

CASE STUDY FROM KARACHI, PAKISTAN

Value of Community Co-design for Vaccine Confidence Interventions



The pilot project was conducted in Karachi, Pakistan between January 2021 – December 2021. It was implemented through a partnership between Dow University of Health Science, Karachi, and Aga Khan University, with funding from the Sabin Vaccine Institute. The project received ethics approval from the Dow University of Health Science Institutional Review Board.

KEY TAKEAWAYS

- Co-designed approaches involving multiple, highly influential and trusted institutions (e.g.; academic, religious, healthcare) need to be employed to develop trust and confidence in vaccines and generate demand for vaccination
- Engagement and empowerment of females is crucial in driving change, especially in Muslim settings, but attention needs to be given to their local values, traditions and cultural practices
- Utilizing and moderating conversational social media platforms (e.g.; WhatsApp) can be successful in tackling misinformation amongst youth and their families

APPROACH



A community-driven approach to improve vaccine literacy and strengthen participants' capacity for vaccination decision-making was implemented with the objective of improving vaccine uptake among an under-served urban population residing in Muslim Abad Colony, Landhi Town, Karachi, Pakistan.¹ Household surveys and focus group discussions (FGDs) were conducted to explore misinformation, rumors, misconceptions, and fear regarding the COVID-19 pandemic and vaccination among residents of informal settlements. Insights established key areas for an intervention designed with and for the community. The process involved five stages of the Design Thinking Model (see Table 1).

1 Plattner, H. An Introduction to Design Thinking PROCESS GUIDE. <https://dschool-old.stanford.edu/sandbox/groups/designresources/wiki/36873/attachments/74b3d/ModeGuideBOOTCAMP2010L.pdf>

Table 1 - The Five Co-Design Phases of the Design Thinking Model

Co-Design Phase	Specific Objectives	Methodology
Empathize	Explore the misinformation, rumors and misconceptions regarding vaccination and COVID-19 from the perspective of different stakeholders	Household survey, focus group discussions (FGDs) by age and gender Identify and engage key stakeholders for co-design
Define	Identify issues and address and validate the findings with different stakeholders	Information sharing workshop among research team and community to identify current vaccine misconceptions
Ideate	Design the solutions for the identified problems based on knowledge-based evidence (what the people think will work for them) and evidence-based practice	Ideation workshops among research team and community to develop problem-based solutions
Prototype	Design and validate a single mature intervention prototype required for testing or implementation phase Develop the implementation action mechanism and theory of change to support the intervention Develop a continuous monitoring framework for the intervention	Design and action plan workshops to develop and translate resources and messaging
Testing	Deliver the mature intervention to the beneficiaries. Evaluate the effectiveness of the intervention.	Field implementation with in-depth interviews and FGDs

Co-design approaches aim to provide greater sustainability and longevity of strategies (e.g.; vaccination acceptance messaging). Given post-intervention evaluation showed these community-centered intervention components were effective in dispelling COVID-19 misconceptions and improving COVID-19 vaccine acceptance, these strategies could inform global stakeholders targeting similar objectives.

IMPLEMENTATION STAGES



1. Empathize Phase

Baseline Understanding

A quantitative cross-sectional survey administered amongst a random selection of 470 households determined the following common misconceptions and beliefs:

- All migrants carry COVID-19 (46%)
- Only the elderly can be infected with COVID-19 (32%)
- Only those who practice taboo behaviors (e.g., not offering prayers, sex etc.) can be infected with COVID-19 (35%)
- Drinking water (48%) and eating nutritious food (59%) prevents COVID-19
- COVID-19 vaccines are unsafe (26%)
- People with comorbidities should not receive vaccination (25%)

Presence of comorbidities, exposure to radio/TV were all associated with higher scores of misconceptions. More than half of survey participants had smart phones. Increased access to messaging channels coupled with low literacy may contribute to the spread of misinformation.

