# Covid-19 Vaccine Concerns Among Ethnic Minorities: A Systematic Review Of UK Studies


## Abstract

Ethnic minority communities in the UK have been disproportionately affected by the pandemic, with increased risks of infection, severe disease, and death. Hesitancy around the COVID-19 vaccine may be contributing to disparities in vaccine delivery to ethnic minority communities. This systematic review aims to strengthen understanding of COVID-19 vaccine concerns among ethnic minorities in the UK. Five databases were searched in February 2022, yielding 24 peer-reviewed studies reporting on vaccine hesitancy or acceptance in ethnic minority groups. Data were extracted using a standardised form, and quality assessment was carried out using the Standard Quality Criteria. There were three key themes: (1). Prevalence of vaccine hesitancy; (2). Reasons for vaccine hesitancy and acceptance; and (3). Recommendations to address vaccine concerns. Vaccine hesitancy, which was more common among some ethnic minority groups, is a complex phenomenon, driven by misinformation, mistrust, concerns about safety and efficacy, and structural and systemic inequities. Community engagement and tailored communication may help to address vaccine concerns. Robust data disaggregated by ethnicities are needed to better understand barriers and facilitators for COVID-19 vaccine delivery in ethnic minority communities. Strategies to address structural disadvantage need to be inclusive, comprehensive, and behaviorally informed and foster confidence in healthcare systems and governments. Community leaders and health care practitioners may prove to be the most important agents in creating an environment of trust within ethnic minority groups.



**Key words:** Covid-19 vaccine, vaccine hesitancy, ethnic minority, vaccine acceptance, trust


## Introduction

The 8 million individuals from ethnic minority backgrounds in the UK [1] have been shown to be at increased risk of acquiring COVID-19, and are over-represented among those who become ill and die [2–4]. The reasons behind these disparities are multi-faceted and complex [5]. Social circumstances, alongside experiences of discrimination and racism in the healthcare system may contribute to mistrust, and to disparities in morbidity and mortality [6].

The UK Government recognised ethnic minorities as a priority group for vaccinations following disproportionate morbidity and mortality in this population [7,8]. Despite strong evidence for the safety and effectiveness of the vaccine, rates of vaccination are lowest in

ethnic minority groups [9]. Vaccine hesitancy, defined as "the delay in acceptance or refusal of vaccines despite availability of vaccination services" [9] is a key obstacle to attaining the vaccination levels necessary to contain the pandemic [12]. The aim of this systematic review was to identify and synthesise evidence on COVID-19 vaccine concerns among ethnic minorities in the UK.

## Methodology

### *Design*

Systematic review using PRISMA guidelines (PROSPERO RD42021243083) [13].

### *Search strategy*

AMED, CINAHL, Embase, Ovid Medline, and PsycInfo were searched up to 18th February 2022. Hand searches were made of key journals and reference lists from included papers. Searches were limited from January 2020 because COVID-19 started in December 2019 and vaccines were rolled out from November 2020. The search strategy (Table-I) was developed in consultation with an information specialist.

### *Eligibility Criteria*

Peer-reviewed primary studies related to vaccine hesitancy or acceptance in ethnic minority groups published in English from January 2020 to February 2022 were included (Table-II).

### *Selection of studies, data collection and management*

All references identified by the search strategy were exported to Endnote and deduplicated, followed by title and abstract, then full text screening (BH). If the decision was unclear this was discussed with a second reviewer (KN) with adjudication by a third (AL) (Figure-I).

### *Data extraction*

BH extracted study data using methods described in the Cochrane handbook for systematic reviews [14]. A standardised data extraction form was used to ensure consistency in the review [15] (Table-III). KN reviewed the data extraction, and any queries were resolved through discussion.

### *Assessment of methodological quality of the studies*

The Standard Quality Criteria [16] were used to assess the quality of primary data (Table-III). Studies were not excluded based on quality. Two reviewers (BH and KN) assessed the quality

of each study independently and met to compare their assessments. Disagreement was resolved by discussion, and a third reviewer (AL) checked the appraisals if an agreement was not reached.

