CME CREDIT

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Meeting the challenge of vaccine hesitancy

ABSTRACT

Vaccination is a cornerstone of public health, but vaccine hesitancy poses significant challenges as highlighted during the COVID-19 pandemic. Addressing the challenge requires healthcare professionals to effectively counter misinformation. They have a pivotal role in fostering trust and promoting evidence-based vaccine recommendations, with tailored communication strategies and community engagement initiatives. Legislation, policy interventions, research, innovation, and technology are needed to enhance vaccine uptake and ensure equitable access. Integration of vaccination into routine healthcare is paramount for public health protection against emerging infectious threats.

KEY POINTS

Antivaccine and vaccine hesitancy are different challenges.

The reasons for vaccine hesitancy are varied and multifactorial.

Increasing vaccine uptake requires education, clear communication, and community engagement.

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Vaccination, one of our most impactful health interventions, saves millions of lives globally every year. It is effective and efficient, safeguarding individuals from preventable diseases and contributing to the overall health and well-being of communities. Beyond the immediate health benefits, vaccination plays a pivotal role in driving economic progress by reducing healthcare costs, increasing workforce productivity, and mitigating the burden of disease on societies.

Ensuring access to recommended vaccinations while addressing hesitancy or delay can significantly enhance community resilience during a pandemic like COVID-19.[1] The pandemic posed a significant global challenge, with a frantic race to develop vaccines, but despite the achievement of vaccine development during the pandemic, doubts and misinformation clouded public perception. As our world becomes increasingly interconnected through travel and migration, the importance of effective communication about vaccines cannot be overstated. Healthcare professionals play a vital role in this endeavor, as they are trusted sources of information for patients and communities. Equipping healthcare professionals with the skills and knowledge to communicate the importance of vaccines effectively is paramount to fostering trust and confidence in vaccination programs. Given the likelihood of encountering more infectious emergencies in the future, we must remain prepared for the next challenge.

UNDERSTANDING VACCINE HESITANCY

The World Health Organization Strategic Advisory Group of Experts on Immunization Working Group (SAGE) defines vaccine hesitancy as refusal of vaccine or delay in its acceptance.[2] Vaccine hesitancy is complex and influenced by various factors, including cultural norms, historical context, socioeconomic limitations, and personal experience. Addressing this multifaceted challenge calls for targeted interventions that acknowledge and respond to diverse concerns

about efficacy and safety and distrust of institutions and government.

The spectrum of responses to a vaccine can range from eagerness to receive it to a neutral stance to outright resistance.[3] Clinically, patients can be categorized as vaccine-ready, vaccine-hesitant, or vaccine-resistant (ie, antivaccination). There is a distinction between individuals who are "anti-vaxers" or anti-vaccinators and those who are vaccine-hesitant.

Vaccine hesitancy is a long-standing issue that became alarming at the height of the COVID-19 pandemic, fueled by misinformation and amplified through social media channels. Unfamiliarity with the virus led to widespread skepticism about the COVID-19 vaccine's safety. The pandemic taught us the importance of incorporating vaccination into routine clinical practice and counseling patients about vaccines and their potential side effects. It also underscored the importance of including vulnerable populations in clinical trials, such as people who are immunosuppressed, pregnant, or lactating; and historically marginalized groups such as blacks, indigenous peoples, and people of color (BIPOC). Boosting participation in vaccine clinical trials among these populations can encourage vaccine uptake and help alleviate concerns.

DETERMINANTS OF VACCINE HESITANCY

Vaccine hesitancy is complex. A systematic review and meta-analysis to uncover factors influencing COVID-19 vaccine acceptance across 185 countries revealed an association between vaccine hesitancy and not having influenza vaccination, mistrust of vaccines, complacency, being female, pregnancy, safety concerns, and taking traditional herbs. Among those living in an urban setting, higher education and low-income earning were associated with higher vaccine acceptance.[4] As proposed by the SAGE working group model, these factors can be classified into 5 domains that collectively shape decisions regarding the acceptance or rejection of vaccines.[4–6] These 5 domains—environmental, personal, social, safety, and vaccine-related factors—are outlined below.

Environmental factors

Socioeconomic level, such as education, income, and occupation, can influence vaccine hesitancy, with lower socioeconomic status often associated with higher levels of hesitancy.

