

BMJ Open Attitudes towards coronavirus (COVID-19) vaccine and sources of information across diverse ethnic groups in the UK: a qualitative study from June to October 2020

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ABSTRACT

Objectives Across diverse ethnic groups in the UK, explore attitudes and intentions towards COVID-19 vaccination and sources of COVID-19 information.

Design Remote qualitative interviews and focus groups (FGs) conducted June–October 2020 before UK COVID-19 vaccine approval. Data were transcribed and analysed through inductive thematic analysis and mapped to the Theoretical Domains Framework.

Setting England and Wales.

Participants 100 participants from 19 self-identified ethnic groups.

Results Mistrust and doubt were reported across ethnic groups. Many participants shared concerns about perceived lack of information about COVID-19 vaccine safety and efficacy. There were differences within each ethnic group, with factors such as occupation and perceived health status influencing intention to accept a vaccine once made available. Across ethnic groups, participants believed that public contact occupations, older adults and vulnerable groups should be prioritised for vaccination. Perceived risk, social influences, occupation, age, comorbidities and engagement with healthcare influenced participants' intentions to accept vaccination once available. All Jewish FG participants intended to accept, while all Traveller FG participants indicated they probably would not.

Facilitators to COVID-19 vaccine uptake across ethnic groups included: desire to return to normality and protect health and well-being; perceived higher risk of infection; evidence of vaccine safety and efficacy; vaccine availability and accessibility.

COVID-19 information sources were influenced by social factors and included: friends and family; media and news outlets; research literature; and culture and religion. Participants across most different ethnic groups were concerned about misinformation or had negative attitudes towards the media.

Conclusions During vaccination rollout, including boosters, commissioners and providers should provide

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This is one of the largest qualitative studies covering attitudes towards the COVID-19 pandemic in the UK public across ethnic groups, ages and religions, adding insights from a broad range of participants.
- ⇒ Qualitative methodology enabled discussion of participants' responses around COVID-19 vaccination, probing to collect rich data to inform recommendations.
- ⇒ Most data collection was undertaken in English, possibly excluding sectors of the population who may access COVID-19 information through different sources due to language.
- ⇒ Data were collected before COVID-19 vaccine licensing and public vaccine campaigns were introduced; therefore, the attitudes and intentions expressed are in a context of minimal community engagement and support.
- ⇒ Socioeconomic data and Index of Multiple Deprivation were not collected, limiting the ability to determine a possible accumulative effect of factors such as socioeconomic status, ethnicity and age.

accurate information, authentic community outreach and use appropriate channels to disseminate information and counter misinformation. Adopting a context-specific approach to vaccine resources, interventions and policies and empowering communities has potential to increase trust in the programme.

INTRODUCTION

The coronavirus (COVID-19) pandemic has had a striking impact on global health, with 5 million reported deaths worldwide by December 2021.¹ Increased COVID-19 morbidity and mortality have been associated with increasing age, gender, comorbidities,

deprivation, occupations with greater face-to-face contact and certain ethnic minority groups.²⁻⁴ Vaccination programmes are one of the key strategies used to limit the impact of infections,⁵ so vaccine acceptability and uptake are crucial to COVID-19 control.⁶ Public vaccine safety concerns and doubts have contributed to reductions in uptake of non-COVID-19 vaccines which has caused an increase in these infections.^{7,8} Modelling suggests 10 400 deaths had been avoided by March 2021 through the English COVID-19 vaccination programme.⁹ Positive COVID-19 vaccine attitudes reportedly increased from 78% to 96% in the 6 months following licensing.^{10,11}

There have been differences in COVID-19 vaccine uptake based on demographic and socioeconomic factors, with black or black British adults and those living in deprived areas more likely to report vaccine hesitancy.¹⁰⁻¹³ However, there is a lack of in-depth qualitative literature exploring attitudes towards the COVID-19 vaccine across a broad cross-section of the UK population with balanced representation of ethnicities, ages, genders and religions. This qualitative study aimed to explore the general public's acceptability and uptake of a COVID-19 vaccine prior to its rollout and attitudes towards sources of COVID-19 information, with representation across ethnic groups.

METHODS

This study has been reported in accordance with the Consolidated Criteria for Reporting Qualitative Research (online supplemental file 1). It forms part of a wider qualitative study that explored public views of and reactions to the COVID-19 pandemic in England and Wales among diverse ethnicities.¹⁴

Research team

The research team consisted of two researchers (LFJ and AKamal) and four research assistants (ES, RSyeda, AT and AKaissi), led by two senior researchers (DML and CM), experienced in qualitative research, behavioural science, intervention development, public health and health psychology.

