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REVIEW

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Building trust and equity in vaccine communication through community engagement

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ABSTRACT

That the COVID-19 pandemic has exacerbated inequities in health has been well studied in recent years, yet the ways in which the pandemic has also revealed existing inequities in communication, specifically health communication, is less well understood. Communities experience differing levels of basic literacy, health literacy, and access to information, as well as differing levels of trust in public health programs. Community engagement (CE) strategies are critical to support improved communication, trust, and equity in vaccination programs. This paper shares two real-world examples of impactful CE strategies from community-based programming to explore how well-designed community engagement strategies can support improved communication, trust, and equity in vaccination programming. Lessons learned from these programs highlight that vaccine communication programs should continuously engage communities to amplify community perspectives and voices to ensure sustained vaccine demand and uptake.

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Introduction

The COVID-19 pandemic led to a surge of global scholarship focused on public health communication, and in particular communication of risk and mitigation strategies including vaccination against COVID-19. Public health crises, with COVID-19 pandemic being the most recent example, have demonstrated the inextricable linkage between science and communication, and how the relationship between the two is essential to protect and promote population health.[1] However, simply creating and disseminating one-size fits all communication materials is not sufficient, or impactful. Effective messaging requires audiences to be front and center in the design, development, and implementation of public health communication strategies.

It has also been widely documented that the COVID-19 pandemic has exacerbated deep-seated injustices in health, while also revealing existing inequities in communication and specifically health communication, as communities experience differing levels of health literacy and have diverse needs in accessing information.[2,3] Equity has come to the forefront of public health discourse.[4,5] Ranney and Friedhoff argue that communication about public health crises should be designed and delivered in a way that "maintains trust and social cohesion, shares evolving science and builds a broad base of support for measures that can save lives and livelihoods."[6] Yet the ability to access and effectively use information can serve as a barrier. A 2023 systematic scoping review of inequalities in COVID-19 vaccine messaging found that limited or lack of information was largely due to language barriers, information that had limited or no reflection of lived experience or specific experiences of marginalization or vulnerability, and ineffective communication channels.[2] Another global, systematic review of COVID-19 vaccine acceptance from 2021 observed significant and wide differences in COVID-19 vaccine demand and acceptance across populations, highlighting the complexity and interplay of social factors that influence demand for and acceptance of vaccination.[7] And a 2020 systematic review of communications interventions and strategies to address parental vaccine hesitancy found that the most successful interventions were multi-component, utilized dialogue and a variety of communication methods, and were specifically tailored to the target population's specific vaccine concerns.[8]

In this review paper, we explore literature on community engagement and its use in vaccination programming, focusing on two specific examples: capacity building through a community activation lens and vaccine equity-focused, community-based research. Then, drawing on two real-world case study examples that focus on capacity building for immunization programming professionals and an approach to research on vaccine equity, attempt to identify the ways in which well-designed community engagement strategies can support improved communication, trust, and equity in vaccination programs.

Community engagement (CE)

The World Health Organization (WHO) defines Community Engagement as "a process of developing relationships that

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enables stakeholders to work together to address health-related issues and promote well-being to achieve positive health impact and outcomes."[9]

At its conceptual core, community engagement recognizes and leverages the expertise and resources within communities, acknowledging that sustainable solutions to public health challenges often emerge from individuals and communities themselves, particularly in identifying their own health needs.[10] This collaborative approach empowers communities to participate in decision-making processes, shape interventions, and advocate for their own health needs.

As it relates to immunization, the concept of community incorporates all the stakeholders involved in or impacted by vaccination efforts, including caregivers, healthcare providers, community leaders, and other influential figures.[11] Understanding the composition and dynamics of communities is essential for tailoring interventions that address specific barriers and facilitators to vaccine acceptance and uptake. Yet within the context of immunization programs, the definition and uses of community engagement are still debated.[12] Evidence is increasingly revealing the utility of community engagement strategies for improved immunization outcomes, including increases in vaccine coverage. A 2022 meta-analysis found that community engagement interventions, particularly those that addressed common contextual barriers and facilitators, had a positive effect on immunization coverage.[11] The ways in which communities may perceive their engagement in program planning and implementation may itself also increase vaccine confidence. For example, a 2019 survey of parents and caregivers in areas of low vaccine coverage in Sierra Leone found that those who perceived that immunization program planning had incorporated community engagement had both higher vaccine confidence and their children had higher uptake of routine vaccines.[13] While this study suggests that CE is an effective approach to improving immunization outcomes, other work has considered the practicalities of utilizing CE approaches in immunization programs. A 2020 qualitative study of vaccine decision-makers in India sought to understand their conceptualizations and use of CE in immunization program planning and implementation. Decision-makers agreed upon a conceptual understanding of CE that incorporates bidirectional relationships, building trust, transparent communication, capacity building, and strong political will. Interestingly, there was agreement that much of the current work in CE as it relates to vaccination was felt to be focused mostly in "downstream delivery" and even "imposition" of immunization services that has led to community backlash both in India and other parts of the world.[14]

