International Journal of Innovative Technologies in Social Science

e-ISSN: 2544-9435

Scholarly Publisher
RS Global Sp. z O.O.
ISNI: 0000 0004 8495 2390

Dolna 17, Warsaw,
Poland 00-773
+48 226 0 227 03
editorial_office@rsglobal.pl

ARTICLE TITLE	THE SOCIAL DETERMINANTS OF VACCINE HESITANCY: A REVIEW OF GLOBAL EVIDENCE
ARTICLE INFO	Weronika Skoczek, Julia Janecka, Michał Hofman, Jan Krzysztof Górski, Witold Romuald Gajewski. (2025) The Social Determinants of Vaccine Hesitancy: A Review of Global Evidence. *International Journal of Innovative Technologies in Social Science*. 3(47). doi: 10.31435/ijitss.3(47).2025.3819
DOI	https://doi.org/10.31435/ijitss.3(47).2025.3819
RECEIVED	25 July 2025
ACCEPTED	03 September 2025
PUBLISHED	10 September 2025
LICENSE	The article is licensed under a **Creative Commons Attribution 4.0 International License.**

THE SOCIAL DETERMINANTS OF VACCINE HESITANCY: A REVIEW OF GLOBAL EVIDENCE

Weronika Skoczek *(Corresponding Author, Email: weronikaskoczek4@gmail.com)*
Raszeja City Hospital, Adama Mickiewicza 2, 60-834 Poznań, Poland
ORCID ID: 0000-0003-3810-3956

Julia Janecka
University Hospital in Poznań, Przybyszewskiego 49, 60-355 Poznań, Poland
ORCID ID: 0009-0005-9011-817X

Michał Hofman
Medical Center HCP, 28 Czerwca 1956 r. nr 194, 61-485 Poznań, Poland
ORCID ID: 0000-0001-9365-4537

Jan Krzysztof Górski
University Hospital in Poznań, Przybyszewskiego 49, 60-355 Poznań, Poland
ORCID ID: 0009-0001-9504-8482

Witold Romuald Gajewski
University Hospital in Poznań, Przybyszewskiego 49, 60-355 Poznań, Poland
ORCID ID: 0009-0000-3900-236X

ABSTRACT

This review examines the social determinants that influence vaccine hesitancy and immunization rates globally. Key factors, including income, education, ethnicity, place of residence, and access to healthcare, are examined to highlight ongoing disparities in vaccine uptake. Vaccine reluctance remains most common among marginalized racial and ethnic groups, low-income communities, migrants, and individuals with limited education. However, recent data reveal a concerning rise in hesitancy among affluent and White populations in high-income countries. Additional influences, such as mistrust in health authorities, insufficient culturally sensitive care, and religious beliefs, further exacerbate these challenges. Evidence suggests that targeted interventions, including community-specific outreach, improved access to information, and engagement of trusted local leaders, can effectively reduce hesitancy. The review emphasizes the importance of developing equitable immunization strategies that address the unique social, cultural, and economic contexts of diverse groups. Addressing the root causes of vaccine hesitancy is crucial for rebuilding trust, narrowing health disparities, and advancing global vaccination goals.

KEYWORDS

Vaccination Hesitancy, Social Determinants of Health, Immunization, Equity, Health Disparities, Vaccination

CITATION

Weronika Skoczek, Julia Janecka, Michał Hofman, Jan Krzysztof Górski, Witold Romuald Gajewski. (2025) The Social Determinants of Vaccine Hesitancy: A Review of Global Evidence. *International Journal of Innovative Technologies in Social Science*. 3(47). doi: 10.31435/ijitss.3(47).2025.3819

Introduction.

Over the past decade, significant progress has been made in developing and implementing new vaccines, as well as expanding immunization program coverage. A greater number of people are now receiving vaccinations, and the availability and uptake of vaccines have increased. However, we also notice a rise in vaccine hesitancy.

Vaccine hesitancy is defined by the WHO as the delay in acceptance or refusal of vaccines despite the availability of vaccination services. Vaccine hesitancy is a multifaceted issue that varies depending on the context, including differences in socioeconomic status, access to healthcare and information, as well as cultural factors (World Health Organization, 2024)

Recognizing the impact of social determinants of health (SDOH) on increasing vaccine hesitancy is essential for addressing this challenge and developing more effective strategies to protect public health.

In this paper, we aim to explore the controversies surrounding this global issue and identify the key areas where significant changes and improvements are needed.

Methodology

This systematic literature review was conducted to comprehensively examine the influence of social determinants of health on vaccine hesitancy across diverse populations and geographic regions worldwide. The review aimed to identify key factors driving vaccine hesitancy, assess trends over time, and evaluate proposed interventions to address these challenges (World Health Organization, 2024).

A comprehensive search strategy was developed using a range of relevant keywords. Search terms included: “vaccines,” “vaccine hesitancy,” “social determinants of health,” “health inequalities,” “immunization coverage,” “access to healthcare,” “mistrust,” “health communication,” “public health policy,” “health disparities,” “socioeconomic factors,” “cultural beliefs,” “health literacy,” “misinformation,” “WHO,” “ECDC,” and “CDC.” These terms were combined using Boolean operators to capture studies addressing the multiple dimensions of vaccine hesitancy and its relationship with social determinants of health.

