mobilization activities for achieving vaccination target. The absence of formal partnership between them and the lack of monetary incentives, or salaries, were barriers to sustaining their enthusiasm to promote these communication initiatives.

... when we talk about communication initiatives or vaccines we should consider three main platforms, one is National level stakeholders secondly State Task Force on Immunization and third District Task Force on Immunization. (Senior immunization officer 5, National level)

As you see in our society we involve these people for convincing community and make a target for headman for example if they achieve 90% vaccination coverage target we give them certificate acknowledging their contribution. But there was no monetary incentive. (Senior health officer 2, Provincial level)

Solutions to major challenges

Along with the barriers as shown above, the participants identified some solutions to these specific issues. However, most solutions were brief and generalized with no specification of time, place, or person responsible.

Religious and traditional leaders should be more involved to create awareness about vaccination in the community since these institutions were trusted and respected in many communities.

There should be a separate committee for ensuring accountability in executing communication activities at the community level.

Multi-faceted interventions such as health system plus provider-oriented interventions should be established for proper training and regular immunization outreach sessions.

Discussion

It has been determined that effective communication has the potential to improve immunization uptake.²⁵ People in different regions of Pakistan are hesitant to receive vaccinations.²⁶ According to earlier research, community engagement with vaccine-hesitant people is essential for relieving their concerns about the effectiveness of immunizations.¹⁵ However, implementing these communication initiatives has been difficult. Therefore, this study looked into aspects relating to vaccine communication in Pakistan based on the perspectives and experiences of health workers across the country.

This study reveals that policymakers have a weak understanding of vaccination communication, with little discussion of communication capacity building or communication in the context of social mobilization. It also illuminates certain external and socio-political issues that have an impact on this system and should be taken into account when evaluating health care delivery. The perceived challenges for EPI personnel and management can be divided into three main groups, including organizational-level, political/constitutional, and community-level aspects when analyzing the perceived components of the vaccination communication plan.

At the organizational-level several factors have been identified as having an impact on the successful execution of vaccine communication methods for both routine and mass campaigns. These identified subcategories were constrained budget, infrastructure deficits, inconsistent comprehensive strategy or policy, health workforce, and inadequate training. Most participants complained that inadequate training, finance, and shortage of staff at the federal and provincial levels are major deficiencies in planning, execution, and program development at all levels.

In addition to this deficient communication skill among health workers, inconsistency in a comprehensive strategy or policy document, infrastructure deficits such as operational and other resources, delays in forecasting, procurement, storage, and distribution to provinces and districts, and mobilization unit and other equipment required for communication activities were among the other issues raised during our discussions. Such types of fallacies have been raised in other published literature, for example, financial challenge has been substantiated by recent studies undertaken in Cameroon and Nigeria.²⁵⁻²⁹ Furthermore, a shortage of health personnel has a significant impact on the delivery of effective communication treatments.^{30,31}

At the political/constitutional factors, governance and leadership, health communication interventions are not a priority among policy-makers were all challenges that emerged as

a result. However, important barriers to program governance and leadership that were identified in this study included lack of coordination within (building blocks of immunization program at provincial level) and between (health at the broader, national level) and ignorance of higher levels tasked with program planning and capacity-building.

Furthermore, this study found that communication strategy was neglected area by policymakers. Similarly, previous studies have identified gaps in service delivery,^{31,32} a lack of a clear human resource strategy, an unwelcoming attitude of staff toward clients and political involvement as difficulties in the immunization system.³³ Positive interactions with health care professionals were also more likely to result in higher immunization rates.³⁴ Participants in our study also observed a lack of political commitment, which had a detrimental impact on communication approaches and immunization programs, as well as finance and deployment issues. Conversely, the leadership and supportive supervision were helpful throughout, especially in terms of gaining the confidence of the communities and ensuring high-quality service delivery outcomes.³⁵ However, there is little in the literature regarding the role of policymaker's credibility in impacting communication strategy implementation for immunization uptake globally. While these issues have not been documented in the peer-reviewed literature, these issues have been identified in gray literature and through anecdotal evidence. To our knowledge, this study is one of the first to identify these interpersonal factors in Pakistan.

At community level, perceptions and practices, lack of formalization of partnerships between national and local stakeholders (religious leaders, clubs, women's groups) factors were identified. This study has shown community unawareness about vaccines efficacy. Also, it was noted that there was no

proper coordination between health department and community leaders about the importance of vaccination for their community through interactive dialog. Previous studies have noted that individual-level factors and these are well articulated in the literature. However, less is known about the interpersonal and community-level factors that influence the vaccine-related decision-making process.^{36,37} Previous studies have also shown an increasing perceived credibility and trustworthiness of health workers, which could strengthen the role that workers play in encouraging caregivers to vaccinate. For example, a study conducted in Malawi found that a high level of trust in vaccinators was a critical reason why caregivers accepted immunizations for their children, even if they faced other considerable structural costs, such as transport costs.³⁷

The respondents highlighted proposed solutions such as the engagement and cooperation of traditional and religious leaders. These were seen to facilitate the delivery of communication interventions for childhood vaccination and the establishment of a separate committee to ensure accountability in executing communication activities. Moreover, they also suggested that the training of health workers would be useful and would enable health workers to target communication to different groups in communities. Putting in place a system to monitor the appropriateness and quality of training activities at the local level should be considered, while training needs assessments should be conducted from time to time. Similar findings were noted in other studies. These are all suggestions that have been reported earlier in Nigerian studies.^{38,39}