Access barriers to vaccination services, including financial challenges, geographic constraints, or lack of awareness about available vaccines, can hinder vaccine uptake among certain populations.

Complacency about the need for vaccination may develop in areas where perceived risk of vaccine-preventable diseases is low due to successful vaccination programs.

Lack of information or misinformation, including limited access to accurate information and the spread of misinformation or conspiracy theories, can contribute to hesitancy. Misinformation about safety, efficacy, or necessity can undermine confidence in vaccination.

Resistance to vaccine mandates and government policies regarding vaccination requirements may promote hesitancy among individuals who perceive these measures as infringing upon personal freedoms or autonomy.

Personal factors

Individual beliefs and preferences about health, risk perception, and medical interventions can shape vaccine hesitancy, with some individuals preferring natural immunity or alternative health practices.

Cultural and religious beliefs may influence attitudes toward vaccination, with concerns about vaccine ingredients or vaccination viewed as contrary to cultural or religious practices. There may be concerns about the use of certain animal-derived ingredients or perceived interference with natural immunity.

Perceptions of risk posed by vaccine-preventable diseases relative to the perceived risks of vaccination can influence hesitancy. Individuals may underestimate the severity of vaccine-preventable diseases or overestimate the risks associated with vaccination.

Trust in healthcare providers and institutions is a key determinant of vaccine acceptance. Positive relationships with healthcare providers and confidence in their expertise can increase vaccine uptake, while distrust can contribute to hesitancy, especially among communities with historical reasons for skepticism.

Previous negative experiences with vaccines, such as adverse reactions or the occurrence of vaccine-preventable diseases despite vaccination, can contribute to hesitancy.

Historical trauma and discrimination, including exploitation or mistreatment within healthcare systems, can contribute to vaccine hesitancy, particularly among marginalized or minority communities.

Social factors

Social networks and peer influence can significantly impact vaccine decisions. The opinions and attitudes of friends, family members, and social networks,

along with peer discussions and social norms within communities can influence individuals' perceptions of vaccine safety and efficacy.

Media and information sources, including social media platforms, play a crucial role in shaping public perceptions of vaccines. Misinformation and sensationalized stories about vaccines can spread quickly through social networks, leading to increased vaccine hesitancy.

Stigma and discrimination associated with certain vaccines or vaccine-preventable diseases can contribute to hesitancy, especially when vaccination is perceived as identifying individuals as part of a stigmatized group. In certain communities, stigma may be attached to certain vaccines, such as those for sexually transmitted infections or diseases associated with specific populations or behaviors. Individuals may hesitate to receive these vaccines for fear of being labeled or judged based on stereotypes or misconceptions.

Misinformation and disinformation about vaccines through various channels, including social media and discussions with communities averse to vaccination, can lead to doubts and concerns about their efficacy.

Safety and vaccine-related factors

Safety concerns about vaccine are among the most common reasons for vaccine hesitancy. Individuals may worry about potential side effects or long-term health risks associated with vaccination, particularly for newer vaccines or those developed rapidly, such as COVID-19 vaccines.

Questions about vaccine efficacy and the degree of protection provided by vaccines can contribute to hesitancy. Individuals may doubt the efficacy of vaccines based on misinformation or misconceptions about how vaccines work.

Vaccine ingredients such as preservatives, adjuvants, or traces of allergens can lead to worries and hesitancy. Misinformation about vaccine ingredients, particularly in relation to allergies or other health conditions, may influence individuals' decisions to receive vaccines.

Concerns about the vaccine development process, including its safety and reliability and the speed of development and testing, can contribute to hesitancy. Individuals may be hesitant to trust vaccines that were developed quickly, particularly during public health emergencies like pandemics.

Vaccine administration concerns, such as discomfort or fear of needles or injections, can contribute to hesitancy. Some individuals may avoid vaccination due to anxiety or phobia related to medical procedures.

Vaccine-specific concerns, such as perceived side effects, safety, or efficacy, can contribute to hesitancy, particularly if these concerns are fueled by sensationalized media reports or anecdotal evidence.