Qualitative data gathered through 20 in-depth interviews and four FGDs (two per sex group; 20 participants total) with community stakeholders identified the following themes:

- Mistrust of vaccine safety and trust in home remedies
- Trust in elder and peer advice, may consider vaccination if recommended by these relations
- Religious prohibition of vaccination
- Perception among youth that COVID-19 is not a serious illness requiring vaccination
- Media playing significant role in spreading misinformation including conspiracy theory that COVID-19 vaccine is a 'Western Plot' to harm particular ethnic groups like people practicing Islam
- Poor health literacy and health care seeking, and lack of communication channels are barriers for healthcare workers in building public confidence in COVID-19 vaccine

Identification and Engagement of Key Stakeholders for Co-Design Process

Community trust, facilitating buy-in of key stakeholders in the co-design process, was developed through the following considerations:

- Hiring study staff from the same target community, with a key member belonging to the same Pashtu ethnicity with fluency in local language
- Engaging with influential community stakeholders, including religious leaders, school teachers, and informal healthcare workers.
- Holding informal meetings from the study outset, to allowed for discussion and community concerns to be addressed
- Honoring of cultural norms and tradition of the community by completely segregating male and female activities and allowing only female staff to interview and approach the female stakeholders
- Providing FGDs in a comfortable, respectful environment with available refreshments, facemasks, sanitizers, and social distancing to motivate and engage participants

Key local stakeholders identified were healthcare providers (informal health workers, Expanded Program on Immunization vaccinators, polio workers), union council chairmen, political party members from the community, law enforcement personnel, religious leaders (male and female), school teachers (male and female), Medical Superintendent of local community hospital, and other community leaders.

2. Define Phase

Using insights from baseline data, key actionable problem statements were constructed (see Table 2).

Table 2 - Key Actionable Problem Statements

Level of Action	Key Actionable Problem Statements
Individual/ family level	<ul style="list-style-type: none">• Poor health literacy resulting in susceptibility to rumors and mis- or disinformation• Lack of female involvement in decision making (poor female empowerment)• Lack of trust in government hospitals and doctors, considered as party in global COVID-19 hoax• Inherently vaccine hesitant population with hardcore refusal for polio vaccination
Community/ society level	<ul style="list-style-type: none">• Faith based trust (more trust in religious leaders), strong influence of religious leaders in the community• School teachers and schools influential and respected by the community where literacy is less than 50%• Poverty, lack of civic facilities and healthcare by the government create lack of trust and negative sentiment
Service level	<ul style="list-style-type: none">• Lack of COVID-19 vaccination center in close proximity• WhatsApp, YouTube, and Facebook as major source of acquiring information• Local informal healthcare providers, religious leaders, school teachers and school going youth considered as knowledgeable regarding COVID-19 pandemic & vaccination

3. Intervention Phases: Ideation and Prototyping

Four, in-person ideation workshops with local stakeholders, held separately for males and females, were conducted to define the identified issues/problems and set priorities. Further brainstorming and mind-mapping exercises were conducted to refine and integrate the collection of ideas into cohesive applicable concepts and solutions to fill knowledge gaps and debunk disinformation within the community. The derived interventions were shared with 20 stakeholders, which included policy makers, general population, and religious leaders to obtain additional insights.

4. Prototyping Phase

The main purpose of this stage was to refine the ideated interventions into the most suitable prototype/intervention and delivery strategy required for testing or implementation. This was achieved through a preliminary consultative meeting and final community stakeholder co-design workshop. A single mature package of interventions involving four different strategies was finalized for testing and evaluation, as listed below:

- **School-based approach** to disseminate correct contextual information and knowledge to the school children and their teachers who would in turn inform the families.
- **Masjid-based approach** to disseminate the same contextual messages/knowledge to the masjid imams (religious leaders) to then convey forward to their followers.
- **Healthcare providers-based approach** to actively involve and educate informal healthcare providers working within clinics and maternity homes within the target setting who will then inform their patients and attendants.
- **Youth-based approach** to disseminate short video clips and health messaging to correct misinformation through created youth WhatsApp groups from each Mohalla (neighborhood), as moderated by the research team.

Contextual communication materials (see Figure 1) to raise awareness of COVID-19 signs, symptoms and prevention methods; depict how to register for COVID-19 vaccination; and counter myths and misinformation were developed in Urdu for community wide dissemination including through WhatsApp groups and Friday prayer services. Key stakeholder groups including school teachers, religious leaders, informal healthcare workers, and youth assisted in disseminating messaging materials.

5. Testing and Evaluation Phase

Information was disseminated amongst six schools (four standard schools and two madrassahs - one of female and male religious students, each) and two youth WhatsApp groups. All informal healthcare worker and religious leader stakeholders disseminated the correct messaging within their workplaces and during Friday prayer.

