



COVID-19 vaccine hesitancy

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The COVID-19 pandemic has highlighted the vital role of vaccination in preventing life-threatening diseases and improving global health. Understanding and addressing the concerns of vaccine-hesitant individuals, including those with chronic diseases, is key to increasing vaccine acceptance and uptake.

“COVID-19 vaccine uptake is suboptimal even among people with chronic medical conditions”

Vaccines are among the most effective tools to protect individuals against vaccine-preventable diseases (VPDs) — including COVID-19 — and their associated morbidity and mortality¹. For people with chronic medical conditions, vaccines reduce the risk of further deterioration of health and death owing to VPDs². Vaccination directly protects vaccinated individuals and indirectly protects those who cannot be immunized or who do not respond robustly to vaccination, through the development of community immunity. Patients with kidney disease are particularly vulnerable to COVID-19 and those with impaired immune systems do not mount good antibody responses to the primary series of COVID-19 vaccination. Protection against COVID-19 for patients on dialysis can be increased through administration of a third dose in the primary vaccine series and personalized strategies for additional booster doses³.

The vaccine acceptance continuum

Despite strong recommendations, COVID-19 vaccine acceptance varies widely between countries and between groups with different sociodemographic characteristics⁴. COVID-19 vaccine uptake is suboptimal even among people with chronic medical conditions who are at increased risk of complications associated with SARS-CoV-2 infection⁴. The term ‘vaccine hesitant’ is commonly used to describe those who are unsure about or unwilling to receive one, some or all recommended vaccines, despite the availability of vaccination services. Vaccine acceptance exists on a continuum, ranging from a minority who stridently oppose all vaccinations to the majority who are willing to accept all recommended vaccines. Vaccine-hesitant individuals are a heterogeneous group with varying levels of indecision and concerns in the middle of this continuum⁵. This group is of particular interest to public health services, as many vaccine-hesitant individuals may be amenable to changing their vaccination attitudes and behaviours if their concerns are adequately addressed and systemic barriers in access to health services are removed (for example, discrimination, stigmatization, racism and gender barriers). By contrast, individuals who are vocal vaccine refusers are unlikely to change their decision not to be vaccinated.

Factors that influence vaccine uptake

At the individual level, various sociodemographic characteristics (for example, age, gender, socioeconomic status and geographical location) and many other factors (for example, low perceived risk of VPD, concerns regarding vaccine safety and/or effectiveness, belief in alternative prevention measures for VPD and/or negative past experiences with health services) are associated with suboptimal vaccine uptake⁵. For people living with chronic medical conditions, additional barriers to vaccine acceptance include real and perceived contraindications, risks of individual vaccines with respect to specific medical conditions and a lack of awareness of vaccine recommendations among specialists caring for these patients².

Acceptance and refusal of vaccines is also highly context-dependent and should not be reduced to individual factors. Social, cultural, economic, organizational, historical and political factors (for example, cultural values, social norms, ease of access to health services, recommendations by health-care providers, social networks and the vaccine communication environment) influence how people perceive and make decisions about vaccination⁶.

The COVID-19 pandemic has highlighted additional issues with regards to vaccine acceptance and uptake. First, the scale of the vaccination campaign is exceptional; the aim is to offer the primary series of COVID vaccines to the entire adult population worldwide. In many settings, no established adult immunization programmes exist. This lack of infrastructure makes delivering a primary series of vaccines difficult, even when doses are available. Moreover, in countries where adult immunization programmes are already in place (for example for influenza), uptake of these routine vaccines has often been low. Second, the COVID ‘infodemic’ — an overabundance of information, some of which is true and some false or misleading — complicates how people search for and access reliable information about vaccination. Misinformation and disinformation can substantially reduce vaccine acceptance⁷ and might influence the vaccine advice of health-care providers⁵. Political decisions such as policy responses to the pandemic have

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also been influenced by the infodemic, and by partisan ideas about the risk of COVID-19 and the effectiveness of preventive measures⁸. Third, the long duration of the pandemic has generated ‘pandemic fatigue’, resulting in demotivation to follow public health recommendations (including for vaccination).

To reflect increased understanding of the complexity of vaccine acceptance and uptake, the Royal Society of Canada Working Group on COVID-19 Vaccine Acceptance has developed a framework of factors that influence vaccine acceptance with four major domains: people and communities; health-care workers; health-care and public health systems; and immunization knowledge (Supplementary Fig. 1). The people and communities domain embraces the goal of the World Health Organization Immunization Agenda 2030, which emphasizes ‘leaving no one behind’ and ensuring immunization across the life course¹. The health-care workers domain reflects the important role of the recommendations of health-care providers in influencing vaccine acceptance. The health-care and public health systems domain highlights the role of immunization programmes and health policies. Legislation, regulations and political decisions that may or may not support public health recommendation also have an important influence on vaccine acceptance. The immunization knowledge domain highlights the importance of reliable information regarding vaccination (that is, easily accessible, accurate and up-to-date information tailored for targeted subgroups of the general population and of health-care providers). Each individual domain influences the other domains and all domains are influenced by the broader context (for example, the extent of collaborations and communications about COVID-19 vaccination)⁵. Although developed for Canada, the principles are broadly applicable to other countries worldwide.

Approaches to increase vaccine uptake

The factors that lead to vaccine acceptance, hesitancy or refusal are complex and a good understanding of local barriers to and concerns about vaccination is critical to develop tailored interventions. Simply giving people more information about vaccine risks and benefits is often unsuccessful because this approach does not account for the myriad ways that knowledge is mediated in diverse communities. Education-based interventions are often not designed to address the specific issues faced by groups that are affected by inequitable distribution of power and resources.

All interventions should be tailored to the different positions held along the vaccine acceptance continuum within local communities. For example, the public health intervention goal for those who are vocal vaccine refusers should not be to convince them to accept vaccination, but rather to minimize the effect that their

critical discourses could have on others (for example, by monitoring and addressing online misinformation about vaccines, implementing policies to limit public advertising against vaccines and teaching the public about the techniques used to promote false information about vaccines). For people who are willing to accept vaccination, the goal is to maintain vaccine confidence with transparent and honest communication while ensuring ease of access to vaccination services. Interventions for vaccine-hesitant individuals should aim to ensure that they make informed vaccination decisions that align with their own values. Listening to and addressing concerns using motivational interviewing techniques is very effective at increasing vaccine acceptance within this group⁹.

Conclusions

The COVID-19 pandemic clearly demonstrates that infectious diseases can disproportionately affect certain populations as a result of imbalances in power and resources, and that inequities in vaccine uptake persist worldwide. These disparities result from intertwined factors including vaccine hesitancy, discrimination and stigmatization at individual, institutional and population levels. Although most people are vaccine confident, this attitude does not automatically translate into vaccine uptake as other barriers to vaccination exist. Understanding which individuals are vaccine hesitant and why, what barriers to accessing vaccination services exist and how to cultivate vaccine confidence is essential to inform the development of tailored strategies to increase vaccine uptake.

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Competing interests

The authors declare no competing interests.

Supplementary information

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