In developing strategies for implementing community engagement strategies into vaccination programs, practitioners can draw on several existing conceptual framework and models. Community engagement approaches are thought to exist on a progressive continuum ranging from least to most community involvement wherein communities 1) receive information from program implementers, 2) are consulted with by program implementers, 3) collaborate with program implementers, and finally 4) fully control the initiative. All these strategies may be affected by exogenous effects, with trust between communities and program implementers (e.g. government, CSOs, etc.) an essential component.[10] Additionally, a recent systematic review-derived conceptual framework for public health interventions outlined effective CE strategies, which typically incorporate: 1) utilized peer-led health services delivery, 2) employed varying degrees of collaboration between communities and health services, and 3) were built upon empowerment philosophies.[10]

Co-creation

Community Engagement is core to public health action and draws on the importance of human centered design, equity, community participation, collective control and community consent for public health interventions.[15] While varying degrees of participatory approaches are used to adapt interventions for end users, community-based participatory research focuses on involving end-users in all stages of the research process.[16] Co-creation then refers to the overarching principle of developing and implementing research or interventions in partnership with various stakeholders, especially the community of focus in all initiative stages.[15] In co-creation, communities are both the target audience and active stakeholders in initiating, planning for, and affecting change. Voorberg et al. make the distinction between three types of co-creation with communities as co-implementors, co-designers and co-initiators.[17]

Co-creation approaches are being used to design vaccine information and communication campaigns[18] and in co-designing and implementation of programs.[19] The case study from India presented in later sections highlights how community-based participatory research can not only strengthen our collective understanding of vaccine inequities but, it can also help document, evaluate and refine different CE approaches taken to make vaccination more accessible. Through regular advisory board meetings and community consultations, the research team, co-led by researchers from the communities of focus, iteratively developed the research design, interview guides, recruitment strategy, analysis and dissemination, incorporating participatory methods like Photovoice Stories and developing targeted outputs including an exhibition and a community brief in local languages like Hindi and in accessible formats such as Braille.

Trust and trust building

Trust is an essential component of all CE frameworks and initiatives and can be considered at the community level, such as a community's trust in government, and at a more individual level, such as the culturally specific aspects of trust that underpin interpersonal relationships.[20] Conceptually, trust is an incremental process of assessing the risk involved in being open with or dependent upon another individual or institution.[21] Both individual and community trust are essential components of demand for and utilization of health services, including vaccines.[22] While it is outside the scope of this paper to delve deep into the literature on trust, the most relevant aspect is in trust-building. Trust-building can include behaviors as well as an individual or institution's values that embody trust.[20]

According to the "community circle of trust-building," there are fourteen trust-building elements grouped into three main themes. The first theme, building relationships and engagement, focuses on building meaningful connections and includes creating safe spaces; providing support, including peer support; utilizing active listening; creating a common language through shared definitions and terminology; encouraging mutual exchange of ideas; and meeting people where they are through integration in the community. Embodying core values of trustworthiness is the second theme and includes transparency; demonstration of integrity, reliability, and consistency; expressing genuine care and concern; demonstrating knowledge and skills that are relevant to community needs; and authentic and genuine personal interactions. The final theme, sharing decision-making, championing autonomy, and addressing barriers to trust includes having shared goals and vision, bolstering resiliency and hope, and addressing distrust and systemic inequities.[20] On a practical level, such concepts can inform the design and implementation of community engagement efforts.

A 2020 study in Sierra Leone utilized community-led ethnography to understand trust-building around vaccination services and found that trust between communities and healthcare workers was defined through meaningful social interactions and relationships built on social proximity, reliability, and respect.[23] These findings underpin the notion of an individualized approach to building vaccine confidence and working against mistrust of vaccines; building meaningful relationships with individual and their communities that emerge from a place of respect and understanding and that engages directly with the process of building and maintain trust.