After removing duplicates, all authors independently screened titles and abstracts of all retrieved records for relevance, based on predefined inclusion and exclusion criteria. Disagreements were resolved through discussion. Eligible articles then underwent full-text review for final inclusion.

Electronic databases such as PubMed and Google Scholar were systematically searched to identify peer-reviewed articles related to the social determinants of vaccine hesitancy. In addition, gray literature and official reports from reputable organizations, including the World Health Organization (WHO), the European Centre for Disease Prevention and Control (ECDC), and the Centers for Disease Control and Prevention (CDC), were reviewed to ensure a broad and up-to-date evidence base. Studies published in English between 2015 and 2025 were considered for inclusion, with a few exceptions for older documents that continue to hold significant academic value. Our review prioritized the most current and relevant literature to ensure the findings reflect the latest evidence and trends in the field. The selection criteria focused on articles that examined factors influencing vaccine hesitancy across different populations and settings. Both quantitative and qualitative studies were included to capture a comprehensive range of evidence.

Results

Defining Social Determinants of Health and Vaccine Hesitancy

Social determinants of health encompass the conditions in which individuals are born, grow, live, work, and age, as well as the broader systems and forces that shape daily life (Nagata et al These determinants include economic policies, institutional frameworks, cultural norms, social and public policies, and political dynamics. According to the World Health Organization’s Commission on Social Determinants of Health (CSDH), advancing progress on those matters is among the most effective strategies for improving overall population health and reducing health inequities. In addition, factors such as education level, employment status, neighborhood environment, healthcare access, gender, and ethnicity are increasingly recognized as critical influences on health outcomes, including vaccine acceptance and hesitancy (World Health Organization, 2008).

This review highlights several key social determinants that significantly influence vaccine hesitancy: socioeconomic status, access to healthcare, cultural and religious factors, and trust in health authorities. Additionally, we examine the roles of education, ethnicity, neighborhood environment, and policy context in shaping attitudes toward vaccination. By exploring how these interconnected factors impact vaccine acceptance, we aim to provide a comprehensive understanding of the complex landscape of vaccine hesitancy worldwide.

Vaccine hesitancy is commonly described through the "3 Cs" framework: confidence, complacency, and convenience. Confidence encompasses trust in the safety and effectiveness of vaccines, as well as in healthcare professionals and public health authorities. Complacency arises when individuals believe that the threat of vaccine-preventable diseases is minimal, leading to a perceived lack of necessity for vaccination. Convenience refers to the ease with which individuals can access vaccination services, considering factors such as availability, affordability, and the overall quality of healthcare delivery. More recently, researchers have proposed expanding this model to include additional dimensions such as communication and context, acknowledging the influence of misinformation, social media, and broader societal factors (Houle, 2023). Thoroughly understanding these drivers of vaccine hesitancy is vital for designing targeted interventions and policies that enhance vaccine acceptance and help prevent outbreaks of infectious diseases (MacDonald, 2015)

Global Immunization Trends and Emerging Challenges

Recent data from WHO and UNICEF show the most significant drop in global childhood vaccination rates in thirty years. DTP3 vaccine coverage fell from 86% in 2019 to 81% in 2021 (Muhoza et al., 2021), resulting in 25 million children missing out on essential immunizations, particularly in low- and middle-income countries (Eagan, 2023). This decline is attributed to disruptions caused by COVID-19, conflict, misinformation, strained healthcare systems, and limited access to care. Other vaccines, such as those for measles, HPV, and polio, also experienced substantial decreases, potentially increasing the risk of outbreaks and reversing years of progress toward global health targets. Some countries, including Uganda (Sayem, 2025) and Pakistan (Joachim, 2024), managed to maintain or restore immunization rates through strong governmental leadership and catch-up efforts; however, most regions experienced declines, particularly in East Asia and the Pacific (UNICEF, 2025). Worryingly, the decline in immunization coincides with increasing malnutrition, putting children at greater risk of severe disease. To address these challenges, global health agencies are calling for urgent action, including investing in routine and catch-up immunization, strengthening health systems, building vaccine confidence, and combating misinformation. Without renewed focus, the world risks more disease outbreaks and setbacks in child health and survival (World Health Organization, 2024).

By the end of 2024, global immunization programs had introduced most major vaccines, including those for Hib, hepatitis B, measles, and polio, in the majority of countries, with over three-quarters of children worldwide receiving these vaccines. However, coverage remains uneven across regions. For example, the European Region reported high Hib vaccine coverage at 93%, while the Western Pacific lagged at 34%. Hepatitis B vaccine coverage is strong globally, but only 17% of newborns in Africa receive the birth dose. HPV vaccine uptake has improved, reaching 31% of eligible girls, yet this remains well short of the 90% goal for 2030. New introductions and a shift to a 1-dose schedule have helped boost HPV coverage (World Health Organization, 2025). Malaria vaccine efforts are expanding across Africa, with over 30 countries planning to add it to their immunization programs following successful pilot projects that reduced child mortality (Osoro et al., 2024). MenAfriVac campaigns have virtually eliminated meningitis A outbreaks in the African meningitis belt, and a new pentavalent vaccine is being introduced (Trotter et al., 2017). Coverage for other vaccines, such as pneumococcal, rotavirus, rubella, and yellow fever, varies, with some regions achieving high rates and others falling behind. For example, pneumococcal vaccine coverage is 88% in South-East Asia but only 23% in the Western Pacific. Despite these advances, persistent regional gaps and challenges such as maternal and neonatal tetanus in some countries and ongoing threats from polio, where it remains endemic, highlight the need for continued investment and targeted strategies to improve vaccine access, equity, and uptake worldwide (World Health Organization, 2022 UNICEF, 2025).

