Achieving polio eradication: a review of health communication evidence and lessons learned in India and Pakistan

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Abstract Since 1988, the world has come very close to eradicating polio through the Global Polio Eradication Initiative, in which communication interventions have played a consistently central role. Mass media and information dissemination approaches used in immunization efforts worldwide have contributed to this success. However, reaching the hardest-to-reach, the poorest, the most marginalized and those without access to health services has been challenging. In the last push to eradicate polio, Polio Eradication Initiative communication strategies have become increasingly research-driven and innovative, particularly through the introduction of sustained interpersonal communication and social mobilization approaches to reach unreached populations.

This review examines polio communication efforts in India and Pakistan between the years 2000 and 2007. It shows how epidemiological, social and developmental data guide communication strategies that have contributed to increased levels of polio immunity, particularly among underserved and hard-to-reach populations. It illustrates how evidence-based and planned communication strategies—such as sustained media campaigns, intensive community and social mobilization, interpersonal communication and political and national advocacy combined—have contributed to reducing polio incidence in these countries. Findings show that communication strategies have contributed on several levels by: mobilizing social networks and leaders; creating political will; increasing knowledge; ensuring individual and community-level demand; overcoming gender barriers and resistance to vaccination; and reaching out to the poorest and marginalized populations. The review concludes with observations about the added value of communication strategies in polio eradication efforts and implications for global and local public health communication interventions.

Introduction

Since 1988 the world has come very close to eradicating polio through the Global Polio Eradication Initiative, a programme in which communication interventions have played a consistently central role. This large public health initiative is organized by WHO, Rotary International, the US Centers for Disease Control and Prevention (CDC) and the United Nations Children’s Fund (UNICEF). Other leading partners include the United States Agency for International Development (USAID), the Bill & Melinda Gates Foundation, governments of polio-affected countries, donor agencies, non-governmental and private sector organizations. Primarily through mass vaccination campaigns, the Initiative cut the number of polio cases from about 350,000 in 1988 to 1,264 by January 2009.1,2 Mass media and information dissemination approaches used in immunization efforts worldwide have contributed to this success. However, polio is still endemic in Afghanistan, India, Nigeria and Pakistan.3 Reaching the hardest-to-reach, the poorest and most marginalized, and those without access to health services remains a critical challenge in all four countries that have pushed eradication efforts to explore increasingly research-driven and innovative communication strategies.

We examine polio communication efforts in India and Pakistan between 2000 and 2007 and show how epidemiological, social and behavioural data guided communication strategies that have contributed to increased levels of polio immunity, particularly among underserved and hard-to-reach populations. As efforts to eradicate polio in these two countries continue, the period covered in this paper saw the emergence of innovative use of epidemiological data and application of multiple known and new communication interventions. We focus on India and Pakistan because: (i) they have faced challenges in reaching often disparate hard-to-reach populations that have required more sophisticated, data-driven and targeted communication approaches; and (ii) communication approaches have been evaluated against surveillance and campaign data, and reviewed periodically by independent bodies including the Technical Advisory Group, the India Expert Advisory Group and technical communication review groups. Monitoring and evaluation of activities implemented in India and Pakistan have been expanded since 2004.

Polio communication reviews at international, national and sub-national levels have supported improvements in the collection, analysis and use of data, contributed to a consensus building process about communication interventions and...
inclusion of communication expertise in some of the polio technical advisory groups. These reviews provide useful spaces to step back periodically to review the communication programmes and develop recommendations to further strengthen polio communication work. We illustrate how evidence-based and planned communication strategies such as intensive interpersonal communication and social mobilization, media campaigns, and political and national advocacy combined have contributed to reducing polio incidences in these countries. We conclude with observations about the value that these strategies bring to addressing the challenges faced in the final phases of polio eradication and its implications for public health communication. We define public health communication as the strategic design, application and evaluation of communication interventions (i.e. social mobilization, interpersonal communication, mass or local media and advocacy) to achieve public health objectives. Social mobilization is defined as "a broad-scale movement to engage people's participation in achieving a specific development goal through self-reliant efforts," which often demands the participation of different social actors including community organizations, national, local and state governments, professional organizations and media.