Community activation

Marshall Ganz, of the Harvard Kennedy School, developed a framework for community activation that offers a complementary approach to mobilizing communities and fostering collective action through community engagement. Ganz emphasizes the importance of empowering communities to identify and address their own needs, echoing the principles of collaboration and empowerment highlighted elsewhere in the literature.[24,25] Recognizing CE's multi-tiered benefits, from measuring the effectiveness for a health promoting activity to building sustainable systems and ceding power to communities, we look to a 2022 systematic review and meta-analysis focused on how CE interventions can be effective in improving routine immunization outcomes in low- and middle- income countries (LMICs). Three elements may affect the success of interventions, leading the authors to conclude that CE interventions should: 1) prioritize the appropriateness of intervention design with CE features, 2) address common immunization barriers and facilitators, and 3) account for implementation constraints and practicalities.

Advanced community activation training for the Sabin Boost Community

The Boost Community (Boost) comprises a global network of more than 4,700 immunization professionals from more than 155 countries. Boost offers its members ongoing opportunities to connect with one another and access resources and both asynchronous and synchronous training opportunities to build skills and learn strategies to navigate a complex and evolving immunization landscape. Part of Boost's core foundational training revolves around adaptive concepts, such as community activation and adaptive leadership, as well as technical concepts such as strategies to recover national immunization programs after the COVID-19 pandemic.

Boost's *Advanced Community Activation Training* is a 14-week experiential virtual learning program that is originally adapted by *People Power Health* drawn from this body of work on community activation and delivered to a select cohort of Boost members. While community organizing is often thought of in terms of social movements or politics, community activation at its core is about "people turning the resources they have into the power they need to make the change they want."[25] This training, which operates both asynchronously through a learning management platform and synchronously with weekly mandatory Zoom sessions, teaches leadership skills and practices to activate people in communities to achieve shared goals together.

The six leadership skills and practices taught in this training include: coaching, narrative and storytelling, relationship building, building and structuring leadership teams, strategy, and action.

These core leadership skills taught in this program remain consistent with the original community activation framework, however, there have been adaptations to this program for Boost's global community of immunization professionals to ensure accessibility and relevance. These skills are highly relevant to the field of immunization and Boost's global community of immunization professionals, many of whom face challenges they cannot solve without engaging and activating the community, such as vaccine hesitancy and vaccine demand.[26]

Many goals that immunization professionals are working toward require a behavior change. For example, to decrease vaccine hesitancy in a community, you need to change both minds and behavior, which is more complex than sharing out information. Drawing on the idea that behavior change is more likely when someone is exposed to an idea from a strong tie – someone with whom they have a real relationship,[27] community activation requires an intentional relationship-building process to create the type of trusting relationships that can motivate others to act.

One of the program's content adaptations is about teaching and modeling the strategy of building a community and allowing the participants to see the evolution of their cohort of strangers becoming a community as the program progresses. Another adaptation includes involving members of the Boost community as facilitators in the course both to make sure the materials remain contextually relevant to the field of immunization and its challenges and to build the facilitation and training capacity within the Boost community. The current program is being offered for the first time in both English and French to reach a wider audience of Boost global immunization professionals. Facilitators use WhatsApp to communicate with participants and

participants can easily reach facilitators directly and informally to ask for guidance or assistance. The cohort size is limited to ensure active participation and active learning from all participating immunization professionals.

To date, more than 55 Boost Community members from 17 countries have graduated from advanced training. As such, there are several examples of participants using these skills in their daily work. Tina Agbonyinma, a Boost member and Social Behavior Change Facilitator for routine immunization in Kano, Nigeria, has used community activation skills to clearly understand, diagnose root causes and ways to tackle and provide lasting solutions to complex immunization challenges relating to vaccine hesitancy, creating demand and building trust for vaccination in her community. Drawing reference from the Human Papilloma Virus (HPV) vaccine introduction campaign and the COVID-19 recovery for immunization fellowship program, another Boost program offering, has shown that application of focused and targeted problem-solving community activation activities strategically has helped restructure communities to bring about positive behavior change and build trust and increased demand for vaccination. Some of the community activation strategies applied to improve community engagement around communication are shown in Table 1.