Steering group

The research team was advised by the steering group which consisted of a patient representative and health-care professionals (MPatel, LN, JG, IC-M, RSyeda, CSB, MPareek, LS, EP). Steering group members were experienced in qualitative research, behavioural science, intervention development, public health, health psychology, ethnic minority health, health inequalities, infectious disease and epidemiology. Researchers and steering group included Arabic, British Bangladeshi, British Pakistani, white British and white Irish ethnic groups. The steering group was consulted during five meetings to advise on topic guide development, recruitment, data collection, theme generation, reporting and dissemination of findings.

Focus group and topic guide development

The topic guide (online supplemental file 2) was informed by Public Health England (PHE) 2020 review of disparities in risks and outcomes for COVID-19³ and the Theoretical Domains Framework (TDF).¹⁵ The PHE review, based on surveillance data, found that risk of dying among those with COVID-19 was higher based on factors such as age, gender, deprivation and ethnicity.³ The TDF uses 14 domains to describe behaviour and can be applied to identify behaviours to target with interventions,¹⁵ all of which were covered in the topic guide of the wider qualitative study¹⁴ relating to more general views of the COVID-19 pandemic not specific to vaccination. Ten of the 14 domains were mapped to the following topics explored in the interviews and focus groups (FGs) and/or raised by participants: knowledge about COVID-19 vaccination; beliefs about consequences of COVID-19 infection and vaccination; optimism that a vaccine would help solve the pandemic (optimism); feelings about being offered a COVID-19 vaccine (two domains: emotion and memory, attention and decision-making); reasons for or against accepting a COVID-19 vaccine (three domains: intentions, reinforcement and social influences); influences on decision-making (memory, attention and decision-making); groups to be prioritised (professional role and identity); and where to receive the vaccine if willing (environmental context and resources). The other four domains, skills, beliefs about capabilities, goals and behavioural regulation, were not raised by participants in relation to COVID-19 vaccination.

Recruitment

To attain a diverse ethnic representation of the public in England and Wales,¹⁶ ethnic minority groups were invited to participate between June and October 2020 and as a comparator, white British individuals to two FGs. The aim was to attain a diverse cross-section of the UK population, including ethnic minority groups, religions and occupations (online supplemental file 3). Ethnic minority varies by context and is defined as 'a group of people who differ in race or colour or national, religious, or cultural origin from the majority population of the country in which they live'.¹⁷ Around 80.5% of the population of England and Wales belongs to the white British ethnic group.¹⁶ Ethnic minority groups include: Asian 7.5% (including 2.5% Indian, 2.0% Pakistani, 0.8% Bangladeshi and 0.7% Chinese), black 3.3% (including 1.8% black African and 1.1% black Caribbean), mixed/multiple ethnic groups (2.2%), white 4.4% other, white Irish (0.9%), white Traveller (0.1%) and other ethnic groups (1.0%).¹⁶

Participants were recruited via adverts in Facebook support groups, Twitter, PHE People's Panel, charities and chain-referral sampling.¹⁸ The advert (online supplemental file 4) requested individuals from diverse ethnic backgrounds to participate in 60-minute remote FGs about their experiences during the COVID-19 pandemic. FGs initially had a range of ethnicities but following steering group discussion, the later FGs moved to same ethnicity (online supplemental file 3)

where possible with the view of ensuring participants were comfortable with data collection. Both types of FG yielded similar results. Participants were offered £25 each for their time and contribution.

Data collection

Data were collected between 15 June and 1 October 2020, prior to Medicines and Healthcare products Regulatory Agency COVID-19 vaccine approval in the UK and start of the rollout of the vaccination programme in December 2020.¹⁹ FGs were conducted in English via Skype, with or without video, and lasted approximately 60 min. Three Skype interviews were conducted in Punjabi by AKamal and FGs were facilitated by LFJ, who both ensured that all participants were questioned and prompted to speak. FGs were supported by a research assistant who made field notes (ES or RSyeda). The topic guide was used flexibly during FGs and interviews. Discussions were recorded, transcribed verbatim by an external agency, checked for accuracy by the research team and translated from Punjabi to English where necessary. Findings were discussed weekly by researchers and four times with the study steering group. Data collection stopped once it was agreed by the steering group that a range of views across ethnic groups had been gathered.

Data analysis

Transcripts were analysed inductively using thematic analysis in QSR NVivo²⁰ by three researchers (LFJ, AKamal and ES). A fourth researcher (AT) double coded 12 of 27 transcripts for consistency. Coding consensus was reached between the four researchers. Themes were identified from the data in two researchers' meetings, halfway through and at the end of analysis. Themes were presented, discussed three times with the steering group and finalised in a workshop. Overarching themes were produced and mapped against the TDF¹⁵ to present results and identify implications and recommendations. Representative quotes were chosen to demonstrate the themes.