**Method**

We conducted a review of primary and secondary data sources that include research, evaluation and technical reports, as well as policy, theme and working papers that document communication efforts for polio eradication in India and Pakistan. We examined data from randomized before and after reports of national and regional surveys, exit interviews at vaccination booths and other research and reviews commissioned by the Technical Advisory Group and India Expert Advisory Group. Other sources of information analysed include country data presented at Technical Advisory Group and India Expert Advisory Group meetings, polio communication reviews and other independent/academic research. Some of these reports were peer-reviewed while others were not. However, all of them provided additional context about polio communication in both countries. We also examined reports on polio eradication efforts in other countries that are available on databases such as Medline. We support our findings through references of selected quantitative and qualitative data from studies conducted throughout the years covered in this review.

**Challenges**

Despite the monumental challenge of coordinating logistics, health workers and volunteers at fixed site polio booths and during house-to-house visits, India has made tremendous progress towards reducing the polio disease burden since 1995. By 2005, India was immunizing 170 million children with oral polio-matomyelitis vaccine (OPV) during National Immunization Days at least twice a year and approximately 100 million children multiple times a year during Sub-National Immunization Days. The number of children in polio endemic areas that received at least two doses of OPV increased steadily from 85% in 1995–1996 to 96% in 2000–2001. Pakistan's Polio Eradication Initiative started in 1994 with implementation of National Immunization Days. From an estimated 2500–3000 cases per year, this number was reduced to only 156 reported cases of wild polio in 1998. Despite peaks in 1999 and 2003, there has been a consistently downward trend until 2007 (Fig. 1).

The use of mass immunization campaigns in the Initiative's early years and the annual decline in polio cases led many to the expectation that polio eradication was imminent. However, India suffered setbacks when the number of cases increased from 268 in 2001 to 1600 in 2002 (Fig. 2) and from 66 in 2005 to 873 in 2007. Eighty percent of the cases were concentrated in Uttar Pradesh, where polio disproportionately affected the poorest, hardest-to-reach underserved communities. Pakistan experienced increases in 2003 and 2006 and a small number of polio cases continued to be reported in high-risk areas suggesting the need to intensify activities to reach the most underserved and marginalized populations to interrupt transmission. Typically, polio cases in India were among children aged less than two years (75%) who lived in mostly poor Muslim communities, lacked access to basic sanitary services, were often missed in OPV rounds, and thus were more likely to receive fewer doses. The question was why these children were consistently missed. While most parents were aware of the need for polio drops to protect their children, many did not understand the rationale for repeated rounds. Misconceptions about OPV and suspicions about motivations behind the campaign emerged, especially in the light of other visible problems (i.e. undertapped clinics, poor roads, other diseases). Misconceptions included: OPV caused illness in children, was ineffective, caused infertility and was part of a plan to curb growth of Muslims and scheduled Hindu castes. Misconceptions resulted in resistance to polio vaccination among significant numbers of caregivers. Pakistan faced similar challenges and its limited reach to children in underserved areas led to resistance towards vaccinators who were not members of some communities, especially all-male vaccinator teams, as well as barriers towards women's involvement in the Polio Eradication Initiative. Caregivers reported being tired of repeated rounds and questioned the OPV's efficacy, a situation exacerbated by news coverage accusing the Initiative of using a substandard vaccine. Passive resistance emerged where families did not actively resist OPV but did not take action to immunize their children. Note that resistance to polio vaccination is not unique to India and Pakistan. In Nigeria, for instance, there has been intense resistance to polio campaigns for similar reasons.