These community activation strategies are key to ensuring all communities continuously accept and trust vaccination locally and globally. The activities below are suggested for prioritization:

- Focus on coaching, mentorship and capacity building of local community members on vaccine-preventable diseases
- Engagement of highly respected community influencers to share their experience on immunization and vaccine hesitancy in local media and language through storytelling to promote vaccination and build trust
- Retention and continuous engagement of trained community workers to provide key immunization messages relating to vaccines and preventable diseases
- Train-the trainer program using Boost Community members to cascade community activation trainings and get feedback on trainings conducted with local communities
- Survey and/or in-house meeting on vaccine hesitancy and trust building with key stakeholders and possible solutions provided using Boost Community members

Social and behavioral research grants program: the iHEAR vaccine equity project at Sangath, India

Vaccination acceptance, demand and delivery challenges are complex and context-specific, varying across time, place, and type of vaccine. Effective interventions need to be tailor-made to address these challenges. In 2019, the Sabin Vaccine Institute developed the Social and Behavioral Research Grants Program (SBRG) to fund local, close-to-community researchers and implementers from interdisciplinary fields to explore the social and behavioral drivers of vaccination acceptance, demand, and delivery in diverse low- and middle-income country settings.

Since its inception, the SBRG program has awarded funding to implement 25 projects in 15 countries across Latin America, Africa, Asia, and the Western Pacific (Figure 1).

One of the Social and Behavioral Research Grant partners in India, the iHEAR[a] team based at Sangath, India conducted a qualitative research study between October 2021 and February 2023 to understand the structural barriers experienced by individuals from the transgender and disability communities in India in accessing COVID-19 vaccination.[28] The study revealed how equity-focused partnerships and community engagement initiatives facilitated vaccine uptake among the two communities. In such programs, community influencers and community-based organizations (CBOs) led vaccine-related communication working along with trusted health professionals; they were viewed as a reliable source of information with whom community members could communicate their doubts and anxieties.

Study participants shared a range of communication strategies that they employed to enhance vaccination. For

Table 1. Community activation strategies to improve vaccine communication.

Actor Mapping	This approach is used to identify key stakeholders in the community targeting— – policy and decision makers – traditional/religious leaders, – influencers, and – partners, supporters and opposition members.Activities such as an advocacy/sensitization meeting, focus group discussions, and community dialogues are conducted to gain community support and trust for vaccination.
One-on-One Meetings	After identification of key stakeholders, one-on-one meetings are scheduled with influential decision-makers in the community to solicit their support and commitment.In gaining the full support of key influencers, decision makers, traditional and religious leaders, the community is more likely to accept and trust vaccination.
Coaching & Structuring Teams	A standard procedure for team selection is implemented and qualified candidates are trained using the coaching method to build their capacity, assign roles and responsibilities, monitor and supervise their activities, and follow-up on feedback. For example, this coaching and mentoring approach was used to train town announcers and ward selection committee members during an HPV vaccine introduction campaign. The campaign was successful due to effective communication, commitment and confidence displayed by team which led to acceptance and trust for the vaccine.
Storytelling	This storytelling approach is a longstanding strategy used to resolve community issues, clarify misconceptions, and build trusting relationships. Storytelling can be carefully applied to address challenges related to vaccine hesitancy due to misconceptions around vaccine safety, low risk perception, political interference, marginalization, and religious barriers leading to low vaccine uptake and access. Stories are communicated with empathy and neutrality, using evidence-based information with facts and figures, pictorials, and songs in local language to capture the minds of the community to act for positive behavior change.

Figure 1. Four cohorts of Sabin's social and behavioral research grants program.

instance, a trans woman from the state of Chhattisgarh worked tirelessly to sensitize, counsel, and even accompany community members for their vaccination. She also consulted a doctor and a counselor at the health department to be able to navigate her fears about the safety of the vaccine for her as a trans person. Such examples highlight the role of community leaders, community-based organizations and support of health professionals in mobilizing the community, addressing anxieties, building trust and facilitating community sensitive vaccination drives which were vital for the trans community.

Another participant with disability engaged his radio show viewers to build trust and awareness about the vaccine. Members of a mobile vaccination campaign in Maharashtra shared that doctors with support from family members were crucial in communicating the benefits of the vaccine among the disability community. Thus, partnerships among community members/organizations, vaccination programs, health professionals and even caregivers in the case of disabled individuals were key to understand community concerns and build confidence in the vaccine.

