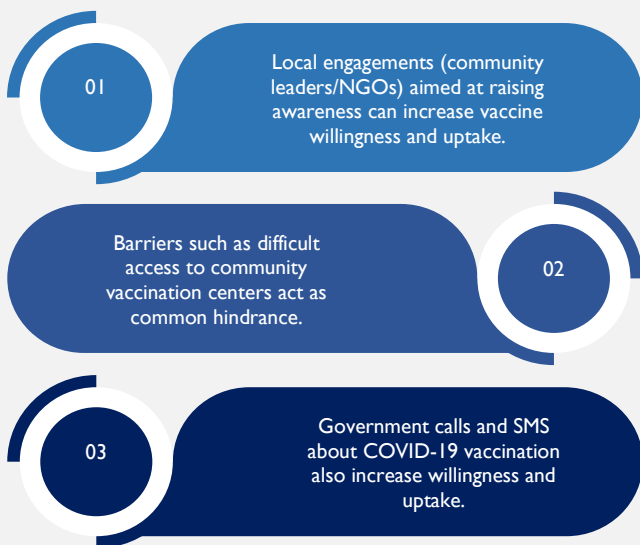


# Community engagement and vaccine uptake: Evidence from a randomized experiment in low-income communities of Pakistan

## Background

One of the major issues that emerged post-COVID-19 pandemic has been vaccine equity. Even with the production of more vaccines than required, accessibility and uptake have been a major challenge for regulatory bodies in achieving universal coverage. Data on vaccine perceptions and uptake in low-income groups and urban slums are missing and can provide information on potential determinants of factors that prevent uptake. Knowledge on interventions aimed at increasing vaccine coverage in such communities is limited.

Figure 1: Key Points



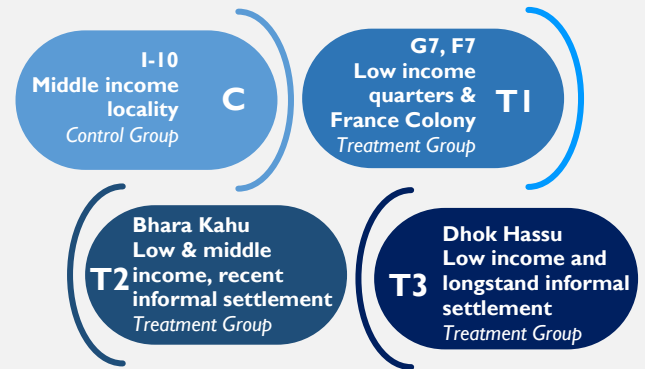
## Methodology

The study follows a cross-sectional research design of household surveys of 1760 respondents. The respondents have an equal gender representation, and data is collected at two points in time for baseline and endline results. The survey is limited to respondents of 18 years and above from Islamabad and Rawalpindi and focuses on five densely populated, low-income and underserved areas.

Community-based interventions were carried out in treatment groups since such interventions have proven to be most effective. The primary intervention was to build awareness in experimental groups (Figure 2) using campaigns at public spots such as shops, markets, mosques, and churches. Printed pamphlets were distributed in the local language to explain the registration process to get vaccinated as well as disseminate information about the locations of Covid-19 Vaccination Centers (CVCs). Since there were no CVCs nearby of intervention areas, mobile camps were arranged through a team of volunteers in collaboration with community-based organizations to counsel and register members for the Covid-19 vaccine. An intent-to-treat (ITT) analysis was performed to measure average treatment effects

(ATEs) across treatment groups using a difference-in-differences (DiD) specification.