ADDRESSING VACCINE HESITANCY

Because healthcare providers play a critical role in addressing barriers to vaccine acceptance, training in the context of increasing vaccine uptake is paramount. The COVID-19 pandemic highlighted the influential role of physicians in advocating for vaccines. A recent study of 1,967 US adults, including minority and rural populations, demonstrated a strong link between trust in one's physician and vaccination rates.[7] Those who had previously declined vaccination were more likely to accept it if they trusted their healthcare provider. Primary care providers are particularly influential due to their close relationships with patients and historical involvement in vaccination efforts, especially in remote areas.[8–12] Many individuals view their primary care providers as the most effective messengers regarding vaccines, with a significant portion expressing willingness to receive vaccines during routine visits.[13,14]

Educating healthcare workers about the reasons behind vaccine hesitancy and providing them with multiple strategies can lead to significant advances. It is essential for providers to begin with a thorough understanding of the causes of hesitancy and to brainstorm strategies to address the concern.

Understand the root cause

Collecting information to gain insights about the perceptions, behaviors, attitude, and knowledge of the hesitant population is the first step. This can be done with interviews or focus groups with representative samples of the hesitant population. Monitoring social media and websites within communities can provide collateral information and help in early identification of potential change in beliefs. This practice can also help identify potential rumors and misinformation, allowing timely action.

Align the intervention to the root cause

The design of interventions should be based on the investigation into the causes of hesitancy in a particular population. This entails active engagement with communities to gain insight into their specific anxieties and tailoring communication efforts accordingly,

rather than adopting a one-size-fits-all approach. Intervention could be as simple as active listening, peer discussions, and education regarding risks and benefits. A population that mistrusts the healthcare system or remembers previous adverse effects related to vaccination requires a complex intervention to gain trust; this includes enforcement of regulatory initiatives on vaccine safety and implementation of reporting systems for adverse effects.

Adopt effective communication

Effective communication skills training is essential for healthcare providers to engage with vaccine-hesitant individuals respectfully and effectively. To develop strategies to counter misinformation, it is critical to encourage open dialogue, participate in community forums, and address concerns voiced by hesitant groups. Harsh language used by some physicians when addressing vaccine hesitancy has been found to be counterproductive.[14] Focused communication skills training will facilitate constructive discussions about vaccines between physicians and patients.

STRATEGIES TO COUNTER VACCINE HESITANCY

Education and clear communication

Education is the cornerstone in mitigating vaccine hesitancy. It is imperative to offer compelling evidence that underscores the necessity of vaccinations while systematically addressing prevalent concerns and misconceptions, a strategy employed successfully during the COVID-19 pandemic. Employing diverse communication channels beyond conventional healthcare platforms can be particularly effective in engaging populations who exhibit distrust in the healthcare system.

Facilitated and supervised dialogues led by community and spiritual leaders, reputable public figures, social networks, and media outlets can play a pivotal role in communicating the importance of vaccination in communities susceptible to "vaccine scare." Utilizing both traditional and online communication channels, tailored to specific demographic groups, is essential. Social networks can have a significant influence on public health behavior and vaccine decision-making, as shown by a study in a pediatric population.[15–17] The propagation of vaccine-related anxieties among parents through social networks negatively impacted pediatric immunization rates, leading to periodic surges in childhood diseases. Research by Fügenschuh et al[18] underscores the pivotal role of social factors in disease prevention and control. Their findings advocate for targeted networking algorithms that foster a supportive provaccine environment, effectively catalyzing attitudinal and behavioral changes necessary to combat disease spread and dispel misinformation.

Community engagement

To build trust with disenfranchised communities, we must acknowledge and address their concerns instead of dismissing them. It is essential to prioritize vulnerable populations and employ innovative approaches to engage communities; doing so will enhance understanding of specific concerns and encourage communication that addresses their needs, which may differ from those of the general populace. Communication should be evidence-based, context-specific, culturally appropriate, and tailored to individual positions on the vaccine hesitancy continuum. Involving communities in vaccination programs, including determining locations, times, and dates, and addressing cultural and religious concerns through respectful dialogue, is vital. A 2023 study on vaccine-hesitant students found reasons such as fear and apprehension of a new vaccine, rather than outright opposition to vaccination.[19] Only through respectful engagement can we uncover the root causes of hesitation or low vaccine uptake.

