Social Determinants of Vaccine Hesitancy: Implications for Immunization Programmes

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Abstract

Vaccination remains one of the most successful public health interventions, yet vaccine hesitancy continues to threaten progress toward universal immunization. While early work on vaccine hesitancy focused on individual attitudes, a growing body of research highlights the central role of social determinants of health in shaping vaccination decisions. This narrative review synthesizes recent evidence on how socioeconomic position, education, health system access, cultural and political context, and the contemporary information environment interact to produce heterogeneous patterns of vaccine hesitancy and uptake. Building on widely used conceptual frameworks of hesitancy, the review emphasizes that doubts about vaccines are rarely the result of "misinformed individuals" alone. Rather, they are patterned along lines of poverty and marginalization, place of residence, historical experiences with state and health institutions, and differential exposure to (mis)information and trust-eroding events. The review concludes by outlining implications for practice: embedding immunization in broader social policy, strengthening primary health care and community engagement, investing in trust-building communication, and designing interventions that are locally tailored and structurally informed. Finally, it identifies priorities for future research, including theory-driven mixed-methods studies and more work in low- and middle-income settings.

Keywords: vaccine hesitancy; social determinants of health; immunization; health inequities; public health policy

1. Introduction

Over the past half century, childhood vaccination has transformed global survival. Routine immunization is currently estimated to avert 3.5–5 million deaths each year, and a recent modelling study of the first 50 years of the WHO Expanded Programme on Immunization concluded that vaccines prevented approximately 154 million deaths between 1974 and 2024, most of them in children under five[1,2]. Despite these gains, progress has stalled. After the disruptions of the COVID-19 pandemic, global coverage with the third dose of diphtheria – tetanus – pertussis vaccine has plateaued in the mid-80% range, and millions of children each year still receive no routine vaccines at all[1,3].

In this context, vaccine hesitancy has emerged as a central concern for immunization programmes worldwide. The WHO Strategic Advisory Group of Experts (SAGE) on Immunization defined vaccine hesitancy as a "delay in acceptance or refusal of vaccines despite availability of vaccination services," emphasizing that it is complex, context-specific, and influenced by complacency, convenience and confidence[4]. Early work tended to conceptualize hesitancy primarily as an attitudinal problem residing in individuals or families. However, a growing body of research in public health, sociology and political science shows that doubts about vaccines are patterned along social gradients and embedded in broader structures of inequality, power and trust[5–9].

This review focuses on social determinants of vaccine hesitancy—that is, the social, economic, political and environmental conditions that influence whether people have the opportunity, motivation and capability to accept vaccination. Drawing primarily on recent international literature, it has three aims: (1) to briefly summarise

contemporary conceptualizations of vaccine hesitancy; (2) to synthesize evidence on key social determinants that shape hesitancy and uptake; and (3) to highlight implications for immunization policy and research. The goal is not exhaustive coverage but a concise, conceptually coherent overview suitable as a foundation for more detailed future reviews.

2. Conceptualising vaccine hesitancy

The modern literature on vaccine hesitancy was catalysed by a series of high-profile safety controversies and outbreaks of vaccine-preventable disease in high-income countries in the late 1990s and 2000s. Dubé and colleagues' influential overview described hesitancy as a spectrum of positions between full acceptance and outright refusal, characterised by ambivalence, delay and selective acceptance[5]. MacDonald's SAGE report later formalised this understanding, explicitly framing hesitancy as a continuum and introducing the "3Cs" model—complacency, convenience and confidence—that remains widely used in policy and practice[4].

Larson and colleagues extended this work by treating hesitancy as a global phenomenon shaped by historical, political and cultural factors, not merely individual psychology[6]. Their systematic review of literature from 2007–2012 underscored that trust in health authorities, pharmaceutical companies and governments is a recurrent theme across settings, as are broader narratives about risk, bodily autonomy and the role of the state.

More recently, conceptualizations have increasingly drawn on social determinants of health frameworks. Systematic reviews and scoping studies highlight that vaccine attitudes and behaviours cluster along gradients of income, education, ethnicity, migration status and geography[7–9]. For example, Cadeddu et al. show that among adolescents, parental education, socioeconomic status and social norms strongly influence vaccine confidence and uptake[9]. Vardavas et al. similarly document consistent associations between COVID-19 vaccine uptake and indicators such as area-level deprivation, minority status and housing conditions[8].