To close these immunization gaps, it is essential to monitor vaccination data not only at the national level but also within regions and communities. Detailed subnational data allows health authorities to identify underserved populations, adapt vaccination campaigns, and implement targeted interventions. Strengthening surveillance and tailoring strategies accordingly are crucial steps toward ensuring that all children, regardless of their location, have access to essential, life-saving vaccines.

The Immunization Agenda 2030 (IA2030) sets out a bold global vision and strategy for vaccines and immunization from 2021 to 2030. Developed collaboratively with input from countries and organizations worldwide, it builds on past experiences and addresses ongoing and emerging infectious disease threats such as Ebola and COVID-19 (Immunization Agenda 2030 Partners, 2024).

Socioenconoimc status

Indicators of socioeconomic status (SES) include income, occupation, education, and sometimes place of residence. Additional indicators may include asset ownership, household size, employment stability, social class, literacy level, access to clean water, and sanitation. However, in this review, we would like to focus on the main factors being income and wealth, place of residence, ethnicity, and access to healthcare. Together, these indicators provide a comprehensive picture of an individual's or community's social and economic position, which can significantly influence health outcomes and access to services, such as vaccination (Lamot, 2024)

Vaccine hesitancy tends to be more prevalent among marginalized racial and ethnic groups than among White populations in predominantly White countries. When COVID-19 vaccines became available in the US, hesitancy was particularly pronounced among Black communities (Guidry et al., 2021). Comparable trends have been observed in other countries; for instance, in the UK, over 70% of Black respondents and more than 40% of Pakistani and Bangladeshi respondents reported vaccine hesitancy, compared to an overall rate of 18% (Roberts et al., 2022). Socioeconomic factors further intensify this divide. Research, including a large meta-analysis from 13 countries, suggests that individuals with lower incomes in high-income countries, such as the UK, France, Ireland, and Australia, are less likely to accept vaccination. Similar findings emerged in Switzerland and the US, where those with fewer financial resources often exhibited lower levels of trust in health authorities and greater reluctance to get vaccinated (Vlasak et al., 2023; Robinson *et al.*, 2021)

Income plays a major role in shaping vaccine hesitancy. As household poverty increases, children are more likely to miss out on complete immunization. Financial hardship often leads to reduced healthcare utilization, creating a double burden for these children: not only do they lack access to nutritious food that supports natural immunity, but they are also less likely to receive the full course of vaccines needed to protect them from preventable diseases (Adedokun et al., 2017). This cycle of deprivation puts disadvantaged children at even greater risk for poor health outcomes and underscores the importance of addressing both economic barriers and healthcare access in immunization strategies (Etana et al., 2012).

UNICEF reports that in 2021, over 60% of the 25 million under-vaccinated children, approximately 15 million were concentrated in just ten low- and middle-income countries: India, Nigeria, Indonesia, Ethiopia, the Philippines, the Democratic Republic of the Congo, Brazil, Pakistan, Angola, and Myanmar (UNICEF, 2025).

Education and access to reliable information are key components of socioeconomic status. In a meta-analysis, Forshaw et al. (2017) evaluated 37 original papers and concluded that higher maternal education had a greater impact on childhood vaccination rates in Asia and Africa compared to Europe. This suggests that maternal education may be a more significant factor influencing vaccine uptake in lower-income countries than in wealthier nations. Children whose mothers had a secondary or higher education were 2.3 times more likely to be fully vaccinated than those whose mothers had no formal education (Adedokun et al., 2017).

A review by British researchers examining 108 studies found that the most significant disparities in full immunization coverage were associated with maternal education and family wealth. Children whose mothers had no formal education were 28% less likely to be fully vaccinated, while those from the lowest-income households were 27% less likely to receive all recommended vaccines compared to children from the wealthiest families. These findings highlight the critical role of socioeconomic factors in vaccination rates and underscore the need for targeted interventions to support vulnerable families and promote equitable access to immunization (Ali et al., 2022).

Another extremely important factor associated with vaccine hesitancy is confidence, one of the key elements of the 3Cs model. Confidence refers to trust in the safety and effectiveness of vaccines, as well as in healthcare professionals and public health authorities. Higher levels of confidence are linked to a greater willingness to receive vaccinations (Schellenberg & Crizzle, 2020).

These findings demonstrate that ethnicity, income, place of residence, and education are all critical factors shaping vaccine hesitancy and uptake. Marginalized racial and ethnic groups, individuals with lower incomes, those living in underserved areas, and people with lower educational attainment consistently face greater barriers to vaccination(Nagata et al., 2013). Addressing these socioeconomic determinants by improving access to healthcare, enhancing education and information, and building trust in vaccines and health authorities is essential for reducing vaccine hesitancy and achieving equitable immunization coverage across diverse populations.