Patient and public involvement

One patient representative of ethnic minority background was recruited via word of mouth and involved in the study steering group during study conception. They provided input into design, methodology, protocol and topic guide.

Ethics

The study was internally approved by the PHE Research Ethics and Governance Group (REGG) (Reference: NR0215). All participants involved in the study provided informed consent, including the use of anonymised transcript quotes in reporting and publications.

RESULTS

Participant characteristics

Of the 141 individuals who were approached, 100 participated in the study. Participants represented a mix of self-reported ethnicities, ages, religions, genders and UK regions, including 85% belonging to ethnic minority

groups, 14% white British and 1% unknown (table 1 and online supplemental file 3). Participants were recruited via: chain-referral (48%); Facebook (16%); Twitter (14%); PHE People's Panel (13%); charities (3%); steering group member (3%) and unknown source (3%).

COVID-19 vaccination uptake

Three overarching themes were identified relating to vaccine uptake: (1) attitudes and beliefs towards COVID-19 and a COVID-19 vaccine; (2) facilitators and (3) barriers. Subthemes and relationship to the TDF¹⁵ can be viewed in table 2.

Participants stated mixed intentions about the likely future uptake of COVID-19 vaccine, ranging from full intention to vaccinate to no intention at all to vaccinate. All participants in the Jewish FG intended to accept a vaccine, while all Traveller FG participants reported that they probably would not.

Attitudes and beliefs towards COVID-19 and a COVID-19 vaccine

Across ethnic minority and white British groups, including even some of the vaccine hesitant, there were similar beliefs on priority groups for vaccination, including occupations with public contact, older adults and vulnerable groups. Across ethnic groups, participants did not want to be the first to receive the vaccine due to concerns about its safety, efficacy and unknown side effects. One participant wanted reassurance that a vaccine had been trialled among ethnic minorities.

Some thought children should be prioritised for vaccination as they were carriers of the virus, while others raised concerns about unknown side effects on developing immune systems.

There were differences within ethnic groups, with factors such as frontline occupation and perceived health status influencing intention to accept a COVID-19 vaccine once made available. Having a health condition led to higher risk perception while positive health status caused lower risk perception, influencing intention to accept a vaccine. Some believed that alternative methods of prevention, such as good hygiene, maintaining a good diet and exercise, were equally, if not more, important to vaccination.

Some participants were optimistic that a working vaccine would become available, while others were aware it might take time. Some believed a vaccine to be important and recognised its role in herd immunity.

Barriers to vaccination

Mistrust and doubt were common themes across ethnic minority and white British groups. Many were concerned about perceived lack of information about COVID-19 vaccine safety and efficacy. Mistrust in government advice and recommendations was identified as the greatest potential barrier to vaccine acceptability. This was due to perceptions of the government's handling of the pandemic, perceived unclear messaging and

Table 1 Participant characteristics (n=100)

Self-reported ethnicity	%
Asian	58
Bangladeshi	16
Chinese	10
Indian	14
Pakistani	13
Asian (detail not given)	2
Sri Lankan	2
Vietnamese	1
Black	15
Black African	9
Black Caribbean	3
Black (detail not given)	2
Black British	1
Mixed	2
Indian/Mauritian	2
White	20
White British	14
Traveller	4
Lithuanian	1
Polish	1
Other	5
Arab	2
Latin American	2
Unknown	1
Religion	%
Buddhist	1
Christian	17
Hindu	7
Jewish	8
Muslim	33
None	17
Sikh	5
Unknown	12
Gender	%
Female	49
Male	50
Unknown	1
Age category	%
18–29	21
30–39	30
40–49	10
50–59	13
60–69	10
70–79	3
80+	2
Unknown	11

Continued

Table 1 Continued

UK region	%
East Midlands	12
London	21
Not applicable (N/A)	4
North East	16
North West	6
South East	5
South West	8
Unknown	10
Wales	6
West Midlands	12

frequently changing guidance at various stages of the pandemic which resulted in confusion. Disengagement with pharmaceuticals, medicine and healthcare services was a barrier to vaccine uptake which was mainly due to mistrust. A few participants had negative views around vaccination imposed by their relatives. A minority of participants stated that they would definitely not accept the vaccine, which was primarily due to being opposed to vaccines in general.