*Data analysis*

Included studies were analysed using narrative synthesis in line with Guidance on the Conduct of Narrative Synthesis in Systematic Reviews [17]. The preliminary synthesis was performed by tabulation, grouping and clustering to demonstrate the characteristics of each included paper.

## Findings

### Overview:

Twenty four studies were included. Nineteen studies used survey-based quantitative methods, two were Randomised Control Trials (RCTs), and two used mixed methods (qualitative semi-structured interviews alongside a survey), one used semi-structure interviews. The findings are presented under three themes.

### Theme – I Prevalence of vaccine hesitancy and vaccine acceptance among ethnic minority populations

A substantial proportion of ethnic minority adults in the UK report uncertainty about the safety and effectiveness of the COVID-19 vaccine. Vaccine hesitancy was more common among individuals from Black, Asian, and Mixed ethnic backgrounds [18–22]. Only one study reported that ethnicity was not associated with vaccine hesitancy [23].

Freeman et al [19] found that vaccine hesitancy is associated with ethnicity along with other factors such as younger age, female gender, and lower income. Robertson et al [21] reported vaccine hesitancy was highest in Black (71.8%) and Pakistani/Bangladeshi (42.3%) groups (OR 13.42, 95% CI:6.86, 26.24 and 2.54, 95% CI:1.19, 5.44 respectively) compared to white British/Irish. Bell et al [18] found that participants that identified as Black, Asian, Chinese, Mixed or Other ethnicity were 2.7 times (95% CI: 1.27–5.87) more likely than White participants to report that they would decline a COVID-19 vaccine for themselves or their child.

In Jackson et al [24] study 16% of participants did not trust vaccines. A survey among undergraduates (n=739) found that participants from Black backgrounds expressed considerably lower confidence than those from White or Mixed backgrounds ($p < 0.001$) [25].

Williams et al [22] found that white participants were more likely to accept a vaccine compared to those from ethnic minorities (regression coefficient 2.91; 95% CI 1.75–4.8; p<0.001). Sherman et al [23] reported contradictory results, showing that intention to be vaccinated was not associated with ethnicity (regression coefficient -.66 (.394, 261) p=0.602). Loomba et al [26] found that individuals from Black ethnic groups were less likely to reject the vaccine upon exposure to misinformation, relative to factual information to protect self and others, while participants from Asian ethnic backgrounds were more likely to decline the vaccine upon exposure to misinformation, relative to factual information to protect self and others.

Freeman et al [27] investigated the effects of different types of written vaccination information on hesitancy. They concluded that Black individuals tended to have an opposite reaction to some of the information conditions (i.e. they had lower hesitancy scores for the control condition) compared with other ethnicities, although this was only significant for the condition "collective benefit of not transmitting"; mean difference 1·25, 95% CI 0·03 to 2·47; p=0·033). "Collective and personal benefit" was the only other condition to show significant differences by ethnicity, with Asian individuals showing the greatest reduction in hesitancy (–1·28, –2·26 to –0·31; p=0·038) [27]. Glampson et al [28] found that Black or Black British individuals had the highest rates of declining a vaccine invitation at 16.14% (4337/26,870). Perry et al [29] aimed to identify inequalities in COVID-19 vaccination in Wales. The odds of being vaccinated were lower for individuals who were from an ethnic group other than White. The largest inequality was seen between Black individuals compared to those from any White ethnic group (OR 0.22, 95 %CI 0.21–0.24).

Skirrow et al [30] investigated pregnant women's views on the vaccine. Compared to women from White ethnic groups, women from ethnic minorities were twice as likely to reject a vaccine ($p < 0.005$). Income and ethnicity were the main drivers. Blakeway et al [31] found evidence of reduced vaccine uptake in younger pregnant women (P¼.001), women with high levels of deprivation, and women of Afro-Caribbean or Asian ethnicity compared with women of White ethnicity (P<.001). Nguyen et al [32] compared U.S. and U.K. participants. In the U.K., ethnic minority participants showed higher vaccine hesitancy than the White ethnic group.