Trust in Health Authorities

It is important to explore the underlying causes and origins of mistrust and hesitancy among minority populations (Vlasak et al., 2023). Gaining a deeper understanding of these factors can inform the development of targeted interventions to address concerns, rebuild confidence in the healthcare system, and improve vaccine acceptance. By acknowledging and addressing the unique experiences and barriers faced by these communities, public health efforts can become more effective in restoring trust and promoting equitable access to vaccination (Laurencin, 2021).

Mistrust is often viewed as a coping mechanism that helps individuals meet certain needs during times of threat or uncertainty, such as the COVID-19 pandemic. These needs can include the desire to make sense of events (epistemic), the wish to feel some control (existential), and the drive to protect a positive self-image or group identity (social) (Douglas et al., 2017). For Black Americans, persistent medical mistrust is shaped not only by historical knowledge but also by ongoing experiences of discrimination and harmful treatment from healthcare systems and government institutions (van Prooijen & Acker, 2015).

Historically, marginalized groups have often distrusted vaccines, shaped by a legacy of healthcare disparities, unethical research practices, and exclusion from clinical trials (Malik et al., 2020). In the United States, for example, Black Americans were the most hesitant among racial groups to receive the COVID-19 vaccine, frequently referencing the nation's history of medical racism and exploitation as a major concern (Bogart et al., 2021).

Indigenous populations in Canada, such as First Nations people, faced a disproportionate burden of COVID-19 cases—accounting for over 70% of cases while representing just 10% of the population—yet many hesitated to get vaccinated, fearing they might be used as experimental subjects (Mosby et al., 2021). These apprehensions are not without basis; despite being among the most vulnerable to COVID-19, ethnic minorities were consistently underrepresented in vaccine research and development (D'Souza et al., 2021).

Additionally, a lack of culturally competent healthcare, communication barriers, and limited access to trustworthy health information have further contributed to ongoing mistrust and reluctance toward vaccination in these communities (Ojikutu et al., 2022).

Understanding the underlying causes of mistrust and vaccine hesitancy among minority groups is essential for developing effective solutions. By examining the historical, cultural, and social factors that contribute to these attitudes, health authorities and policymakers can create targeted strategies to address concerns and rebuild confidence (Laurencin, 2021). This approach not only helps restore trust in the healthcare system and vaccines but also promotes greater equity in health outcomes. Engaging community leaders, improving communication, and ensuring representation in healthcare decision-making are crucial steps toward fostering trust and increasing vaccine uptake in marginalized communities.

The SAGE Working Group on Vaccine Hesitancy (2014) reported that a project was initiated in the United Kingdom to address vaccine hesitancy among Orthodox Jewish communities in Greater London. In Sweden, the diagnostic tool was applied to various groups, including Somali immigrants, anthroposophic communities, and unregistered migrants, enabling authorities to better understand and address each community's specific vaccination needs and preferences. Meanwhile, in Bulgaria, findings revealed that the main obstacle for the Roma population was not a lack of knowledge or confidence in vaccines, but rather limited access to friendly, inclusive immunization services and positive healthcare interactions. These insights allowed interventions to be tailored to tackle the true barriers to vaccine uptake within each group.

This highlights the importance of developing tailored approaches that address the unique needs of each community when tackling immunization challenges. There is no universal solution; instead, individualized strategies that consider specific barriers and preferences are crucial for enhancing vaccine uptake and fostering trust across diverse populations (Laurencin, 2021).

However, this issue is even more complex, as vaccine hesitancy is rising not only among lower-income minorities but also among White and affluent individuals in high-income countries (Vlasak et al., 2023).

If COVID-19 vaccine uptake follows patterns seen with other vaccines, higher refusal rates may emerge among more privileged groups. For example, a 2016 Australian study found that wealthier postal codes had lower childhood vaccine compliance (Vlasak et al., 2023).

Similarly, by 2018, 10 out of 86 low- and middle-income countries had poorer children with higher vaccination rates than wealthier ones, a reversal from 2010 (Cata-Preta, 2021).

Silveira et al. (2020) examined four population-based birth cohorts in Pelotas, Brazil, and observed that full immunization coverage increased from 80.9% in 1982 to a peak of 97.2% in 1993, but then dropped to 77.2% by 2015. Interestingly, the original advantage seen among wealthier families shifted over time; by 2015,

children from poorer households were more likely to be fully immunized, indicating that vaccine hesitancy may have become more prevalent among higher-income groups.

Morales et al. (2024), using longitudinal state-level data from the U.S. Census Household Pulse Survey, found that COVID-19 vaccine hesitancy decreased significantly among Black Americans from January to October 2021, whereas refusal rates among White Americans remained relatively unchanged during the same period.

Access to Healthcare

Migrants represent a highly diverse population, yet they are often more affected by infectious diseases and are at increased risk of being underimmunized compared to native residents. This can have significant implications for public health upon their arrival in a new country (Noori et al., 2021), highlighting the need for enhanced healthcare monitoring and support for these communities.

Both migrants and primary care providers have identified multiple obstacles to healthcare access, including difficulties registering with health services, the physical closure of clinics, and experiences of indirect discrimination (Perry, 2021). Additional barriers include language and communication challenges, as well as insufficient access to culturally appropriate or specifically tailored COVID-19 information and interventions (Kang et al.,2019).