Facilitators for vaccination

There was general agreement across ethnic minority and white British groups on preferred places to receive the vaccine, including community healthcare settings and settings perceived as low risk, for example, a space with less people. Many stated that they would accept the vaccine either to enable return to 'normal' life, continue working, or protect themselves and others due to existing health conditions. However, several of these participants stated that they would wait until others in the population received the vaccine first to observe potential side effects.

Sources of COVID-19 information

Findings related to sources of COVID-19 information were not specific to COVID-19 vaccines but could inform interventions and dissemination of COVID-19 vaccination messaging. Themes around COVID-19 information included: (1) sourcing information from friends, family and social media, media and news outlets and the research literature; (2) concerns about misinformation; and (3) cultural and religious influences (table 3).

Many participants across ethnic minority and white British groups reported comparing stories with friends and family, often via WhatsApp and other social media channels. Some received information from traditional UK media channels such as British Broadcasting Company news. Some reported watching the government daily COVID-19 briefings, while others used websites to obtain information and reported that they were aware of the ethnic minority COVID-19 statistics through the news. A minority reported that some relatives obtained information through non-UK-based news outlets (eg, American

Table 2 COVID-19 vaccination uptake: attitudes, beliefs, facilitators and barriers

Relationship of subtheme to Theoretical Domains Framework ¹⁵	Quote (gender: female (F), male (M); focus group (FG)*)
Theme: attitudes and beliefs towards COVID-19 and a COVID-19 vaccine	
Optimism A degree of optimism that COVID-19 vaccine would become available while some were aware it might take time.	<p>“I’m fairly optimistic that at the end we will have at least one viable vaccine.” (M, FG3)</p> <p>“It’s going to take a long time for a fully functional vaccine...To be available to everyone.” (F, FG1)</p>
Environmental context Understanding of the importance of COVID-19 vaccine, belief it would become part of standard immunisations.	<p>“It would become part of whatever the standard practice of immunisation is for kids moving forward.” (M, FG10)</p>
Beliefs about consequences Beliefs surrounding who should receive the vaccine: <ul style="list-style-type: none"> ▶ Would wait as perceived themselves to be healthy. ▶ Vulnerable people or older adults should be prioritised. ▶ Equal opportunity rather than prioritising ethnic minority groups. ▶ Children. ▶ People should have the choice. 	<p>“I’m quite healthy so I’d hold back, I wouldn’t go straight away.” (M, FG14)</p> <p>“Those people who were shielding and those people who have a higher chance of being affected by it, should get it first... So those people over 50 should get it first.” (M, FG3)</p> <p>“There is no medical evidence [regarding minority ethnic groups]...then I think we should be equal opportunity for everyone.” (M, FG15)</p> <p>“There’s something in children as well...they keep saying that children can be carriers...” (M, FG14)</p> <p>“As long as it’s not mandatory to take the vaccine, which they never have been, you can always opt out. I have it because I want it.” (M, FG20)</p>
Beliefs about consequences; environmental context Belief that other health behaviours were equally, or more important.	<p>“The key thing... is...managing your risk factors, asthma, diabetes, obesity, whatever, but importantly, making sure that we are being scrupulous with hand hygiene and wiping down our surfaces.” (M, FG1)</p>
Role Recognition of importance of clinical trials.	<p>“We do need some people to test stuff, and I’ve done a few clinical trials in the past...” (M, FG10)</p>
Beliefs about consequences Would wait until others had tried the vaccine before accepting it themselves.	<p>“Unless my life is really, really at risk, I will wait a long time before I take that vaccine because I’m not really fan of vaccines per se.” (M, FG16)</p>
Beliefs about consequences: knowledge, social influences Beliefs and concerns about vaccine safety and efficacy: <ul style="list-style-type: none"> ▶ Lack of ethnic minority participants in trials. ▶ Need more information. ▶ Ethical concerns about trials. ▶ Perception that development was rushed. ▶ Lowers risk perception and need for other measures. 	<p>“How do we know it’s not going to cause cancer or something ... in 20 years’ time.” (Unknown, FG20)</p> <p>“...reassurance that any vaccines and trials have been completed on BAME individuals...health is set up with perhaps white British people in mind.” (Unknown, FG2)</p> <p>“The first thing is...if its ingredients, like fat and other things, are allowed in Islam. Then, I will research to see how long it would keep me safe...” (F, Interview 3)</p> <p>“...they inject live vaccine to volunteers, to induce antibodies against the virus...is this ethical?” (M, FG19)</p> <p>“...everyone would get a vaccine and then just go around doing whatever they wanted to feeling like they were, there was no way anything bad was ever going to happen to them.” (F, FG20)</p>
Beliefs about consequences Perception of health and risk meant that some may not accept a vaccine immediately: <ul style="list-style-type: none"> ▶ Perceived lower risk of infection. ▶ Perceived higher health status. ▶ Belief that accessing the vaccine would be a risk. 	<p>“I work from my bedroom...I’m not really in contact with anyone else, so I won’t be too fussed.” (M, FG1)</p> <p>“I’m quite healthy so I’d hold back, I wouldn’t go straight away.” (M, FG19)</p> <p>“I just think that the body learns to fight things.” (F, FG1)</p> <p>“I don’t think I’d go to a hospital [to get a vaccine]...they wouldn’t want to run the risk of putting me in the hospital because I’d be even more exposed to actually getting the illness.” (M, FG1)</p>
Social influences Belief that culture and religion influenced the attitudes of certain groups towards vaccines.	<p>“...conspiracy theories from religious and cultural belief...surrounding this there is a lot of media work that needs to be done.” (M, FG8)</p>
Theme: barriers	