Woolf et al [33] studied vaccine hesitancy among healthcare workers (HCWs). Black Caribbean (OR 3.37, 95% CI 2.11 - 5.37), Black African (OR 2.05, 95% CI 1.49 - 2.82), and White Other ethnic groups (OR 1.48, 95% CI 1.19 - 1.84) were significantly more likely to be

hesitant than white British. Martin et al [34] examined vaccine uptake in NHS staff. Compared to White HCWs (70.9% vaccinated), a significantly smaller proportion of ethnic minority HCWs were vaccinated (South Asian, 58.5%; Black, 36.8%; $p < 0.001$ for both). After adjustment, belonging to any non-White ethnic group was negatively associated with vaccine uptake (Black: adjusted odds ratio [OR] 0.30, 95% CI 0.26–0.34, $p < 0.001$; South Asian: OR 0.67, 95% CI 0.62–0.72, $p < 0.001$).

Byrne et al [35] measured vaccination intention in England and Wales. They found that over the studied time frame (December 2020-January 2021), association between minority ethnicity and intention to accept the vaccine weakened, but did not disappear. Curtis et al [36] studied actual vaccine uptake in different clinical and demographic groups in the first 100 days of the vaccine rollout. Of patients aged ≥80 years not in a care home 94.7% received a vaccine, but with substantial variation by ethnicity (White 96.2%, Black 68.3%).

**Theme 2 Factors influencing hesitancy and vaccine acceptance among ethnic minority groups**

Nine studies reported information on factors that influence vaccine hesitancy and acceptance. Freeman et al [19] demonstrated that the variance in vaccine hesitancy among different population groups (including ethnic minorities) is mainly explained by beliefs about the collective importance of getting vaccinated, efficacy of the vaccine, side-effects and the speed of development of a COVID-19 vaccine. Other factors explaining hesitancy included excessive mistrust, conspiracy beliefs, and negative views about doctors and government. Lockyer et al [37] found that vaccine hesitancy could be attributed to three factors: safety concerns about the vaccine, negative stories about the vaccine and personal knowledge related to health, illness and the vaccine. The more confused, distressed and mistrusting participants felt about their social worlds during the pandemic, the less positive they were about a vaccine.

Allington et al [38] also identified coronavirus conspiracy suspicions and general vaccine attitudes contributed to vaccine acceptance. Robertson et al [21] found that the main reason for vaccine hesitancy was concerns over future unknown effects of a vaccine, 42.7% citing this as their main reason. When compared to the White British/Irish group, Black/Black British participants were more likely to state they ‘Don’t trust covid-19 vaccines’ (29.2% vs 5.7%), and the Pakistani/Bangladeshi ethnic group cited worries about side-effects (35.4% vs 8.6%). The survey also highlighted that 43.2% of Black/Black British participants were not prepared to have the vaccine with a further 44.7% suggesting that they would consider this if safety of

the vaccine was demonstrated. In the Pakistani/Bangladeshi cohort 65.2% reported that they would be persuaded if sure the vaccine reduced their risk of catching the virus and 64.6% if it was demonstrated to be safe. Skirrow et al [30] also exposed trust issues. They found that safety concerns about COVID-19 vaccines were common, though wider mistrust in vaccines was also expressed. Gaughan et al [39] found that all minority ethnic groups had lower age-standardized rates of vaccination compared with the white British population. The lower rates were partly explained by socio-demographic differences.

Chaudhuri et al [40] examined how attitudes towards public officials and government impacted vaccine willingness. They found that ethnic minority groups were more likely to be unwilling to be vaccinated. Positive opinions about public officials (OR 2.680: 95% CI 1.888 – 3.805) and the government (OR 3.400; 95% CI 2.454—4.712) led to substantial increases in vaccine willingness. This effect varied across ethnicity and socio-economic status with those from South Asian backgrounds (OR 4.513; 95% CI 1.012—20.123) being the most unwilling to be vaccinated compared to white groups. Cook et al [41] sought to examine the factors that impacted the decision to accept the COVID-19 vaccination among an ethnically diverse community. Age and ethnicity were the only sociodemographic factors to predict vaccine hesitancy. 'Lack of trust in government/authorities' and 'concern about the speed of vaccine development' were the most common reasons for non-uptake.