Language barriers, in particular, were frequently cited by both migrants and healthcare professionals as a major obstacle, further exacerbated by the shift toward digital healthcare services and the limited availability of interpreters. These challenges can lead to delays in care, misunderstandings about vaccination, and lower overall immunization rates among migrant communities (Knights et al., 2021). Addressing these issues requires proactive measures, such as providing multilingual resources, expanding interpreter services, and creating targeted outreach programs to ensure migrants have equitable access to immunization and healthcare.

This suggests that access to a family doctor and trust in healthcare providers can help reduce vaccine hesitancy (O'Donnell et al., 2017). Two studies explored the role of trust in vaccine acceptance. They found that parents who vaccinated their children tended to have more trust in public health authorities, doctors, and academic experts compared to parents who did not vaccinate their children. Distrust of pharmaceutical companies was also notably higher among non-vaccinating parents (80%) than among those who vaccinated (51%). Additionally, parents who trusted vaccine information were significantly less likely to be hesitant and more willing to accept vaccines, even if they initially had doubts (Schellenberg et al., 2020).

Cultural and Religious Aspects

Culture and religion shape many aspects of people's lives, influencing not only individual choices but also decisions made within families and entire communities. These factors play a significant role in attitudes toward vaccination and can affect vaccine hesitancy in various ways (López-Cepero et al., 2022). It is essential to investigate how religious beliefs and cultural backgrounds influence vaccine hesitancy and to develop effective strategies for increasing vaccination rates within these communities. Tailored outreach, culturally sensitive education, and engaging trusted community and faith leaders may be key to improving vaccine acceptance among diverse groups.

Our findings reveal that individuals with higher levels of religiosity tend to be more uncertain or unwilling to receive the COVID-19 vaccine. They also perceive themselves as less susceptible to COVID-19, see fewer benefits to vaccination, and encounter more obstacles to getting vaccinated. Religiosity was associated with how individuals responded to cues, such as receiving sufficient information about the vaccine or observing vaccination decisions within their social networks (Milligan et al., 2022).

These results align with previous studies from the US and other countries, which have consistently shown that religiosity can be a significant factor in vaccine hesitancy and refusal. For example, Jacobi (2021) showed that among US adults in several states, those with stronger religious beliefs were 21% less likely to accept the COVID-19 vaccine.

López-Cepero et al. (2022) discovered that adults in Puerto Rico who considered religiosity to be very important were more likely to feel unsure about or resistant to getting the COVID-19 vaccine. These individuals also perceived themselves as less at risk, saw fewer benefits to vaccination, and reported more obstacles to getting vaccinated.

Given these insights, it is clear that religious beliefs can have a significant impact on vaccine attitudes. To address hesitancy in highly religious communities, public health initiatives should consider engaging faith leaders, providing tailored information that aligns with community values, and fostering open dialogue to build trust and encourage vaccine acceptance.

Olagoke et al. (2021) found that individuals who attribute their health to external factors, such as divine will, are more likely to have their vaccination intentions shaped by their religiosity. The study suggests that highly religious people may interpret health events including crises like COVID-19, as being outside of personal control, which can reduce their motivation to pursue preventive measures such as vaccination.

While religion often provides support and reassurance during difficult times like the COVID-19 pandemic, seeing health as controlled by a higher power may lead highly religious individuals to feel less at risk, which could explain their lower motivation to get vaccinated.

Discussion

Our review focused on key socioeconomic indicators, income, wealth, and place of residence that collectively shape vaccine coverage and hesitancy across populations. Analysis revealed that vaccine hesitancy is disproportionately higher among marginalized racial and ethnic groups compared to White populations in predominantly White countries (Giudey et al. 2021). For example, in the US and UK, Black and Pakistani/Bangladeshi communities reported hesitancy rates significantly above national averages (Roberts et al., 2022). Socioeconomic disparities further intensify these gaps. Across high-income countries, individuals with lower incomes consistently exhibited lower vaccine acceptance and greater mistrust of health authorities (Vlasak et al., 2023). UNICEF data from 2021 showed that over 60% of under-vaccinated children were concentrated in just ten low- and middle-income countries, emphasizing the global dimension of socioeconomic disadvantage.

Household poverty was closely linked to incomplete immunization. Financial hardship reduced healthcare utilization, compounding disadvantages through both poor nutrition and fewer vaccines. Notably, by 2018, vaccine coverage among poorer children in some low- and middle-income countries had surpassed that of their wealthier peers, marking a reversal of historical trends (Adedokun et al., 2017). Meanwhile, in affluent countries, vaccine hesitancy has begun to increase among wealthier and White populations, suggesting a shift that warrants further investigation (Vlasak et al., 2023).

Educational attainment, particularly maternal education, emerged as a strong predictor of vaccination uptake. Children whose mothers had a secondary or higher education were 2.3 times more likely to be fully vaccinated than those whose mothers had no formal education (Adedokun et al., 2017). A review of 108 studies highlighted that children from the lowest-income households and those whose mothers lacked formal education were 27% and 28% less likely, respectively, to be fully vaccinated compared to their wealthiest and more educated peers (Ali et al., 2022).