In addition to engagement, a community-oriented approach can strengthen vaccine delivery and acceptance. Dhaliwal et al[20] utilized community-based participatory research to involve the community in designing an intervention to facilitate vaccine acceptance in Mewat District, India, an area with low vaccination coverage. Their comprehensive approach amplified local voices, identified local concerns and advocates, and achieved the co-design of successful interventions to bring about long-term change. Similar approaches were implemented in northeast Ohio during the COVID-19 pandemic, with education and town hall meetings that targeted specific communities, addressed special needs, and resolved questions and concerns.

Other evidence-based community strategies for overcoming parent and caregiver vaccine hesitancy include community-participatory vaccine hesitancy measurement, communication approaches, reinforcement techniques (such as incentives or mandates), and community-engaged partnerships (such as vaccine champion training or vaccination in community settings).[21] Engaging with specific groups based on their concerns allows for focused discussions that are more likely to be productive and less confrontational.

Legislation and policy

Before the COVID-19 pandemic, vaccination mandates played a crucial role in increasing vaccine uptake among pediatric cohorts and college students. Requiring vaccines for school enrollment consistently improved vaccination rates among children. However, mandates for adult vaccinations are relatively new. The most recent widespread adult vaccine mandates were implemented after the H1N1 influenza pandemic. Many healthcare institutions now mandate annual influenza vaccinations for staff, with exemptions for medical or religious reasons. While these mandates have increased adult vaccine uptake, their impact on education, attitudes, and practices is unclear.

A survey by Jaiyeoba et al found that healthcare providers were primarily motivated by organizational mandates rather than personal health when receiving the annual influenza vaccine.[22] However, mandatory vaccination protocols for healthcare workers help protect patients, regardless of individual motivations.

Legislative and policy frameworks also influence vaccine uptake by ensuring equitable distribution and access, especially among marginalized, underserved, immigrant, uninsured, and non-English-speaking communities. To ensure equitable access, vaccine manufacturers should consider logistical challenges faced by rural areas with limited storage and freezing facilities when developing vaccines. Vaccines should ideally be provided free of charge, accommodating undocumented immigrants and individuals without insurance coverage.

A study on social media responses to vaccination during pregnancy among rural Spanish-speaking perinatal individuals in the United States found that immigration status significantly influenced vaccination sentiments.[23] Some viewed vaccination as necessary for immigration evaluations, while others were concerned about privacy breaches when interacting with healthcare systems, particularly for undocumented individuals.

Redirect social media with reliable information

Strategies such as educational videos, hospital lectures, mobile vaccination teams, social media marketing, and web-based questionnaires have been employed to promote behavioral change regarding vaccination. Leveraging technology through mobile apps, websites, and social media platforms has proven effective in disseminating information.[24]

Research has shown that mobile apps and social media can combat vaccine misinformation and discussions promoting vaccine refusal. Healthcare providers serve as trusted sources of information, with their recommendations playing a crucial role in vaccine acceptability. For example, a study by Souza et al[25] found that perinatal individuals were more likely to receive the COVID-19 vaccine when recommended by their healthcare provider.

To maximize impact, we can combine social media's reach with evidence-based data findings to cultivate "medically trained influencers" on social platforms. Trusted providers act as messengers, and their personal stories or testimonials serve as the message. This approach was demonstrated during the pandemic at the Cleveland Clinic, where pregnant doctors, nurses, and pharmacists shared their reasons for receiving the COVID-19 vaccine online, effectively influencing vaccine uptake.

Address misinformation and disinformation

Addressing misinformation and disinformation is crucial in promoting vaccine acceptance and combating hesitancy; it requires that we provide accurate information and counter false narratives through education, public awareness campaigns, and proactive communication strategies, while remaining empathetic and culturally competent.[6] During the COVID-19 pandemic, vaccine hesitancy was fueled by baseless claims that spread rapidly through social media. Despite the lack of evidence supporting these claims, many people were influenced by the newness of the vaccine. Some of the misinformation included beliefs that the COVID-19 vaccine caused COVID-19, severe side effects, infertility or reproductive problems in women, changes to DNA, and "microchip" monitoring. Additionally, some falsely believed that the vaccine utilized aborted fetuses in its manufacturing process.