Continued

Table 2 Continued

Relationship of subtheme to Theoretical Domains Framework ¹⁵	Quote (gender: female (F), male (M); focus group (FG)*)
Knowledge: memory, attention and decision processes, beliefs about consequences Low trust and doubt: <ul style="list-style-type: none"> ▶ Government advice on the safety of the vaccine. ▶ Changing, conflicting COVID-19 messaging. ▶ Belief that COVID-19 statistics had been exaggerated. ▶ Mistrust of pharmaceuticals or pharmaceutical companies. 	<p>“I wouldn’t take the government’s advice that it’s safe to do so straight away.” (F, FG4)</p> <p>“...You don’t know what [it] is, if anything you’re being told about it is true because everything changes so frequently. One minute the vaccine might be the best thing, the next minute it might not.” (F, FG24)</p> <p>“there’s a genuine belief that, in order to then push this vaccination through, for God knows what, it’s been escalated or it’s been, it, the numbers have been almost manipulated, yes...” (F, FG5)</p>
Knowledge: memory, attention and decision processes Concerned about spread of misinformation, for example, vaccine has a microchip to monitor people.	<p>“Some people say they might have included some chemicals in the vaccine (laughs)...It’s like rumours circling around. I am not sure about it, because I have never got vaccinated.” (F, Interview 3)</p>
Environmental context and resources Disengagement with medicine and healthcare services.	<p>“You’d have to tie me down and strap me down to put a vaccine in me...I don’t do medicine, I don’t do doctors, I don’t do clinics anyway.” (F, FG24)</p>
Social influences, memory, attention and decision processes Family influences.	<p>“My husband is completely anti vac so...I’d be in a bit of a difficult position to try and get my children vaccinated” (F, FG5)</p> <p>“Elderly individuals...they have nothing to lose...I will ask or request my mother to have it, considering by balancing or weighing the risks and the advantages. But not for the young individuals, not for the children.” (M, FG10)</p>
Intentions Opposition to vaccines in general in a minority of participants.	<p>“The flu vaccine, which has been out for years and has been tested, I wouldn’t get [it].” (F, FG24)</p>
Theme: facilitators	
Reinforcement Desire to return to ‘normality’.	<p>“Without a vaccine, I think we’re going to struggle to do these things that we enjoy...” (M, FG21)</p>
Role and identity, environmental context Occupation influenced intentions of accepting a vaccine: <ul style="list-style-type: none"> ▶ Working with children. ▶ Feeling pressured into accepting as a healthcare worker. 	<p>“I will definitely take it (COVID-19 vaccine) because I would then feel more confident to work with the children in the school and be in close contact...” (F, FG1)</p> <p>“...it’s not about you it’s about the people you might come into contact with, I was still kind of pressured into taking it.” (M, FG22)</p>
Reinforcement, belief about consequences Protecting the health and well-being of themselves and others: <ul style="list-style-type: none"> ▶ Those with health conditions. ▶ Perception of risk attributed to a combination of factors, for example, age and ethnicity. 	<p>“...my wife, she had too many problems, and obviously I’m diabetic as well. I think I’d go for it.” (M, FG14, Indian)</p> <p>“...because of the age that I am and the fact that I’m of South Asian heritage, I won’t be comfortable ... until I’m confident that this vaccine is out...” (F, FG4)</p>
Reinforcement, knowledge, belief about consequences, social influences Evidence of vaccine safety and efficacy: <ul style="list-style-type: none"> ▶ Intention to accept if passed trials. ▶ If media showed it to be effective. ▶ Confirmation from others receiving a vaccine. 	<p>“...as long as it’s passed its trials, for me usually the vaccines don’t really <i>go ahead</i> until they’re at a good safety, got a good point in terms of safety and efficacy.” (M, FG9)</p> <p>“...if I, it’s on the media that this is really working and, then I’ll be so glad to have one, I don’t mind.” (M, FG14)</p> <p>“After a few people have confirmed, yeah, that is working. Yeah I’ll be glad to go in then.” (M, FG16)</p>
Environmental context and resources: <ul style="list-style-type: none"> ▶ Availability. ▶ Willingness to receive in any type of setting. ▶ Community healthcare settings. ▶ Perceived low-risk setting, for example, a space with less people. ▶ Convenience of booking vaccination appointments. 	<p>“My optimism about actually having that available within the next 18 months is quite low.” (F, FG8)</p> <p>“I have to take from GP or anything, if they make any <i>boat</i> or any station, in a field...I’m ready to go.” (M, FG15)</p> <p>“Pharmacy’s quite a good place because then it could be more easily accessed, otherwise there’s a lot of pressure on the GP ...” (F, FG1)</p> <p>“...where there are less people, there is more protection (from catching COVID-19)...” (F, Interview 2)</p> <p>“Surgery is near and there won’t be much hassle. [Just] book an appointment and go there.” (F, Interview 3)</p>