Woodhead et al [42] identified that decision-making processes were underpinned by an overarching theme of 'weighing up risks of harm against potential benefits to self and others'. They identified ways in which these were weighted more heavily towards vaccine hesitancy for ethnic minority staff groups who perceived institutional and structural discrimination. This included suspicions around institutional pressure to be vaccinated, ethnic injustices in vaccine development and testing, religious or ethical concerns, and legitimacy and accessibility of vaccine messaging and communication.

## Theme – 3 Recommendations from included studies to improve vaccine uptake among ethnic minority populations

### *3.1 Communicating information about risks of not getting vaccination and benefits of vaccination*

Six studies reported data on communicating about the risks and benefits of vaccination. Sherman et al [23] stated that COVID-19 vaccination intention reflected general vaccine beliefs and attitudes. Campaigns and messaging about vaccination could consider emphasising the risk

of COVID-19 to others, and the necessity for everyone to be vaccinated for it to be effective in controlling infection. Freeman et al [27] identified that willingness to take a COVID -19 vaccine is closely bound to recognition of the collective importance of vaccination. Therefore, vaccine public information that highlights prosocial benefits may be especially effective.

However, Freeman et al [19] found that for people who are strongly hesitant about COVID-19 vaccines, offering information on the personal health benefits and addressing safety concerns about speed of development of the vaccine, upfront, helps in reducing vaccine hesitancy. Communicating the collective benefits of getting the vaccination, such as not transmitting the virus to others were not found helpful in reducing vaccine hesitancy among those holding strong negative views on the vaccine.

Woodhead et al [42] suggested that instead of generalised approaches to encouraging uptake, vaccine promotion activities should be: tailored to the concerns within and between different groups; transparent in acknowledging the causes of concerns; and considerate of intersectional social statuses. Approaches must avoid perpetuating mistrust by decontexualising hesitancy from underpinning social processes and not pressuring, discriminating against, or shaming marginalised communities for being hesitant. Gaughan et al [39] recommended that culturally tailored public health measures to improve vaccination rates should be targeted to Black communities, certain religious groups and people living in deprived areas. For women who are pregnant, Skirrow et al [30] recommended that safety information on COVID-19 vaccines must be clearly communicated to pregnant women to provide reassurance and facilitate informed pregnancy vaccine decisions. Targeted interventions to promote COVID-19 vaccine uptake among ethnic minority and lower-income women may be needed.

*3.2 Addressing mistrust*

Eight studies reported data on addressing mistrust about the vaccine. Bell et al [18] reported that information on how COVID-19 vaccines are developed and tested, including their safety and efficacy, must be communicated clearly to the public. They identified concerns around the safety and effectiveness of a 'rushed' COVID-19 vaccine, and suggested that starting a conversation with the public early is key to understanding factors that may affect vaccine acceptability, and developing approaches to allay concerns.

Freeman et al [19] noted that factors such as conspiracy beliefs that foster mistrust and erode social cohesion will lower vaccine up-take. Allington et al [38] suggested strengthening positive attitudes to vaccination and reducing conspiracy suspicions may have a positive effect

on vaccine uptake. Lockyer et al [37] recommended that the vaccine programmes should provide a localised and empathetic response to counter misinformation. Paul et al [20] reported negative attitudes towards vaccines as a major public health concern. General mistrust in vaccines and concerns about future side effects are barriers to vaccination. They recommended public health messaging should be tailored to address these concerns, for women, ethnic minorities, and people with lower levels of education and incomes.

Robertson et al [21] recommended urgent initiatives to improve vaccine uptake in Black ethnic groups by working in close partnership with communities and making use of community champions. While universal and targeted educational interventions are necessary to enable the public to understand the importance of vaccination, they are not enough to modify behaviour or increase confidence. Therefore, full endorsement from regulatory bodies is likely to increase confidence, but efforts to combat misinformation, especially around vaccine safety, may be warranted. The rise in vaccine hesitancy as a result of misinformation coincides with the rise in social media. There is a need to proactively engage young people using online platforms and traditional formal and informal communication mediums such as churches, mosque, and family gatherings in order to meaningfully engage with these groups and support the delivery of vaccines.