Figure 2: Treatment and Control Groups



## Findings

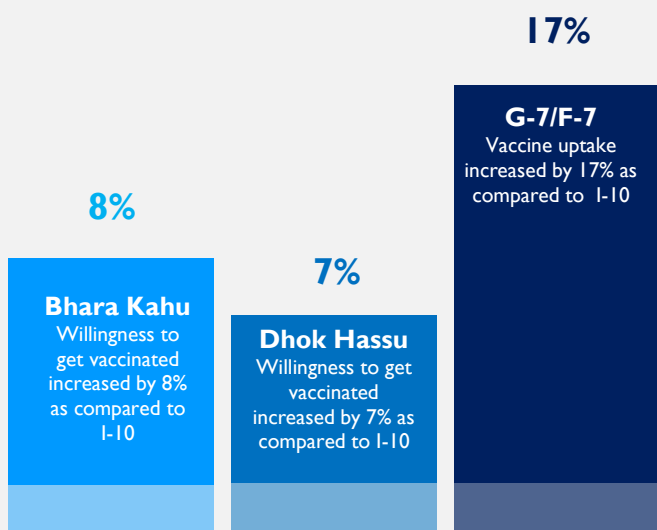
- Few respondents reported prior Covid-19 infection for themselves or their family, while 59-71% reported being worried about Covid-19.
- The willingness to receive vaccines increased from 67% to 80%—similarly, the refusal to receive vaccines dropped in the endline. The highest drop was 18% for men in Dhok Hasu and 20% for females in Bhara Kahu.
- Vaccine uptake increased from 22% to 47%, with men receiving more vaccination than women.
- The average marginal treatment effects show that compared to the control area (I-10), willingness to get vaccinated increased by 8% and 7% in Bhara Kahu and Dhok Hassu, respectively, whereas the change in G-7/F-7 was not significant (Table 1). However, this willingness did not translate entirely into vaccine uptake. Vaccine uptake increased by 17% in G-7/F-7 only.

Table 1: Average Marginal Treatment Effects

Comparison	Willingness to Vaccinate	Vaccine Uptake
	Adjusted	
<b>Difference-in-differences</b>		
T1: G-7/F-7 vs C: I-10	0.0611 (-0.02, 0.142)	0.1709** (0.042, 0.3)
T2: Bhara Kahu vs C: I-10	0.0764** (0.012, 0.141)	0.0418 (-0.082, 0.165)
T3: Dhok Hassu vs C: I-10	0.0661** (0.005, 0.127)	0.0398 (-0.077, 0.156)
Observations	2,904	3216
Number of clusters	220	220
Intra-class correlation	0.046	0.048

- Increasing age, higher education, and employment were important determinants of willingness and vaccine uptake initially. However, the significance of these determinants decreased towards the endline.
- Pushto speakers became less likely and Urdu speakers more likely to receive the vaccination at the endline.
- A previous Covid-19 contraction for self was observed to be a significant determinant for vaccine uptake. Similarly, infection or vaccination of a family member was a motivator for both willingness and uptake of the vaccine.
- Advice from friends, family, medical professionals, and religious leaders were ineffective; however, SMS or call from the government was a major motivator for increased willingness and uptake.
- Living near a CVC was correlated with higher willingness, and closer distances were associated with higher uptake.

**Figure 3: Outcome of Interventions**



## Discussion

The study shows that engaging local community leaders and NGOs to raise awareness for Covid-19 increases willingness and uptake of the vaccine. These findings align with the existing literature.<sup>1, 2, 3</sup> However, a "one-size-fits-all" approach is ineffective in most community-based interventions because of potential barriers. A closer examination shows that interventions improved willingness for the vaccine in two treatment groups only (Bhara Kahu and Dhok Hassu).

One major barrier towards uptake was identified as difficulty accessing CVCs. The MVCs set for the purpose of this study also had limited capacity. The limited accessibility to vaccination centers might also be the reason for low uptake in some treatment groups since they are at a distance from city centers. Compared to baseline, the interventions also increased vaccine uptake in the endline for people with prior Covid-19 infection. In the endline period, there appears to be a homogenization effect in terms who would take up vaccination, or a loss of disadvantage of the less educated,

younger individuals and residents of marginalized communities. This shows that communicating and raising awareness impacts the perceptions and behavior of people who would have otherwise not gotten the vaccine even after contracting the Covid-19 virus themselves. In comparison, the interventions only increased willingness for the vaccine for individuals whose family members had been infected with Covid-19.

Public spots such as shops and places of worship are major places where information is shared among the masses and transmitted to communities. In contrast to expectation, the study shows that advice from family, friends, and religious leaders were ineffective. However, there is a positive impact on willingness and uptake if the source of information is directly from the government in the form of calls or messages.

## Recommendations

The policy brief highlights barriers of concern in underserved and low-income localities from the demand and supply sides and provides cost-effective interventions to improve vaccine equity. Perceptions are important determinants. Risk awareness discussions should be done with community groups comprised of household heads to influence perceptions. The government should devise awareness campaigns in collaboration with the telecom industry to reach a broader audience in these areas.

## References

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