Kumar's discussion paper offers a useful integrative perspective, arguing that vaccine hesitancy is best understood as an interaction between cognitive factors (risk perceptions, beliefs), social influences (family, peers, religious and community leaders) and structural conditions (affordability, accessibility, policy) [10]. In this view, social determinants do not simply "add on" to attitudes; they partly constitute them, by shaping what information people encounter, whom they trust and what constraints they face.

3. Social determinants of vaccine hesitancy

3.1 Socioeconomic position and education

Socioeconomic gradients in vaccination coverage are well documented for a range of vaccines across diverse settings. Reviews of both routine childhood immunization and COVID-19 vaccination consistently show lower uptake among populations experiencing poverty, precarious employment or housing, and limited access to social protection[7,8]. Within these groups, vaccine hesitancy often coexists with more basic barriers to care, such as transportation costs, inability to take time off work, or lack of health insurance.

Education is a particularly complex determinant. On the one hand, lower educational attainment is associated with missed opportunities for vaccination, poorer awareness of schedules and less access to reliable health information. On the other hand, in some high-income countries, higher education and income have been linked with selective refusal of certain vaccines, especially where distrust of pharmaceutical corporations and alternative health beliefs are prevalent[7]. This "inverse gradient" illustrates that vaccine hesitancy can arise from both deprivation and privilege, but via different mechanisms.

Among adolescents, parental education, social position and peer norms are strongly associated with vaccine confidence and perceived need. Cadeddu et al. report that adolescents from more advantaged families are more likely to have higher health literacy, but may also be more exposed to online debates framing vaccination as a matter of personal choice rather than collective responsibility[9]. These patterns suggest that interventions must be tailored not only to disadvantaged groups with structural access barriers but also to socioeconomically advantaged groups where hesitancy may reflect different worldviews and information ecologies.

3.2 Health systems, access and place

Structural features of health systems and the broader built environment are central determinants of whether hesitancy translates into under-vaccination. Geographic distance to facilities, transportation infrastructure, clinic opening hours, user fees and bureaucratic requirements all shape whether supposedly "available" services can in fact be used.

Studies of COVID-19 vaccine uptake during the first phase of roll-out highlight how social vulnerability indexes—which combine income, housing, race/ethnicity and other indicators—correlate strongly with lower vaccination coverage even when vaccines are formally free[8]. In many countries, migrant and undocumented populations, people experiencing homelessness, and residents of informal settlements faced not only logistical obstacles but also fears about data sharing, deportation or discriminatory treatment.

Place matters in more subtle ways as well. Residents of rural areas or informal urban settlements may have fewer encounters with trusted health professionals and rely more heavily on informal networks or local leaders for health information. Historical experiences with under-resourced or coercive health services can also fuel mistrust, particularly in communities that have experienced medical neglect or experimentation. In such contexts, expressions of hesitancy may be less about the vaccines themselves than about long-standing structural violence and marginalisation[7].

3.3 Culture, religion and politics

Cultural norms, religious beliefs and political dynamics are core elements of the social context of vaccination. Importantly, religious affiliation per se does not reliably predict hesitancy; rather, what matters is how religious and community leaders interpret vaccination in relation to doctrine, morality and identity. Case studies from multiple regions show that when faith leaders actively support immunization, they can be powerful advocates; when they oppose or question it, they can rapidly amplify doubts[7,10].

Political polarisation has become a particularly salient determinant in recent years. In several high-income countries, COVID-19 vaccination attitudes became strongly aligned with partisan identity, with refusal signalling membership in particular political or ideological communities. This politicisation interacts with pre-existing cleavages related to gender, race and migration status, sometimes producing highly localised clusters of under-vaccination.

Structural racism and colonial legacies also shape vaccine attitudes. Communities that have historically been exposed to discriminatory policies, unethical research or coercive public health interventions may reasonably view new campaigns with suspicion. Addressing hesitancy in these settings requires acknowledging and repairing these histories, not merely providing more information.