Continued

Table 2 Continued

Relationship of subtheme to Theoretical Domains Framework ¹⁵	Quote (gender: female (F), male (M); focus group (FG)*)
Role and identity Some would encourage others to accept a vaccine.	"I would be generally positive and encourage my parents to get a vaccination as well." (M, FG9)
*FG ethnicities: FG1–4, mixed; FG4, South East Asian; FG5, mixed; FG6, Pakistani; FG7, Chinese; FG8, black ethnicities; FG9, Indian; FG10, Bangladeshi; FG11, European; FG12, Chinese; FG13, Arabic; FG14, Indian; FG15, Bangladeshi; FG16, black ethnicities; FG17, Chinese; FG18, Indian; FG19, Pakistani; FG20, white British; FG21, Jewish; FG22, white British; FG23, black African; FG24, Travellers; Interviews 1–3, Pakistani. BAME, black, Asian and minority ethnic; GP, general practitioner.	

and Asian), which may have promoted different information, behaviours and attitudes.

In most FGs or interviews across ethnic minority and white British groups, one or more participants had negative attitudes towards the media's reporting of COVID-19. Such attitudes included beliefs that the media had its own agenda, should present more balanced stories, caused confusion and gave inconsistent messaging. Participants were wary or uncertain about the credibility of the information. They reported that media coverage had negative implications on their mental health and well-being, sometimes causing fear and distress.

A minority reported directly using government COVID-19 guidance. Some had public-facing roles and they therefore followed the guidance from their workplace. A minority reported researching topics themselves through research literature.

Concerns around COVID-19 misinformation were mentioned across most ethnic groups including ethnic minority and white British, some among their WhatsApp and social media networks, for example, that the vaccine contained a microchip to monitor people. Consequently, some reported taking on the role of dispelling misinformation circulating among friends and family, particularly for older family and community members.

Some cultural and religious sources of information were identified in ethnic minority groups. A participant suggested that their parents believed in traditional remedies while another reported obtaining information from the mosque.

DISCUSSION

Statement of principal findings

This study adds findings on views of COVID-19 vaccination, some of which differ from attitudes towards other vaccinations. There were generally similar views across ethnic minority and white British participants, who made up 85% and 14% of the sample, respectively. Mistrust and doubt surrounding COVID-19 vaccination were common themes across ethnic groups. Many were cautious and shared concerns about COVID-19 vaccine safety and efficacy. There were differences within ethnic groups, with factors such as occupation and perceived health status influencing intention to accept a vaccine once made available. Identifying sources of COVID-19 information

could help inform intervention development and dissemination of vaccination messaging. Many received information from sources such as mainstream television, and reported negative attitudes towards the government, media and news outlets. Table 4 provides an overview of practical intervention and policy recommendations based on the findings of this study.

Comparison with existing literature

Attitudes, intentions and uptake

We found that views towards COVID-19 vaccination were generally similar across ethnic groups between June and October 2020, while larger UK quantitative studies conducted within the first year after vaccine rollout demonstrated lower uptake in certain ethnic minority groups, and there were sometimes further inequalities by age, gender, religion, area deprivation, disability status, English language proficiency, socioeconomic position and educational attainment.^{21–24} Surveillance data demonstrate that COVID-19 vaccination rates in the UK and Israel were lowest among certain ethnic minority groups.^{25,26} For UK healthcare workers between December 2020 and February 2021, studies found that some ethnic minority groups were more likely to be COVID-19 vaccine hesitant in comparison with white British groups,¹² and that COVID-19 vaccine uptake was lower among some ethnic minority groups compared with white people.²⁷ In a US youth survey, black participants were less likely and Asian participants more likely to accept a COVID-19 vaccine compared with white participants.²⁸ Being from an ethnic minority group alone may not account for vaccine uptake differences; attitudes and intentions vary depending on multiple factors including location, time, socioeconomic status and cultural context.