High levels of trust in healthcare providers and public health authorities were associated with increased vaccine acceptance, while mistrust correlated with hesitancy and refusal (Vlasak et al., 2023). Studies have found that parents who trust vaccine information and healthcare professionals are more likely to have their children vaccinated. Conversely, distrust, especially of pharmaceutical companies, was much higher among non-vaccinating parents. Migrant populations, facing additional barriers such as language, discrimination, and lack of tailored information, were at greater risk of being underimmunized (Bogart et al., 2021). Access to a family doctor and culturally competent care emerged as protective factors against delayed or incomplete vaccination (O'Donnell et al., 2017).

Cultural background and religious beliefs were found to have a significant influence on vaccination decisions. Individuals with higher religiosity were more likely to be uncertain or unwilling to receive the COVID-19 vaccine, perceiving themselves as less susceptible and facing greater barriers to vaccination (Milligan et al., 2022). This association was consistent across several countries and populations, including overlooked groups such as adults in Puerto Rico. Belief in external health control (such as divine will) also contributed to lower perceived risk and reduced vaccine uptake (López-Cepero et al., 2022).

Conclusion

This review demonstrates that vaccine hesitancy is a complex, multifaceted issue for which one-size-fits-all solutions are ineffective. International examples from the UK, Sweden, and Bulgaria show the importance of understanding and addressing the unique barriers faced by different communities ranging from access to services and cultural beliefs to previous experiences with healthcare systems (The SAGE Working Group on Vaccine Hesitancy, 2014). Effective approaches include involving trusted community and religious leaders, offering information in various languages, and ensuring outreach efforts are culturally relevant and respectful.

Moreover, building trust in healthcare providers and public health authorities is essential, particularly in populations with a history of medical mistrust or exclusion (Malik et al., 2020). Tailored interventions that focus on education, improve access to reliable information, and foster open dialogue are key to overcoming hesitancy. Ultimately, strategies must be adaptable and responsive to the social, cultural, and economic realities of each community (Vlasak et al., 2023). By prioritizing equity and community engagement, public health initiatives can make significant progress toward closing immunization gaps and protecting vulnerable populations (Laurencin, 2021).

Conflicts of Interest: No conflicts of interest to declare.

REFERENCES

1. Adedokun, S. T., Uthman, O. A., Adekanmbi, V. T., & Wiysonge, C. S. (2017, March 8). Incomplete childhood immunization in Nigeria: A multilevel analysis of individual and contextual factors. BMC Public Health, 17(1), Article 236. https://doi.org/10.1186/s12889-017-4137-7
2. Ali, H. A., Hartner, A. M., Echeverria-Londono, S., Roth, J., Li, X., Abbas, K., Portnoy, A., Vynnycky, E., Woodruff, K., Ferguson, N. M., Toor, J., & Gaythorpe, K. A. (2022). Vaccine equity in low and middle-income countries: A systematic review and meta-analysis. International Journal for Equity in Health, 21(1), Article 82. https://doi.org/10.1186/s12939-022-01678-5
3. Bogart, L. M., Ojikutu, B. O., Tyagi, K., Klein, D. J., Mutchler, M. G., Dong, L., Lawrence, S. J., Thomas, D. R., & Kellman, S. (2021). COVID-19-related medical mistrust, health impacts, and potential vaccine hesitancy among Black Americans living with HIV. Journal of Acquired Immune Deficiency Syndromes, 86(2), 200–207. https://doi.org/10.1097/QAI.0000000000002570
4. Cata-Preta, B. O. (2021). The rise of vaccine hesitancy in upper-middle-income countries. International Journal of Epidemiology, 50(Supplement 1). https://doi.org/10.1093/ije/dyab168.114
5. Commission on Social Determinants of Health, & World Health Organization. (2008). Closing the gap in a generation: Health equity through action on the social determinants of health: Final report of the Commission on Social Determinants of Health. World Health Organization. https://iris.who.int/handle/10665/43943
6. Douglas, K. M., Sutton, R. M., & Cichocka, A. (2017). The psychology of conspiracy theories. Current Directions in Psychological Science, 26(6), 538–542. https://doi.org/10.1177/0963721417718261
7. D'Souza, R. S., & Wolfe, I. (2021, April 10). COVID-19 vaccines in high-risk ethnic groups. The Lancet, 397(10282), 1348. https://doi.org/10.1016/S0140-6736(21)00624-3
8. Eagan, R. L. (2023). Recent trends in vaccine coverage and confidence [Commentary]. PMCID: PMC10395254. https://pubmed.ncbi.nlm.nih.gov/PMC10395254/
9. Etana, B., & Deressa, W. (2012). Factors associated with complete immunization coverage in children aged 12–23 months in Ambo Woreda, Central Ethiopia. BMC Public Health, 12, Article 566. https://doi.org/10.1186/1471-2458-12-566
10. Forshaw, J., Gerver, S. M., Gill, M., Cooper, E., Manikam, L., & Ward, H. (2017). The global effect of maternal education on complete childhood vaccination: A systematic review and meta-analysis. BMC Infectious Diseases, 17(1), Article 801. https://doi.org/10.1186/s12879-017-2890-y
11. Guidry, J. P. D., Laestadius, L. I., Vraga, E. K., Miller, C. A., Perrin, P. B., Burton, C. W., Ryan, M., Fuemmeler, B. F., & Carlyle, K. E. (2021). Willingness to get the COVID-19 vaccine with and without emergency use authorization. American Journal of Infection Control, 49(2), 137–142. https://doi.org/10.1016/j.ajic.2020.11.018
12. Houle, S. K. D., & Andrew, M. K. (2023). RSV vaccination in older adults: Addressing vaccine hesitancy using the 3C model. Canadian pharmacists journal : CPJ = Revue des pharmaciens du Canada : RPC, 157(1), 39–44. https://doi.org/10.1177/17151635231210879
13. Immunization Agenda 2030 Partners. (2024, April 8). Immunization Agenda 2030: A global strategy to leave no one behind [Editorial]. Vaccine, 42 (Supplement 1), S5–S14. https://doi.org/10.1016/j.vaccine.2022.11.042
14. Jacobi, C. J. (2021). Racial differences in anticipated COVID-19 vaccine acceptance among religious populations in the US. Vaccine. Advance online publication. https://doi.org/10.1016/j.vaccine.2021.11.024
15. Joachim, G. E., Wagner, A. L., Naseem, M., & Boulton, M. L. (2024). Trends in childhood vaccination in Pakistan and associated factors; 2006-2018. Vaccine, 42(4), 795–800. https://doi.org/10.1016/j.vaccine.2024.01.014
16. Kang, C., Tomkow, L., & Farrington, R. (2019). Access to primary health care for asylum seekers and refugees: A qualitative study of service user experiences in the UK. British Journal of General Practice, 69(685), e537–e545. https://doi.org/10.3399/bjgp19x701309
17. Knights, F., Carter, J., Deal, A., Crawshaw, A. F., Hayward, S. E., Jones, L., & Hargreaves, S. (2021, July 29). Impact of COVID-19 on migrants' access to primary care and implications for vaccine roll-out: A national qualitative study. *British Journal of General Practice, 71*(709), e583–e595. https://doi.org/10.3399/BJGP.2021.0028

