

Immunization crisis, vaccine hesitancy and strategies to improve immunization rates in Pakistan

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Immunization is now discussed as a significant barrier to Pakistani vaccine hesitancy. Studies indicate that wrong treatment, ignorance and distrust towards governmental health education are significant factors that lead to refusal or postponement of Vaccination (1). High-risk district surveys indicate that vaccine safety, fear of adverse effects and conspiracy claims de-vaccinate large proportions of children putting them at risk (2). Inequity and poor coverage also have a relationship with socioeconomic factors, including household income, mother education, and access to healthcare, which further supports the connection between poor coverage and inequity. These findings reiterate the notion that the lapses in immunization occur not only because of individuals but also due to the general sociocultural and structural reasons.

In addition to parental perceptions, there are operational barriers that also undermine the immunization uptake. Caregivers report missed opportunities of vaccination because of absentee vaccinators, stockouts and unreliable cold-chain systems in various districts. These discrepancies weaken public confidence and reinforce the idea that regular and safe immunization services are not available. Evidence from community-level assessments suggests that more than one-

third of parents who were initially willing to accept vaccinations lose confidence because of poor quality of service, long waiting times, or negative interactions with health personnel (3). These loopholes demonstrate that vaccine hesitancy is not only a behavioral issue but also a systemic problem that cannot be resolved without improving the public health infrastructure.

Gender norms play an important role in delaying immunization. In many rural settings, women do not have the autonomy to take their children for vaccination without the permission or accompaniment of a male. Literature on polio-affected districts demonstrate that mothers mostly realize the significance of vaccination, but they are constrained by the family structures, lack of mobility, or family chores. Such limitations are further intensified by the absence of female vaccinators in some areas especially where cultural norms demand that women should be seen only by female health workers (4). Limitation of female mobility, coupled with the fear of meeting male vaccinators, leads to missed immunizations and continues to create immunity gaps.

The impact of vaccine hesitancy is demonstrated through the frequent outbreaks of measles, diphtheria, and continued transmission of polio-virus. Pakistan is one of

the last two countries where wild polio-virus is still circulating and the fact is directly associated with the pockets of refusals and campaign fatigue. Investigations of outbreak have repeatedly demonstrated that most infected children had not received even one dose of vaccine or had not been fully immunized (5.) These trends reveal the risks of non-adoption, as well as the inability of the system to provide universal access to vaccination, especially in marginalized and high-risk areas. Health gains at national and regional level are reversed because unvaccinated children become reservoirs of infection.

Community-based health providers play an important role in such delicate situations. Lady Health Workers, vaccinators, religious leaders and schoolteachers have greatly increase vaccine acceptance through interpersonal communication and trust building. Their involvement has also been more effective than mass media campaigns in reducing misinformation (6). Mother-to-mother groups and mosque-based awareness programs are other community-based initiatives that have greater acceptance in areas where formal messaging has not been influential. However, these frontline workers face threats, harassment, low pay and lack of proper training - which undermines the sustainability of interventions despite their known success.

The immunization crisis is also fueled by misinformation, which is being spread through digital platforms. False stories about vaccine ingredients, fertility theories and political conspiracies are rampant on social media and reach millions of users (7). Communication monitoring system analyses indicate that misinformation spikes are associated with the highest refusal rates in

mass vaccination efforts. In many cases, health workers have to spend a lot of time squelching rumors before administering even one dose. The absence of systematic digital surveillance and strategic counter-messaging will keep misinformation sabotaging the immunization efforts and public trust (8).

The immunization disparities are a bigger population health inequity that discriminates unfairly against children in lower-income groups. The remote areas, urban slums and conflict-affected places always have lower vaccination coverage, disease burden, and access to quality health information (9). It is equally difficult to rebuild confidence in the system that ensures child protection as it is to vaccinate them (10). To reach the destination of resilience, the road should be a complicated one: to the service quality improvement, allowing more women to participate in healthcare, institutionalizing the community engagement, making immunization a part of the primary healthcare situation in the community, and confronting the problem of misinformation through evidence-based communication (11). Investment into cold-chain facilities, digital vaccination monitoring and continuous training of healthcare staff are also required. The future development of Pakistan is based on the premise of changing reactive campaigns to sustainable and community-based immunization model as part of primary healthcare systems.

Clearly, the problem of vaccine hesitancy is not only a very specific behavior issue, but also an entire emergency in the health of the nation, and the national health security is in danger. It deals with political commitment, institutional restructuring and societal partnerships. Vaccination is among the cheapest interventions in the health care

system; its inability to be strengthened may lead to death and reoccurrence of the already eliminated diseases in other nations. They will seal such gaps in immunization, which will define how healthy Pakistan will be in future before it turns into irreparable crises.

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