

Table 1 Themes and insight on barriers to vaccination at community level

Theme	Detail impression	Insights
Household barriers to vaccination	Lack of permission by the main decision-maker of the household for vaccination is a common barrier which hinders a woman from accessing vaccination services. Secondly, family gives less priority to the vaccination compared to other household tasks.	“Women cannot go for vaccination without the permission of men; only when a child becomes ill, then she has permission to take the child to the hospital, but with another woman.” (Mother)
Gender insensitive services	Poor knowledge and lack of awareness. Male dominance of vaccinators is the critical aspect of service delivery which leads to restrictions on seeking healthcare.	“We do not know what these injections are and why you force them on our children” (Mother) “They are male; how can I go to talk to them when I am not allowed to talk to men? They are rude and disrespectful.” (Mother)
Myths, misconceptions, and fears related to vaccine administration.	It is a common belief that vaccination causes sterility in males, serious illnesses/side effects, pain, and disabilities.	“These vaccines cause boys and girls to reach puberty quickly. These vaccines decrease men’s ability to reproduce. I know some cause fever, so, why would I let my child be exposed to them?” (Father)
Social/religious influence	A few social and religious influencers are known to have forbidden vaccination and going against their teaching seems as if one is committing a sin.	“Prevention is better than cure. I do not take drugs; I know they are harmful, and contain alcohol. However, if you stay in a state of ablution, you will remain protected.” (Spiritual Healer)

quality and accountability (12,17). The key initiatives in demand generation were: development of EPI social media accounts, a strategic tactical plan, content development, quarterly editorial calendar, engagement of bloggers/influencers, social media monitoring and analysis, and introduction of automated chatbots. Gaining of community trust, adaptation of information, education, and communication materials, public service messages, and vaccination fact sheets also played an important role. The joint milestones achieved were the National Communications Strategy and Provincial Communication Action Plans, which were implemented at national level. UNICEF and WHO were engaged in evidence generation through studies on the theme of knowledge, attitude, and practice; allocation of funding for demand generation; and implementation research to improve social mobilization (15). These initiatives were implemented at national level.

Initiatives of civil society and not-for-profit organizations

Fourteen vaccination-related initiatives led by civil society organizations covered a vast population across Pakistan. They were mainly high-level engagement, technical assistance, social mobilization, and community engagement, and initiatives for demand generation, service provision, and evidence generation. The secretariat of the Pakistan Civil Society Coalition for Health and Immunization has been strengthening engagement between civil society organizations and national and provincial EPIs to improve immunization coverage in Pakistan. The VITAL Pakistan Trust has adopted an integrated services model across the maternal, neonatal, and child healthcare continuum in slum areas, including the main study sites (18). This resulted in improved vaccination coverage over a period

of 5 years. Within the integrated maternal, neonatal, and child health approach, vaccination activities were initiated with close coordination with the provincial EPI in the slums of Karachi. The Civil Society Human & Institutional Development Programme implemented social mobilization, community awareness (19) and urban profiling through individual and institutional developments in slums (14). All the initiatives were made in close coordination with the national and provincial EPIs. None of the initiatives were implemented in the main study settings. The Health and Nutrition Development Society, through the MISALI Project, improved knowledge about vaccination through community engagement in rural Pakistan (20). The Health, Education and Literacy Programme, through the integrated maternal, neonatal, and child health service, enabled community mobilization by providing vaccination services at fixed sites and conducting outreach activities through collaboration with the provincial EPI (unpublished data). These initiatives were mostly in urban slums of Karachi, and none were implemented in the main study settings. The National Rural Support Programme implemented the Water, Immunization, Sanitation and Education Programme, which developed links between community-based support organizations and district health management in rural Pakistan (unpublished data). None of the initiatives were implemented in the main study settings. The Rural Education and Economic Development Society Pakistan conducted vaccination awareness sessions in Rahimyar Khan, and trained community volunteers in inaccessible areas (unpublished data). None of the initiatives were implemented in the main study settings, and the level of EPI involvement was not clear. The Sindh Development Society conducted integrated community awareness sessions on vaccination and reproductive