One of the most difficult challenges for India and Pakistan has been reaching underserved populations where immunity is too low to stop circulation of wild poliovirus, especially in environments conducive to its spread. Reaching and engaging underserved populations has become a turning point in the Initiative's communication strategy as information alone is not sufficient to encourage behaviour and social change in these populations that would lead to acceptance of OPV. Therefore, the twofold communication challenge has been to: (i) engage and convince caregivers in hard-to-reach areas of the benefits of vaccinating their children, and (ii) ensure that caregivers whose children have received OPV are motivated to continue vaccinating their children.
Social mobilization

While widespread mass media campaigns continue to ensure national visibility and public awareness of the Initiative, augmentation of interpersonal communication and social mobilization interventions have become crucial to reach unreached populations. In India, these strategies relying on cadres of trained health workers and communicators have been intensified to address the context in which the wild poliovirus thrives. In coordination with local health authorities, a social mobilization network involved coordinators working at different levels: the sub-district, block (covering about 100 villages) and community (village) mobilization coordinators. They teamed up with vaccination teams for routine follow-up of families. Activities included planned, intensive and repeated interpersonal communication in selected sites using house-to-house visits as well as systematic and sustained mobilization of community and religious leaders and influencers (e.g. local doctors, Imams). 11

Several evaluations and studies show how these activities have contributed to the Initiative’s efforts. Communities where social mobilization activities are conducted are consistently less likely to refuse OPV, more likely to attend booths and more likely to report positive attitudes towards OPV, and higher perception of polio risk, compared with families in communities without these activities, hence contributing to lower incidence. In four high-risk districts of Uttar Pradesh where social mobilization activities were conducted, the number of wild poliovirus cases dropped from 116 to 49 and there was a significant increase in booth coverage between 50 and 57%, compared with 19–35% at district level.11 A one-year longitudinal study in 13 districts of Uttar Pradesh demonstrated that booth coverage was 8 to 12% higher in areas with a community mobilization coordinator than in areas without one. Other evaluations found a statistically significant difference (P < 0.05) in families’ positive attitudes and behaviours towards OPV. 5,6 An evaluation of the role of community mobilization coordinators in Uttar Pradesh pointed to a 20% increase among families who reported that interaction with community mobilization coordinators influenced their intention to vaccinate their children. 20 Social mobilization raised community perceptions of polio risk for an unvaccinated child from 76 to 87.4%.10 Researchers at JN Medical College in Uttar Pradesh studied the impact of follow-up interpersonal communication and social mobilization activities with resistant families in five high-risk urban areas and found that 49.76% of 1025 resistant families accepted OPV after the first follow-up visit. After a second follow-up visit, a total of 79.32% of resistant families had accepted OPV for their children.8

In Pakistan, attitudinal changes were reported in districts with intensive social mobilization, where 93% of respondents agreed that polio is a serious health problem compared with 83% in districts without these activities. In communities where this was intensified, 95% of respondents believed that OPV was safe for children, compared with 88% in districts without.21 The use of programme and research data enabled Pakistan’s Polio Eradication Initiative to revise its communication strategy to focus on messages for specific audiences and adapt behaviour-change goals towards improving OPV acceptance. A 2005 evaluation found that while mass media campaigns were effective in sustaining peoples’ interest in polio (98% of respondents knew about the campaign; 55% said they discussed OPV with other community members), findings underlined the need to target women, often the primary decision-makers on child health, through ongoing interpersonal communication by trained female health workers. While men remained important opinion leaders and information gatekeepers, female caregivers played a primary role in the decision-making regarding immunization of their children in 55% of households.22

![Fig. 1. Wild polio cases in Pakistan, 1998–2007](chart1.png)

Source: Global Polio Eradication Initiative.1

![Fig. 2. Wild polio cases in India, 2000–2007](chart2.png)