Woodhead et al [42] concluded that acknowledging historical and contemporary abuses of power is essential to avoid perpetuating and aggravating mistrust by decontextualizing hesitancy from the social processes affecting hesitancy, undermining efforts to increase vaccine uptake. Chaudhuri et al [40] suggested that trust in public officials plays a key factor in the low vaccination rates seen in at-risk groups. Health promotion advice given to these groups needs to be tailored as well as examining methods to improve trust in public officials and the government.

### *3.3.* ***Need for more research***

Five studies reported the need for more research on the reasons for vaccine hesitancy. Bell et al [18] argued that it is important to understand factors affecting COVID-19 vaccine uptake in Black, Asian and other ethnic minority groups. For Lockyer et al [37] vaccine hesitancy needs to be understood in the context of the relationship between misinformation and associated emotional reactions. William et al [22] suggest that future interventions, such as mass media and social marketing, need to be targeted at a range of sub-populations, necessitating better understanding of the barriers to vaccination. Robertson et al [21] said that qualitative research

on the reasons for vaccine hesitancy should help develop approaches to overcoming hesitancy. Similarly Cook et al [41] recommended that further work is needed to investigate the most effective approaches to communicating with ethnically diverse communities

## Discussion

This systematic review is the first comprehensive study to bring together the UK literature about vaccine hesitancy in minority groups. It is evident that communities that face higher levels of systemic deprivation and low levels of vaccination coverage for non-communicable diseases like seasonal influenza may also be more likely to experience vaccine hesitancy. The pandemic has been recognized to have a syndemic nature [43], as COVID-19, adverse social conditions, and structural inequalities have been found to work together to increase risk from the virus [44]. Vaccine hesitancy is a complex phenomenon depending on a host of contextual factors. Our findings align with the SAGE report on factors influencing COVID-19 vaccine uptake among ethnic minorities [9], which highlighted perception of risk, confidence, loss of trust, inconvenience, and lack of appropriate communication about vaccines from trusted healthcare providers or community leaders.

Misconceptions about the immunisation process [45], lack of trust in government or healthcare [46], newness of a vaccine [47], perceived incompatibility of vaccines with religious and cultural beliefs [25] and conspiracy theories [48] were highlighted as factors known to aggravate lack of confidence in vaccines. The framework of confidence, complacency, and convenience (three Cs) is used to summarise the different facets that contribute to vaccine hesitancy [11,49], reflecting the SAGE report [9] (Table - IV).

Existing uncertainty about the vaccine has been attributed to the novelty of the virus, the fast pace of vaccine development, medical mistrust and suspicion towards science, health services, or government within sub-groups [50–52] as well as mounting apprehensions over politicisation of the vaccine and standards of its efficacy and safety [51–53]. For instance, a significant decline in vaccine acceptability was recorded in the United States [52], potentially resulting from politicisation of the vaccine during the US 2020 Presidential Election campaign [54,55]. Another important factor is historical medical mistrust resulting from historical coercion and structural inequalities, notably within the Black community, which has been found to lower vaccine uptake [56].

Earlier experiences with vaccination campaigns have demonstrated the significance of engagement with audiences for effective promotion and implementation. Communication with

specific audiences is essential, and will require development of effective and tailored vaccination-related information and messages predicated on an understanding of wide-ranging concerns and beliefs of audiences [57–59]. A human-centered, targeted approach that relies on a range of intervention methods suited to specific subsets of the population has been found to be effective [60]. It is also crucial that these interventions are developed from research-based insight. Further investment in social science research will be paramount [61].

Vaccine hesitancy is driven largely by a wide range of individual experiences and personal beliefs [62]. Appropriate information and positive engagement may facilitate uptake [63]. The extensive anxiety, experiences of loss, and psychological exhaustion caused by the COVID-19 crisis have had a severe bearing on health behaviours and vaccination intent [64–67]. COVID-19 vaccine messaging will require understanding and engagement with feelings of fear and mistrust in order to decrease vaccine-related uncertainties. A focus on awareness in the target audiences of the manipulative tactics used by anti-vaccination campaigns can be helpful in protecting individuals from the effects of those campaigns [63].