Research and innovation

Investing in research, especially targeting vulnerable groups like BIPOC, children, and pregnant individuals, is crucial to counter vaccine hesitancy.[26] The scientific community must acknowledge its role in historical and contemporary vaccine hesitancy among underserved populations and work to rebuild trust in clinical research.[26,27] Researchers should address epidemiologic and socioeconomic factors associated with vaccine hesitancy risk, explore innovative vaccine delivery methods and technologies, and maintain apolitical research to prevent misinformation.

Large-scale national studies on vaccine adverse effects, along with transparent disclosure of findings,

are essential to increase public trust in vaccine development and administration processes. Transparency regarding vaccine limitations, dosages, side effects, and information dissemination should be prioritized. Monitoring vaccine coverage rates and identifying areas with low uptake, especially during outbreaks, is critical for closing gaps and addressing misinformation that fuels hesitancy.

Research findings should be communicated transparently and in simple terms to build confidence, particularly among immunosuppressed individuals and parents and guardians of minors. Positive factors associated with vaccine confidence, such as safety awareness and understanding the need for vaccination, can influence intentions to vaccinate children. In a cross-sectional online survey of COVID-19 in South Korea, high confidence in the safety of COVID-19 vaccines, increased parents' willingness to vaccinate children and wards, and awareness of the need to vaccinate children against COVID-19 were associated with positive factors in intention to vaccinate their children.[28]

To ensure the safety of pregnant patients, healthcare systems and organizations must conduct surveillance and maintain transparency regarding vaccine effects during pregnancy. Pregnant patients should be provided access to registries and encouraged to report their vaccine uptake, including the gestational ages at vaccination, and any adverse effects. This comprehensive monitoring will allow for informed decision-making regarding vaccination during pregnancy.

Incorporate vaccination into routine prenatal care

Integrating vaccinations into prenatal care is essential for ensuring standardization and equity. Routine prenatal visits should include discussions on vaccinations, including influenza, Tdap (tetanus, diphtheria, and pertussis), and maternal respiratory syncytial virus (RSV) vaccines. Healthcare providers should be trained to discuss the safety and effectiveness of vaccines during pregnancy, and pregnant individuals should be offered vaccines recommended by Centers for Disease Control and Prevention Advisory Committee on Immunization Practices and the American College of Obstetricians and Gynecologists (ACOG), with documented reasons for declines. Fortunately, the maternal RSV vaccine introduced in 2023 did not encounter similar difficulties, as clinical trials were conducted in pregnant populations worldwide, making it generalizable.

During the COVID-19 pandemic, low vaccine uptake among pregnant individuals stemmed from inadequate information, as they were initially excluded from clinical trials, and risks, benefits, and side effects were not adequately communicated. However, interventions from ACOG and the Society for Maternal-Fetal Medicine, such as education and advocacy efforts, including weekly question-and-answer sessions, helped address anxiety and safety concerns and led to proven vaccine uptake among this group.

Informed and shared decision-making is crucial during pregnancy.[28] Alongside flu and COVID-19 vaccines, pregnant individuals receive the Tdap vaccine with each pregnancy. Personal testimonials from trusted sources within relevant communities can be particularly effective in countering negative information. During the COVID-19 pandemic, vaccinated pregnant individuals shared positive experiences of safety, contributing to increased confidence in vaccine uptake and healthy pregnancies and infants.[25]

CONCLUSION

Vaccination is a critical cornerstone of public health, saving lives and strengthening communities against infectious diseases. The challenges posed by vaccine hesitancy, notable during the COVID-19 pandemic, emphasize the necessity for a comprehensive approach. Education, clear communication, and community engagement are essential to dispel misinformation and foster trust. Legislation and policy are instrumental in ensuring equitable access to vaccines, while healthcare providers play a pivotal role in promoting vaccine uptake through ongoing training and open dialogue. Research and innovation are key in addressing hesitancy, especially among vulnerable populations, while technology can assist in combating misinformation and enhancing outreach efforts. Collaboration, transparency, and empathy are imperative as we navigate the complexities of vaccine hesitancy to safeguard public health and cultivate a resilient future against infectious threats. Through collective action and unwavering commitment, we pave the way for a resilient future anchored in vaccination and community resilience.

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