3.4 Information environments, social media and trust

The contemporary information landscape is a crucial mediator between social determinants and vaccine attitudes. Social media platforms, messaging apps and online news sites allow rapid circulation of both accurate information and misinformation, often in highly polarised echo chambers. Puri et al. describe how anti-vaccine activists exploit platform algorithms to amplify emotionally resonant narratives, conspiracy theories and anecdotal accounts of adverse events, frequently targeting communities already experiencing social and political marginalisation[11].

However, the problem is not simply "fake news" versus "true facts". People interpret information through the lens of prior experiences and trust. Communities that feel neglected or stigmatised by health authorities may find alternative sources—whether influencers, religious leaders or peer networks—more credible than official channels. In this sense, what appears as "misinformation susceptibility" is often a symptom of deeper fractures in social and institutional trust.

Digital divides further complicate the picture. In settings with limited internet access, interpersonal communication and local media remain dominant, and rumours may travel primarily through face-to-face networks, radio or community gatherings. Here, the key determinant is not platform architecture but the density and orientation of social ties: who speaks with authority, and whose experiences are believed.

4. Implications for immunization programmes and research

Recognising vaccine hesitancy as a socially patterned phenomenon has important implications for policy and practice.

First, interventions must address structural as well as attitudinal barriers. Systematic reviews of interventions to reduce hesitancy show that multicomponent strategies—combining community engagement, reminders, provider

training and service adaptations—are more effective than information campaigns alone[12,13]. For populations facing poverty and precarious work, extending clinic hours, providing vaccination at workplaces or schools, removing user fees and offering transport or childcare support may be more impactful than additional educational materials.

Second, communication strategies should be trust-building rather than purely persuasive. Habersaat and Jackson argue that understanding vaccine demand requires attention to how people experience health systems and their interactions with providers[14]. Trust is earned through respectful, culturally sensitive encounters, transparency about risks and uncertainties, and authentic engagement with community concerns. This is particularly crucial in communities with histories of discrimination, where generic messages about "following the science" may be perceived as dismissive.

Third, interventions should be co-designed with affected communities. Evidence from both routine immunization and COVID-19 campaigns suggests that involving community leaders, civil society organisations and lay health workers in planning and delivering vaccination activities can increase acceptability and reach, especially among marginalised groups[7,12]. Co-design helps ensure that strategies are tailored to local meanings of risk, responsibility and care, rather than importing one-size-fits-all messages.

Fourth, health workers need support to engage constructively with hesitancy. Clinicians and vaccinators are often the most trusted sources of information but may feel ill-equipped to respond to complex questions or emotionally charged conversations. Training in communication skills, motivational interviewing and cultural humility, combined with institutional backing for longer consultation times when needed, can enable more productive dialogue. Tuckerman and colleagues highlight that providing health professionals with structured tools and consistent messaging improves their confidence in addressing parental hesitancy[15].

Finally, research agendas should be explicitly theory-driven and equity-focused. Skoczek et al.'s 2025 review underscores the value of integrating social determinants frameworks into hesitancy research, moving beyond descriptive surveys toward analyses that link individual attitudes with structural conditions[7]. Vardavas et al. similarly demonstrate how using established social vulnerability metrics can illuminate where and for whom inequities in vaccine uptake arise[8]. Future work would benefit from mixed-methods designs that combine geospatial and epidemiological data with qualitative insights into lived experiences, particularly in low- and middle-income countries where evidence remains comparatively sparse..

5. Conclusion

Vaccine hesitancy is often framed as a problem of misinformed individuals, yet the literature increasingly shows that it is patterned by the same social forces that shape most other health behaviours and outcomes. Socioeconomic position, education, place, health system design, cultural and political context, and information environments all structure how people encounter vaccines, whom they trust and what constraints they face. Addressing hesitancy therefore requires more than better leaflets or sharper slogans; it demands a sustained commitment to socially grounded immunization policy.

For practitioners, this means designing programmes that are convenient, affordable and dignified for those with the least power and resources, while also engaging critically with forms of hesitancy that arise among more privileged groups. For researchers, it calls for conceptual clarity, robust theory, and interdisciplinary collaboration bridging public health, social science and communication studies. By placing social determinants at the centre of analysis, future work can move beyond blaming individuals and instead help build vaccination systems that are both more equitable and more resilient.

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