18. Lamot, M., & Kirbiš, A. (2024). Understanding Vaccine Hesitancy: A Comparison of Sociodemographic and Socioeconomic Predictors with Health Literacy Dimensions. *Vaccines*, *12*(10), 1141. https://doi.org/10.3390/vaccines12101141
19. Laurencin, C. T. (2021). Addressing justified vaccine hesitancy in the Black community. *Journal of Racial and Ethnic Health Disparities, 8*(3), 543–546. https://doi.org/10.1007/s40615-021-01025-4
20. López-Cepero, A., Rodríguez, M., Joseph, V., Suglia, S. F., Colón-López, V., Toro-Garay, Y. G., Archevald-Cansobre, M. D., Fernández-Repollet, E., & Pérez, C. M. (2022). Religiosity and beliefs toward COVID-19 vaccination among adults in Puerto Rico. *International Journal of Environmental Research and Public Health, 19*(18), 11729. https://doi.org/10.3390/ijerph191811729
21. MacDonald, N. E., & SAGE Working Group on Vaccine Hesitancy. (2015). Vaccine hesitancy: Definition, scope, and determinants. *Vaccine, 33*(34), 4161–4164. https://doi.org/10.1016/j.vaccine.2015.04.036
22. Malik, A. A., McFadden, S. M., Elharake, J., & Omer, S. B. (2020). Determinants of COVID-19 vaccine acceptance in the US. *EClinicalMedicine, 26,* Article 100495. https://doi.org/10.1016/j.eclinm.2020.100495
23. Milligan, M. A., Hoyt, D. L., Gold, A. K., Hiserodt, M., & Otto, M. W. (2022). COVID-19 vaccine acceptance: Influential roles of political party and religiosity. *Psychology, Health & Medicine, 27*(9), 1907–1917. https://doi.org/10.1080/13548506.2021.1969026
24. Morales, D. X., & Paat, Y.-F. (2024). Hesitancy or resistance? Differential changes in COVID-19 vaccination intention between Black and White Americans. *Journal of Racial and Ethnic Health Disparities, 11*(1), 23–35. https://doi.org/10.1007/s40615-022-01494-1
25. Mosby, I., & Swidrovich, J. (2021, March 15). Medical experimentation and the roots of COVID-19 vaccine hesitancy among Indigenous Peoples in Canada. *Canadian Medical Association Journal, 193*(11), E381–E383. https://doi.org/10.1503/cmaj.210112
26. Muhoza, P., Danovaro-Holliday, M. C., Diallo, M. S., Murphy, P., Sodha, S. V., Requejo, J. H., & Wallace, A. S. (2021, October 29). Routine vaccination coverage — worldwide, 2020. *MMWR. Morbidity and Mortality Weekly Report, 70*(43), 1495–1500. https://doi.org/10.15585/mmwr.mm7043a1
27. Nagata, J. M., Hernández-Ramos, I., Kurup, A. S., Albrecht, D., Vivas-Torrealba, C., & Franco-Paredes, C. (2013). Social determinants of health and seasonal influenza vaccination in adults ≥ 65 years: A systematic review of qualitative and quantitative data. *BMC Public Health, 13,* Article 388. https://doi.org/10.1186/1471-2458-13-388
28. Noori, T., Hargreaves, S., Greenaway, C., van der Werf, M., Driedger, M., Morton, R. L., Hui, C., Requena-Mendez, A., Agbata, E., Myran, D. T., Pareek, M., Campos-Matos, I., Nielsen, R. T., Semenza, J., Nellums, L. B., & Pottie, K. (2021). Strengthening screening for infectious diseases and vaccination among migrants in Europe: What is needed to close the implementation gaps? *Travel Medicine and Infectious Disease, 39,* Article 101715. https://doi.org/10.1016/j.tmaid.2020.101715
29. O'Donnell, S., Dubé, E., Tapiero, B., Gagneur, A., Doll, M. K., & Quach, C. (2017). Determinants of under-immunization and cumulative time spent under-immunized in a Quebec cohort. *Vaccine, 35*(43), 5924–5931. https://doi.org/10.1016/j.vaccine.2017.08.072
30. Ojikutu, B. O., Bogart, L. M., & Dong, L. (2022, March). Mistrust, empowerment, and structural change: Lessons we should be learning from COVID-19 [Editorial]. *American Journal of Public Health, 112*(3), 401–404. https://doi.org/10.2105/AJPH.2021.306604
31. Olagoke, A. A., Olagoke, O. O., & Hughes, A. M. (2021). Intention to vaccinate against the novel 2019 coronavirus disease: The role of health locus of control and religiosity. *Journal of Religion and Health, 60*(1), 65–80. https://doi.org/10.1007/s10943-020-01090-9
32. Osoro CB, Ochodo E, Kwambai TK, Otieno JA, Were L, Sagam CK, Owino EJ, Kariuki S, Ter Kuile FO, Hill J. Policy uptake and implementation of the RTS,S/AS01 malaria vaccine in sub-Saharan African countries: status 2 years following the WHO recommendation. BMJ Glob Health. 2024 Apr 30;9(4):e014719. doi: 10.1136/bmjgh-2023-014719. PMID: 38688566; PMCID: PMC11085798.f
33. Perry, M. (2021). Inequalities in coverage of COVID-19 vaccination. *Vaccine.* Advance online publication. https://doi.org/10.1016/S0264-410X(21)01198-1
34. Roberts, H. A., Clark, D. A., & Hicks, B. M. (2022). To vax or not to vax: Predictors of anti-vax attitudes and COVID-19 vaccine hesitancy prior to widespread vaccine availability. *PLOS ONE, 17*(2), Article e0264019. https://doi.org/10.1371/journal.pone.0264019
35. Robinson, E., Jones, A., Lesser, I., & Daly, M. (2021). International estimates of intended uptake and refusal of COVID-19 vaccines: A rapid systematic review and meta-analysis of large nationally representative samples. *Vaccine, 39*(15), 2024–2034. https://doi.org/10.1016/j.vaccine.2021.02.005
36. Sayem, A. S. M., Musuka, G., Atuhebwe, P. L., Dadari, I., & Siddique, A. R. (2025). Childhood vaccination catch-up and recovery plans for mitigating immunity gap post the COVID-19 pandemic: A case study of selected African countries. *Vaccine*, *61*, 127328. https://doi.org/10.1016/j.vaccine.2025.127328
37. Silveira, M. F., Barros, A. J. D., & Horta, B. L. (2020). The emergence of vaccine hesitancy among upper-class Brazilians: Results from four birth cohorts, 1982–2015. Vaccine, 38(5), 1191–1198. https://doi.org/10.1016/j.vaccine.2019.10.070