To assess the impact, feasibility, and acceptance of the intervention among the community, a post-intervention survey from 401 randomly sampled participants, and 20 in-depth interviews and three FGDs were conducted amongst key stakeholder groups. Tables 3 contains the quantitative survey findings.

Figure 1. Contextualized Communication Pamphlets in Urdu



Table 3 - Comparison of Misconceptions and Intention to Vaccinate between Baseline and Post-Intervention Survey Findings

Knowledge, Attitude, Perception	Baseline (N=470)	Endline (N=401)
COVID-19 vaccine-related misconceptions, overall	45%	14%
COVID-19 vaccines are unsafe	26%	15%
COVID-19 has severe side effects (disability, hospitalization, death)	18%	15%
COVID-19 vaccination should not be offered to people with underlying chronic conditions, pregnancy or are breastfeeding	25%	5%
Intention to receive a COVID-19 vaccine once it is available	15%	85%

A summary of the post-intervention qualitative findings are as follows:

- Delivery of fact-based information through key community stakeholders was an essential element in changing the community's perception towards COVID-19 vaccination.
- Stakeholders acknowledged the value of the co-design process to create community-centered behavior-change, as it addressed contextual factors.
- Community members stopped trusting hearsay and developed a habit of cross-checking information with local medical professionals or other trusted sources.
- Evidence of positive shifts in attitude towards the COVID-19 vaccine and reductions in vaccine-related misconceptions.
- Community stakeholders expressed desire for the intervention to be long-term and scaled-up.

INFORMING COMMUNITY ACTION



Policy

- Engagement and empowerment of females is crucial in driving change, especially in Muslim settings, but attention needs to be given to their local values, traditions and cultural practices
- Co-designed approaches involving multiple, highly influential and trusted institutions need to be employed to develop trust and confidence in vaccines and generate demand for vaccination

Program

- Engaging key stakeholders from the outset of a program enables the creation of feasible interventions
- Utilizing and moderating conversational social media platforms (e.g.; WhatsApp) can be successful in tackling misinformation amongst youth and their families

Practice

- Interventions need to be tailored to the needs of the community
- Involve key stakeholders from different fields (e.g.; education, religion, medical) to create change within their communities

RESEARCH LEADS



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Rubina Qasim, RN/RM, BScN, MScN, works as an Assistant Professor at the Dow University of Health Sciences in Pakistan. Rubina has more than 10 years of teaching and research experience in both public and private sector academic institutions. Her area of research is maternal and child health including routine immunization, and vaccine acceptance and hesitancy among marginalized hard-to-reach populations. She leads a team of research staff working for the health and social uplifting of the marginalized population living in the peri-urban slum of Karachi, Pakistan.



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Tahir Yousafzai, MPH, PhD (Global Health) Scholar is working as Assistant Professor at the Dept. of Pediatrics and Child health, Aga Khan University Karachi, Pakistan. Tahir has more than 10 years of research experience in Pakistan, Middle East and Australia. His research interests rang from surveillance of vaccine preventable diseases among children, impact evaluation of newly introduced pediatric vaccines and vaccine hesitancy. He recently completed a funded study exploring the misinformation regarding COVID-19 pandemic and COVID-19 vaccines and used co-design methodology to develop contextual strategies to address misinformation among the marginalized communities living in peri-urban settlements in Karachi. In addition, he is co-investigator on a CEPI funded multicenter phase 2 trial evaluating the immunogenicity and safety of various COVID-19 vaccines administered through mix-and-match strategy in Pakistan. Tahir is also co-PI in GAVI funded project to evaluate the impact of typhoid conjugate vaccine among children in several cities of Pakistan.

RESEARCH LEADS



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Uday Narayan Yadav has implemented various public health programs and conducted research in Nepal, Bangladesh, Pakistan, India and Australia, and has worked with development partners such as USAID, UNAIDS and IOM. He is the recipient of the 2021 David L. Sackett Fellowship from the Nuffield Department of Primary Care Health Sciences at the University of Oxford, and the 2021 National Health Research Award from the Government of Nepal. Uday holds the position of Associate Editor at BMC Public Health for the "Global Health" section and is a member of the United Nations Research Consortium.