Source: Global Polio Eradication Initiative.1
The communication strategy refocused on reaching women through interpersonal communication with an emphasis on OPV safety and efficacy and its benefits to children. Trained female health workers spearheaded intensified efforts as communication support persons. They communicated directly with female caregivers or indirectly through females in the community, with support from male community and religious leaders. The female teams were effective in influencing caregivers shown by reports of improvements in attitudes towards OPV and perceptions of risk of polio in target areas. A 2005 UNICEF study in high-risk and four low-risk areas (categorized by poor campaign indicators and/or poor coverage; \( n = 2143 \) households) showed that in districts with intensive social mobilization (\( n = 808 \) households), 78% of respondents reported that OPV protected their children from polio, compared with 71% in areas without these activities (\( n = 1335 \) households) caregivers.\(^8\)

Engaging influencers

The challenge of reaching underserved and hard-to-reach populations in India, which included high proportions of Muslim families, led to a focused strategy aimed at “areas with families at high-risk of wild poliovirus infection and ... poor access to health, sanitation, and other basic services”.\(^9\) Influential Muslim training institutions (such as Aligarh Muslim University and Jamia Millia Islamia) and religious and community leaders were engaged in building public confidence and credibility in the Polio Eradication Initiative, improving coverage in underserved communities, providing support at district and settlement levels and countering resistance to polio vaccination in Uttar Pradesh.

In 2004, Muslim religious (2697) and community (1892) leaders were asked to participate in the polio campaign, resulting in 77% and 79%, respectively; of these leaders supporting the programme’s efforts to convince resistant caregivers. They succeeded in 87% of cases in their coverage area, reaching 100% in some districts. This was a critical contribution to the reduction of the immunity gap among Muslim and Hindu children in Uttar Pradesh’s western region. The number of Muslim children who had not received at least two polio drops was reduced from 5% in 2002 to nearly 0% in 2004.\(^1\) Engagement of religious leaders to counter refusals due to religious reasons or misperceptions has yielded similar results in Pakistan’s north-west frontier province. Data from 2007 show that, after involving religious leaders in polio eradication activities, coverage of children in families refusing due to religious reasons increased from 13% in August to 17% in October, and coverage of families refus- ing due to religious reasons increased from 37% to 50% in the same period.\(^2\) When properly engaged, religious and community leaders become strong community allies to eradicate polio.

Role of media and advocacy

Data support claims of the contribution of mass and folk media and advocacy to increased awareness and booth attendance. In India, large-scale mass media campaigns involving movie and cricket stars and political figures focused on dispelling rumours about OPV and encouraging caregivers to bring their children to vaccination booths. A 2003 evaluation showed that nearly 92% of 9370 respondents cited television and radio spots as “very influential” or “influential” in their decision to take children to vaccination booths, while 9 out of 10 respondents … said they had come to the booth largely due to … the TV and radio spots”.\(^3\) Entry and exit polls following exposure to messages on local media among 2552 randomly selected respondents showed a 60% increase in awareness of the next National Immunization Day’s date and a 20% increased intention to get their children immunized at the booth. Puppet/theatre shows, video vans and other folk media activities held in more than 3500 villages in Uttar Pradesh, contributed to a 20% increase in booth attendance.\(^4\) Data from 2004–2005 showed that 68% of respondents exposed to polio radio and television spots reported taking their children to the booth for vaccination, compared with only 44% among those not exposed to the advertising (Fig. 3).\(^5\)

Advocacy efforts have focused on mobilizing professional associations and enlisting their support for polio eradication activities, particularly during National Immunization Days. Political endorsement and support of professional associations include the Indian Academy of Paediatricians, whose members have encouraged caregivers to vaccinate their children and have used their own clinics as polio booths during National Immunization Days. In Uttar Pradesh, this led to the “full-scale involvement of partners and communities … who contributed to an increase in the number of children vaccinated from 30.48 million to 33.96 million and an increase in the total number of children vaccinated at booths from 8.77 million to 14.7 million over the same period”.\(^6\)

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**Fig. 3.** Exposure to polio radio and television advertising and polio immunization rates, Uttar Pradesh, India, 2004–2005