38. Strategic Advisory Group of Experts on Immunization (SAGE) Working Group on Vaccine Hesitancy. (2014, November 12). Report of the SAGE Working Group on Vaccine Hesitancy (revised report). World Health Organization. https://www.asset-scienceinsociety.eu/sites/default/files/sage_working_group_revised_report_vaccine_hesitancy.pdf
39. Trotter, C. L., Lingani, C., Fernandez, K., Cooper, L. V., Bita, A., Tevi-Benissan, C., Ronveaux, O., Préziosi, M. P., & Stuart, J. M. (2017). Impact of MenAfriVac in nine countries of the African meningitis belt, 2010-15: an analysis of surveillance data. The Lancet. Infectious diseases, 17(8), 867–872. https://doi.org/10.1016/S1473-3099(17)30301-8
40. UNICEF. (2025, July 14). Immunization [Data topic page]. UNICEF Data. https://data.unicef.org/topic/child-health/immunization/
41. van Prooijen, J. W., & Acker, M. (2015). The influence of control on belief in conspiracy theories. Applied Cognitive Psychology, 29, 753–761. https://doi.org/10.1002/acp.3161
42. Vlasak, D., Dinero, R. E., & Roitman, N. A. (2023, November 1). Vaccine hesitancy at both ends of the socioeconomic spectrum: A new paradigm for understanding the role of systemic inequity [Review article]. Journal of Public Health and Emergency, 7. https://doi.org/10.21037/jphe-23-81
43. World Health Organization. (2024, July 15). Ensuring quality health care by reducing HIV-related stigma and discrimination (Technical document). https://iris.who.int/handle/10665/78141
44. World Health Organization. (2025, July 15). Immunization coverage [Fact sheet]. World Health Organization. https://www.who.int/news-room/fact-sheets/detail/immunization-coverage
45. World Health Organization, & UNICEF. (2022, July 15). COVID-19 pandemic fuels largest continued backslide in vaccinations in three decades [Press release]. World Health Organization. https://www.who.int/news/item/15-07-2022-covid-19-pandemic-fuels-largest-continued-backslide-in-vaccinations-in-three-decades