Based on the findings of this study, we suggest some areas where health systems need to be strengthened (Table 3). Respondents suggested that policy-makers must earmark the funds for communication techniques, which is an important part of the program. However, policies are

Table 3. Where do health systems need to improve in terms of childhood vaccine communication?

| Problems/Issues | Key findings from the analysis | How could this problem be prevented/solved? |
|--|--|--|
| Finance of vaccination communication strategy | <ul style="list-style-type: none"> • Lowest budgetary provision for communication intervention. • Intermittent communication approaches, particularly at the local level (insignificant between campaigns). • Excessive dependency on donors. | <ul style="list-style-type: none"> • Consider increasing the cash allocation in the recurrent budgets of States and Local Government areas to provide a consistent source of money for immunization communication initiatives in order to increase sustainability. |
| Human Resources shortage | <ul style="list-style-type: none"> • Suboptimal health care professional performance (overburdened staff). | <ul style="list-style-type: none"> • Examine the role of volunteers in assisting with some of the less technical responsibilities, as well as the possibility of redistributing health staff. |
| Training | <ul style="list-style-type: none"> • Lack of communication skills. • The 'cascade' training model causes training efforts to be diluted. | <ul style="list-style-type: none"> • Strengthen the skills of health workers by having state social mobilizers supervise local government area mobilizers. • Frontline communicators in different local government areas should be given training guidelines or manuals that can be customized to match local needs. |
| Infrastructure deficits | <ul style="list-style-type: none"> • Outreach sessions, both actual and planned discrepancies. • Materials for IEC (information, education, and communication) are in short supply. • Issues with transportation. | <ul style="list-style-type: none"> • Compare the number of scheduled outreach sessions in the micro-plan to the number of actual outreach sessions done over the last 6 months. Find out why the outreach is not being implemented if there is an obvious discrepancy. • The ability of state and local governments' social mobilization committees and health promotion departments to generate their own IEC materials should be reinforced. |
| Political assistance | <ul style="list-style-type: none"> • In communication activities, there is a lack of political commitment. • Some policy-makers do not consider health communication to be a priority. | <ul style="list-style-type: none"> • Visits to political leaders on a regular basis. • Improve accountability procedures, especially at the state and local government levels, to avoid theft of resources intended for vaccination program communication. |
| Parents' and caregivers' vaccination attitudes | <ul style="list-style-type: none"> • Vaccine apprehension and rejection among some religious groups may make vaccination information difficult to obtain. | <ul style="list-style-type: none"> • Assess data quality and utilize the results to fix specific issues and track progress. • In some communities, engaging traditional and religious organizations, as well as other community structures, may be beneficial in combating rejection. |

needed to eliminate structural and health care system immunization hurdles, as well as to discover effective and comprehensive measures for increasing immunization rates among children in high-risk groups. Furthermore, the results of this study strongly highlight the need for a communication skills training plan to be modified and well implemented.

Conclusions

This was a large study with sufficient power to detect hurdles to the application of communication techniques among diverse groups across Pakistan. It looked at a variety of variables, such as financing constraints, insufficient infrastructure, health-worker-related and political factors, as well as community-level factors, that hampered the delivery of vaccination communication interventions. Another significant impediment was the lack of political will at the federal and local levels to undertake routine immunization communication initiatives. This could be due to political leaders' lack of understanding of the relevance of vaccination communication within the routine immunization campaign.

Decision-makers must consider how to overcome these obstacles so that evidence-based techniques for engaging with parents and caregivers about childhood immunization can be implemented. Bridging the existing budget gap, resolving human resource shortages, and maintaining strong political will for implementation will be required to solve communication gaps. The engagement of traditional and religious institutions, as well as the usage of established communication committees should be enhanced as facilitators for the execution of vaccination communication interventions. Vaccination communication programs may achieve their desired outcomes if they are well planned, well funded, and linked with service delivery.

Strengths and limitations of the study

The study's key strength is the key informants coming from all over Pakistan. This was the first research on the subject, which is being done in the country. Furthermore, we explored health care stakeholder's views on health care delivery at the national and state levels in the country, allowing us to gain a comprehensive picture of vaccination-related communication challenges.

A potential limitation is that the study did not investigate local levels of health care delivery throughout the country due to time and resource constraints. Furthermore, we included immunization officers from both the national and state levels of health care delivery, and it is likely that these respondents covered similar ground to those from the local level.

Author's contributions

The authors of this manuscript are FA, MA, ZB, AM, and YY. FA is the main investigator of the study. FA made a considerable contribution to study design, data collection, interpretation, analysis, and drafting of the manuscript. MA and AM helped in data collection and field notes

preparation. ZB and YY were involved in critically reviewing the manuscript. All authors read the final document and approved the submitted version.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

The data set used and/or analyzed during the current study is available from the corresponding author on reasonable request.

Ethical approval

This study was approved by the Pharmacy Human Ethics Committee (PHEC), The Islamia University of Bahawalpur, Pakistan (Ref. no.: 157-2022-/PHEC).

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