<table>
<thead>
<tr>
<th></th>
<th>Exposed to advertising</th>
<th>Not exposed to advertising</th>
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<tbody>
<tr>
<td>Immunized at booth</td>
<td>68%</td>
<td>44%</td>
</tr>
<tr>
<td>Immunized at home</td>
<td>27%</td>
<td>27%</td>
</tr>
<tr>
<td>Not immunized</td>
<td>9%</td>
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Value added to the initiative

Strategic and synergistic communication efforts that integrate social mobilization, interpersonal communication, gender- and culturally-sensitive interventions, mass/folk media and political advocacy have contributed to the Initiative’s progress and to access unreached populations in challenging socio-economic environments. Principles underpinning communication strategies in India and Pakistan include: i) use of epidemiological, social and behavioural data to assess social/individual constraints, such as knowledge gaps and resistance, to develop effective interventions to reach underserved groups; (ii) development of innovative and intensive interpersonal communication/social mobilization strategies; and (iii) engagement of community and religious leaders. Evidence of impact of communication interventions, including vaccine-related interventions, has been discussed widely.18

Lessons from the added-value of polio communication may contribute to other public health communication programmes, particularly those trying to reach out to the marginalized and poor. They include:

- implementation of communication interventions based on routine monitoring of epidemiological, social and behavioural data on affected populations;
- intensive use of interpersonal communication and social mobilization at different levels to maximize reach, effectiveness and efficiency;
- mobilization of community leaders, communication and relationship-building, engaging families and caregivers who question repeated polio vaccination;
- involving religious leaders as spokespeople and using faith-based folk media (i.e. mosque announcements) to reach community members;
- working with trained communication outreach workers as part of a house-to-house strategy to reach children missed during National Immunization Days;
- advocacy with intensive grassroots mobilization to reach and communicate with marginalized communities; and
- addressing social/gender norms to improve interpersonal communication and increasing access to hard-to-reach groups.

Conclusion

Historically, communication for polio eradication relied on information dissemination about health services, primarily through mass media, aimed at increasing demand for vaccines, especially in areas with a good health infrastructure and high routine immunization rates (i.e. Latin America). Polio eradication in India and Pakistan has raised new challenges that demand communication interventions that are responsive to the evolving nature of the epidemic and the social context of the children they hope to immunize. Both countries have implemented proven strategies and developed innovative approaches to reach and immunize children in hard-to-reach areas. Epidemiological, social and behavioural data have informed multiple communication interventions and culturally-sensitive approaches. These include setting a national agenda for polio eradication, creating demand for OPV, increasing booth attendance during National Immunization Days, pushing for universal coverage through mobilization of local partnerships and networks, and overcoming pockets of resistance to vaccination among caregivers in unreached and underserved areas.

Despite setbacks in their polio eradication efforts, India26 and Pakistan have made remarkable progress in lowering the burden of polio. Communication strategies have contributed to such progress on several levels by: mobilizing social networks and leaders, creating political will, increasing knowledge and changing attitudes, ensuring individual and community-level demand, overcoming gender barriers and resistance to vaccination, and, above all, reaching out to the poorest and the most marginalized. They should continue to play a central role in the final push to eradicate polio.

This review documents the value and crucial contribution of carefully planned and closely monitored communication in building widespread support and understanding, as well as accessing unreached populations and overcoming resistance. There is no vaccine against resistance or refusals that are rooted in social-cultural, religious and political contexts. No supply chain can overcome issues of gender-based decision-making in households. Medical approaches alone cannot address certain community concerns (i.e. why OPV is brought to their door when many other services are not available). These challenges demand effective communication action. Lessons learned by the Global Polio Eradication Initiative may contribute to global public health efforts as we look for innovations to address even more challenging objectives outlined in the United Nation’s Millennium Development Goals.