Healthcare professionals are seen trusted sources of vaccine-related information [68], particularly in the pandemic [69]. The SAGE report supports this, highlighting the benefit of engagement between communities and trusted sources [9]. Vaccination rates have been influenced by healthcare provider recommendations [70–72]. A survey in the US showed a higher probability of vaccine acceptance among patients after recommendation from a healthcare provider [56]. However, given medical mistrust, conspiracy theories, and experiences of marginalisation, healthcare provider education is needed on vaccine safety, efficacy, and cultural issues [9,56,61].

Community leaders are valuable mediators for knowledge-sharing between marginalised communities, and healthcare providers and policymakers, and can facilitate engagement and inform response strategies [9]. Religious leaders are effective in delivering communication regarding vaccinations, positively influencing vaccination uptake in their communities, as well as facilitating engagement where there is limited trust in governments or health care systems [73]. Engaging religious leaders in vaccine promotion can also help in mitigation of vaccine-related uncertainty fuelled by conspiracy theories and misinformation. However, it is important that engagement with religious leaders is sensitive to religious and cultural concerns, and supported by adequate training and education. For instance, a decline in vaccine confidence in Indonesia was associated with Muslim leaders' concerns regarding safety of the MMR vaccine,

which was then declared ‘haram’ (religiously prohibited) and thus forbidden for Muslims [74]. The identification of ‘community leaders’ must be guided by communities themselves to ensure they meaningfully represent the views of these groups.

Effective and equitable delivery of COVID-19 vaccinations will depend on organizational-level change. Removal of structural barriers to vaccine access can increase vaccination uptake, especially among ethnic minority groups [6]. Reduction in procedure-related friction e.g. waiting times, and inconvenient locations of vaccination centres can lead to higher levels of vaccine uptake. Research [71] has suggested that making vaccination available at accessible outlets within the community (e.g. retail pharmacies, healthcare centres, schools, retirement homes or community centres) has potential to increase both vaccine confidence and vaccine uptake across populations.

**Strengths and limitations of the review**

This is the first comprehensive examination of the evidence on vaccine hesitancy among ethnic minority communities in the UK. It highlights the limited evidence in this area and the need for more robust research. The main limitation is that several studies recorded data before the approval of COVID-19 vaccines and are therefore based on intention to vaccinate [18–20,22,23,26]. Views around vaccine hesitancy are also likely to fluctuate. Another limitation concerns the small sample sizes reported in the studies. In most cases, findings related to ethnic minority groups are presented collectively, rather than disaggregating groups by ethnicity [22,75,76].

Most of the studies were survey-based, conducted online, and using a cross-sectional design, which may have limitations. There may be disparities in access to online surveys due to language barriers or digital literacy, particularly among first-generation migrants or elderly participants. No standard definition given in the studies of BAME or BME, and different studies used these terms interchangeably, making generalization of the findings challenging.

**Conclusions and implications for policy and practice**

To address disparities in delivery and uptake of the vaccine, the voice of ethnic minority groups and their social and health circumstances must be better understood. There have been strong calls for attention to the disproportionate burden of COVID-19 on ethnic minority groups, with warnings that inaction will be responsible for further inequities in mortality [8,77]. This systematic review therefore has several important implications, which we outline in Table-V.

The evidence base points to concerns around the COVID-19 vaccine in ethnic minority communities which contributes to disparities in delivery of vaccinations. More robust data are needed, disaggregated by ethnicity, to better understand barriers and facilitators to the delivery of COVID-19 vaccinations. Effective promotion will require the development of tailored information informed by the concerns and experiences of ethnic minority communities. In addition, organisational level change is needed to address structural barriers, inequities, and discrimination. Ultimately, this review underscores the importance of meaningful engagement and co-production approaches with ethnic minority communities to address the complex and multidimensional concerns and experiences contributing to vaccine hesitancy in ethnic minority communities in the UK.

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