Mistrust and doubt

Low trust in government advice and recommendations due to its perceived handling of the pandemic and changing COVID-19 messaging was identified as a potential barrier to vaccine acceptability and uptake in our study and others.^{23,29–31} The link between mistrust in a COVID-19 vaccine and mistrust in government was found to be more pronounced among some ethnic minority groups in a small qualitative study among UK healthcare providers³² and a larger UK quantitative study.²³ Some ethnic minority groups reported inferior National Health

Table 3 Sources of COVID-19 information

Theme	Subtheme	Quote (gender: female (F), male (M); focus group (FG)*)
Friends and family, social media	Family a source of information rather than media outlets.	"I have been hearing about it from my family, but as I don't have Sky, I have not been watching TV a lot, but I did hear about the number of cases in various countries each day." (F, Interview 2)
	People reported that negative WhatsApp messages spread rapidly among their networks.	"...So every time you had a WhatsApp in the morning, people were scared, who's passed away, and things like that. So I think that actually did not help. Too much negative WhatsApp calls going around, messages, and I said to people, try to stay positive..." (Unknown, FG18)
Media and news outlets	Traditional media a source of information, for example, news, BBC, newspaper.	"...at the end of the day like come to 5 to 6 o'clock, I just go onto the BBC news website and quickly just have a look at what's, what they've published..." (Unknown, FG2)
	Participants or their family watched news from non-UK-based media outlets.	"...I mean most of the information I've had on it has come from America... I learnt first from listening to the American news and speaking to my cousin who works for the government in Washington..." (M, FG3)
	Government daily COVID-19 press conferences or briefings were a source of information.	"...because I have a degree in Applied Biology, I understood a lot of the briefings and how these things spread..." (Unknown, FG16)
	Websites such as BBC a source of information.	"...from websites mainly, like the BBC website, what's been on the internet...I don't really follow closely let's say, but it's, from time to time or when there is a major change..." (F, FG13)
	Awareness of the ethnic minority COVID-19 statistics through the news.	"...Then that started hitting the news, the headlines, I think that's when it started, how would I put it, that's when it started affecting a lot of people in our background..." (M, FG5)
	Perception that the media had its own agenda.	"...To me, you should be trying to find out, more informative for the public rather than their media outlets and to score points against the government and, that's how I saw it..." (M, FG18)
	Belief that the media should show more balanced stories.	"...They have to think of presenting a true reflection of what is happening. So good and bad, both." (M, FG9)
	Media and news caused fear among some participants.	"...I was watching ITV this morning and it's like the arguments are still ongoing about all of the negative news that's out there, which is really scaremongering and really starting to affect peoples' mental health ..." (F, FG20)
	Confusion at inconsistent messaging and policies.	"...Some of the things he told were confusing, but others were not. They did one thing wrong. Look, they know that corona is spread [everywhere], [but] they opened the restaurants, introduced offers at restaurants. They should not have done that...People should be careful not to listen everything (laughs), like what the government is saying. You should be careful [and] think deeply." (F, Interview 3)
	Negative impact of inconsistent messaging on mental health.	"Scary statement or maybe I've been targeted with this vaccination, whatever, it has got a mental health impact..." (M, FG23)
Accessing guidance directly via government website.	"I don't watch TV, I don't watch the news, but I read in the gov.co.uk, so that's my resource, so that's the only place, I read the guidelines and stuff from there." (F, FG13)	
Research literature	Seeking information on the COVID-19 vaccine and trials themselves.	"...I work in scientific research, and I work with clinicians who sort of organise things like clinical trials..." (M, FG22)
	Reading academic or scientific literature.	"I reviewed all the potential (COVID-19) treatment available..." (M, FG19)
Concerns about misinformation	Participants concerned about the spread of misinformation through WhatsApp and social media.	"The funeral one was massive because ... there was all these groups being started, different Facebook, WhatsApp type groups, talking about whatever and it was actually quite upsetting, I think, to be honest, because I think people were somewhat misinformed..." (F, FG5)
	Taking on the role of dispelling misinformation among network.	"The amount of viral things that were going around in and amongst my extended family and friends and, I've just got this thing where I'm like, guys, it's fake news..." (F, FG5)
	Volunteering for a local community radio station to help dispel misinformation.	"I also sort of voluntarily basis, oversee a local community radio station... So getting those messages out was important, and try and dispel those conspiracy theories. It was quite difficult, but we eventually got there ..." (M, FG19)
	Use of websites to identify 'fake news'.	"...there are a few really good websites that tell you whether it's fake news or not, like reputable ..." (F, FG5)