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Resumen

Erradicación de la poliomielitis: análisis de la evidencia sobre la comunicación sanitaria y enseñanzas extraídas en la India y el Pakistán

Gracias a los esfuerzos desplegados desde 1988 a través de la Iniciativa de Erradicación Mundial de la Poliomielitis, el mundo está a punto de erradicar esta enfermedad. En esa empresa las intervenciones de comunicación han sido siempre decisivas, y las tácticas de recurso a los medios de difusión y divulgación de información empleadas en las actividades de inmunización en todo el mundo han contribuido a ese éxito. Sin embargo, ha habido dificultades para llegar a las poblaciones más remotas, más pobres y más marginadas, y a las personas sin acceso a los servicios de salud. En la última acometida para erradicar la enfermedad, las estrategias de comunicación de la Iniciativa de Erradicación de la Poliomielitis se han visto cada vez más impulsadas por las investigaciones y han tenido un carácter crecientemente innovador, gracias sobre todo a la introducción de mecanismos sostenidos de comunicación interpersonal y movilización social para llegar a las poblaciones que quedaban fuera del alcance.

En esta revisión se analizan los esfuerzos de comunicación contra la poliomielitis desplegados en la India y el Pakistán entre 2000 y 2007. Se explica cómo los datos epidemiológicos, sociales y comportamentales orientan las estrategias de comunicación que han contribuido a aumentar los niveles de inmunidad contra la enfermedad, sobre todo entre poblaciones subatendidas y de difícil acceso, y se describe el proceso por el que unas estrategias de comunicación basadas en la evidencia y planificadas en consecuencia -como una combinación de campañas sostenidas en los medios, una movilización comunitaria y social intensiva, fórmulas de comunicación interpersonal, y medidas políticas y de promoción a nivel nacional- han contribuido a reducir la incidencia de poliomielitis en esos países. Los resultados indican que las estrategias de comunicación han contribuido en distintos niveles a: movilizar a las redes y los líderes sociales; generar voluntad política; ampliar los conocimientos; garantizar la demanda individual y comunitaria; superar las barreras de género y la resistencia a la vacunación; y dar alcance a las poblaciones más pobres y marginadas. El análisis concluye con diversas observaciones sobre el valor añadido de las estrategias de comunicación en las actividades de erradicación de la poliomielitis y sus implicaciones para las intervenciones mundiales y locales de comunicación en materia de salud pública.

Revisión de la evidencia sobre la erradicación de la poliomielitis: análisis de la contribución de la comunicación sanitaria en la India y Pakistán
وتُبَيِّن النتائج والنتائج الموجودة أن استراتيجيات التواصل قد ساهمت على مستوى مختلف في تحقيق الشكك الاجتماعي والقيادات، وخلق الإرادة السياسية، وزيادة الأعداد، وتعزيز الوعي على المستوى المجتمعي والآلاف الأفراد، وتَنُويه على مؤشرات التوجه، واتخاذ الإجراءات إلى الناس. وتأثرت على التخليات الخاصة بالتعاون في الصحة العمومية على المستوى المحلي والعالمي.

المراجعة الجهود المبذولة في التواصل حول شلل الأطفال في الهند وفي باكستان في الفترة بين عامي 2000-2007، وتوضّح كيف قادت ملاحظات السلوكية والاجتماعية والبيئية استراتيجيات التواصل التي ساهمت في زيادة مستوى النشاط ضد شلل الأطفال، وآليتها بين السكان المحرمون من الخدمات، الذين يصعب الوصول إليهم.

كما تَبَيَّن المراجعة كيف ساهمت استراتيجيات الفنون الباليوتية والمُطبِّح لها حول التواصل، مثل الحملات الإعدادية المكثفة، واستخدام المجتمعات العامة والطبيعية، والناشرين بين الأشخاص، وتمخّض عنها الرؤية السياسية والوطنية معاً، في تحقيق موثود وقوع شلل الأطفال في هذين البلدين.

References