Effective targeted vaccine communication also requires community-specific vaccine information generation and sharing. Transgender and disability community participants highlighted a structural gap in vaccine research on how the vaccine might affect their disability, co-morbidities, HIV treatment or use of hormone replacement therapy and plans for gender affirming surgeries. Due to this, many expressed a lack of information and resultant concern and confusion around decisions to take the vaccine, delaying their vaccination.

Beyond communication, there is a need to make vaccination services tailored to the needs of the two communities. When transgender persons and persons with disability reached vaccination centers, many reported experiences of mistreatment, lack of accessibility and denial of services due to stigma and lack of awareness. Many people living with disabilities had to stand in line for hours and were not prioritized at the center and several trans people faced challenges in centers due to gender discordant identification cards, binary registration lines and facilities such as toilets, or because their first dose was obtained under their deadname[b] and at the time of their second dose or booster dose, they had legally transitioned to their chosen name.

Many community-specific initiatives deployed reflect how vaccination services could be tailored to the specific needs of communities to fill this gap. For instance, many people from the disability communities required vaccination at their residence and sex workers and transgender individuals who work during the day and cannot afford to lose their daily income, required vaccinations in the evening, outside the operating times of vaccination centers. To address this, mobile vaccination units in parts of Maharashtra informed communities about and provided exclusive near-home vaccination camps and at hours preferred by sex workers, transgender persons and other marginalized communities like street vendors and tribal communities. Flexibility in design considerations can thus benefit multiple marginalized communities. They also provided vaccination at institutional care settings for persons with disability.

Some state governments such as Kerala and Nagaland also partnered with CBOs to conduct community specific

vaccination drives. A trans man from Kerala said that the staff members were also sensitized at these drives and did not deadname him, pointing to the importance of affirming language and conduct for trans persons. These programs recognize that the two communities have longstanding histories of marginalization with public services, which has fractured their trust with the health system, and that program managers and their teams need to think about how they can rebuild trust and make access easier.

Effective community engagement holds the promise to repair this fractured trust by focusing on the whole spectrum of CE, starting with tailored information generation, the accessibility of formats and restructuring vaccination services to meet community needs. The socio-economic and cultural contexts of these communities must shape the when, where, how of vaccination drives. From examples illustrated, some key questions informing equity focused CE initiatives should be – How do people in a community view and prioritize vaccination? How do their socio-economic histories and needs shape their anxieties around vaccination? Which non-vaccination needs might also need to be addressed before/alongside conversations on vaccination? Which partnerships are necessary to work toward an effective communication campaigns and vaccination design? Who is viewed as a reliable source of information?

These initiatives are vital for enabling equity and dignity within vaccination programs and prepare for a future where vaccination of marginalized communities is not an afterthought but integrated into programmatic frameworks. The sustainability of these initiatives is dependent on the political and policies at all levels including that of governments, including local district immunization teams. Finally, restoring trust also requires paying attention to the long-term investment needs for a community's socio-economic well-being. As one trans activist shared, "*How could they even expect these people to think about getting vaccinated when they could not even feed themselves?*" Another key informant working with a tribal community in Karnataka shared that "*[Community members] said that it has been fifty years since they have been asking for drinking water and roads and now everyone… is coming and saying that take the vaccine and save your life [but] if they really cared about our life they would get us the road.*" Sharing their approach, she said, ". *our primary message was that no one can force them to take a vaccine . . . It is a right that you have where you can think about yourselves and move away from fear and make an informed choice rather than a fearful one."*

Discussion

The two examples presented reveal different, but complementary, approaches to utilizing community engagement strategies to build effective vaccine communication approaches that are built on trust, equity, and dignity for all. With the Boost community activation training, the focus is on providing on-the-ground immunization professionals with skills and training to engage local communities in a way that empowers those communities to identify local influencers, build confidence and trust among community members, and dispel misinformation about vaccines. The foundation of this community activation training approach is building and fostering strong relationships between the trainers and the community, empowering community members with the skills to communicate and advocate for vaccination from a place of trustworthiness within their own community. The facilitators of such training programs must be aware, to the best of their ability, the context in which the trainings are given. This is particularly salient for online trainings which have the potential to feel removed from local context. Conducting one-on-one meetings with enrolled participants is a way to gain insight into the national, regional, and and/or local context prior to the launch of trainings/workshops. It also allows participants to share their current challenges and reasons for enrollment, understand the expectations of the training, and start to build a relationship with the program facilitators.

The iHEAR VaccinEquity project at Sangath in India with key members of the research team drawn from the transgender and disability communities was able to identify barriers to effective vaccine communication, including not receiving information on vaccine interactions with medical needs that are unique to these two communities, such as gender affirming surgery, hormone replacement therapy, and disability(ies). The relationships between researcher and research participant came with that idea of social proximity discussed previously, focusing on specific needs of specific individuals within each community, bringing trust, respect, and dignity to these interactions.

These examples align with previous examples in the literature that highlight the importance of trust-building and inclusive leadership as key aspects of a process of co-creation of public health and immunization interventions,[15] as well as centering dignity in building a path toward community ownership.[29] Both the community activation training program, through a training of trainers approach, and the iHEAR VaccinEquity project, using community advisory boards, are designed to decrease and even eliminate imbalances of power between communities and implementers or researchers. Such strategies foster equality between communities and implementers and researchers in terms of decision-making, knowledge production, and intervention design and in so doing directly address any potential imbalances of power[30] and builds trust.[31] Ethical considerations should always foreground the design of a community engagement strategy, including engaging key community stakeholders and influencers first, as well as contextual considerations of social norms that may introduce or even reiterate existing power imbalances within the community.

A major limitation of these programs is that they are discrete and hyperlocal examples that are reactive to community needs, and thus extrapolation to other settings may be difficult. Regardless, the broader lessons contribute to the literature two examples of processes of trust-building as an essential component of community engagement that works alongside existing strategies. To our knowledge, this work contributes to an identified gap in the literature focusing on trust building for vaccination.[23,32]

Conclusion

Two key lessons can be drawn from these examples. First, communication about vaccination starts with open

transparent and bidirectional communication; both program implementers and researchers alike need to talk to people, understand and respond to unique needs of communities, especially those who are marginalized, and do so regularly in a way that leads with empathy, supports continuous trust-building, and empowers individuals and collectives. Second, the work of engaging communities to drive vaccine demand and uptake, either in empowering communities through training in community activation or utilizing community-based and community co-designed research, should continually amplify community perspectives and voices to ensure sustained vaccine uptake, be iterative and flexible, and be incorporated as a critical part of vaccination program design and implementation. Further research should engage with the concept of trust -building specifically as a component of overall community engagement strategies for vaccination programming.

Notes

[a] Initiative for Health Equity Advocacy and Research.
[b] Deadname is the birth name of a transgender person, which they have changed as part of their transition are no longer comfortable using.

Acknowledgments

The authors would like to remember and celebrate Bhakti Ghatole, a beloved colleague and friend who passed away on 11 May 2025. She was a psychologist, researcher, person with visual impairment and a relentless disability and equity advocate. Bhakti was a researcher in the iHEAR VaccinEquity project where she led data collection and analysis. She also advocated for disability and gender inclusive health and vaccination programming at national and international forums. In line with the theme of this paper, Bhakti believed in the power of community and interdependence. We hope to embody Bhakti's critical thinking, courage, humor, compassion and optimism.

Disclosure statement

Five of the authors (TS, MD, BT, KH, EK) are employed by the Sabin Vaccine Institute. The authors have no other competing interests to declare.

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Notes on contributor

Theresa Sommers has been with Sabin since March 2020, where she manages the Social and Behavioral Research program, provides technical oversight of the Vaccination Acceptance Research Network (VARN), and is the Deputy Director of the Gavi-funded Hexavalent Switch Assessment project. She has over 15 years of experience in global health programming and research, including with various bilateral and multilateral public health organizations (CDC, WHO, USAID) on infectious disease control and pandemic preparedness and response. While at CDC, she supported multiple US government emergency responses including the 2009 h1N1 outbreak and developed high-level risk assessments in support of mass gatherings and CDC polio eradication efforts. Her doctoral work focused on the social determinants of access to health services for migrant youth in Johannesburg, South Africa. Her research background and interests include vaccine acceptance and demand generation, global health governance, intimate partner violence, and transnational health issues including human migration. She has designed and taught both online and in-person undergraduate and graduate-level courses on Global Health, Research Methods, and Research Ethics at three US Universities. Theresa holds a BA from Wellesley College, an MPH from Boston University, and a PhD from the University of Massachusetts.

Ethical approval

This study did not involve human subjects, and therefore we did not seek ethical approval for this project.

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