Continued

Table 3 Continued

Theme	Subtheme	Quote (gender: female (F), male (M); focus group (FG)*)
Cultural and religious influences	Perception that some people believe in natural remedies.	"...I might tell them stuff and they would just be like, they will just talk about some kind of folk cures to take or drink and you'll be fine..." (M, FG10)
	Information from the mosque.	"I think we are doing everything OK now from our point of view, we've got the radio and the messages going on a regular basis. Also, from the Mosque and from community..." (Unknown, FG19)

*FG ethnicities: FG1–4, mixed; FG4, South East Asian; FG5, mixed; FG6, Pakistani; FG7, Chinese; FG8, black ethnicities; FG9, Indian; FG10, Bangladeshi; FG11, European; FG12, Chinese; FG13, Arabic; FG14, Indian; FG15, Bangladeshi; FG16, black ethnicities; FG17, Chinese; FG18, Indian; FG19, Pakistani; FG20, white British; FG21, Jewish; FG22, white British; FG23, black African; FG24, Travellers; Interviews 1–3, Pakistani. BBC, British Broadcasting Company.

Service healthcare experiences, which could partially explain this mistrust.²³ However, mistrust can stem from wider inequalities beyond COVID-19.³²

Beliefs surrounding COVID-19 vaccination

Many participants expressed concerns about receiving a COVID-19 vaccine or wanted more information, particularly around safety and efficacy. Large UK surveys support this, demonstrating a significant positive association between confidence in the importance, safety and effectiveness of a COVID-19 vaccine, and vaccine acceptance.^{31 33} A small qualitative UK parental study and larger survey completed in May 2020 found that COVID-19 vaccine safety and efficacy concerns were the greatest barrier to definite vaccine acceptance, which in the larger parallel survey was 56%.³¹ There was a belief that COVID-19 vaccine development had been rushed among most participants in our study and other qualitative studies.^{30 32} Some of our participants stated that they would wait until 'it is deemed safe and effective', or others in the population received the vaccine first before accepting it themselves. This was echoed in UK qualitative studies exploring COVID-19 vaccination in pregnant women³⁴ and recent migrants,³⁵ a Canadian qualitative study in a diverse sample of the population³⁶ and a US quantitative study of attitudes towards COVID-19 vaccination in people aged 14–24 years old.²⁸ Research indicates that people deem older vaccines safer than newer ones.^{37 38} A large UK parental survey found that lower income, or ethnic minority participants were at least twice as likely to reject COVID-19 vaccination,³³ and although we found few differences by ethnicity, our sample size of 100 and its qualitative methodology were not designed to determine this.

We found that participants' perception of risk of COVID-19 infection and severe illness to themselves and their family, through occupation, age or comorbidity, and protection through vaccination were strong facilitators for COVID-19 vaccination acceptance. This has been found in several other studies of the general population, healthcare workers, immunocompromised and parents.^{6 31 39} Easy access will be important to facilitate vaccination uptake for those with risk due to occupation or comorbidity.²⁵ Our study and others certainly indicated

that many would prefer a local, low-risk community healthcare setting with convenience of booking appointments.^{35 40 41} However, at the time of our data collection, access to vaccines was not a tangible issue as they had not yet been approved. The importance of differentiating between vaccine hesitancy, which has less variation in different ethnic groups,⁴² and undervaccination related to environmental context and access has been raised by others.^{35 43} Locally appropriate outreach settings are needed with flexible appointments to overcome vaccine access issues. Migrants with precarious immigration status suggested walk-in centres in trusted locations such as foodbanks, community centres and charities would facilitate vaccine access and uptake.³⁵ Additionally, allowing vaccination without documentation or general practice registration should be considered and publicised to facilitate equitable access, for example, for the estimated 600 000 undocumented migrants living in the UK,⁴⁴ the homeless and other vulnerable populations.

Sources of COVID-19 information

Identifying sources of COVID-19 information could help inform intervention development and dissemination of vaccination messaging (table 4). In our study, concerns about misinformation were raised across ethnic groups. People with more of a reliance on social media and social networks for COVID-19 information are more likely to get information on social media⁴⁵ and be exposed to misinformation⁴⁶; those reliant on social media tend to be younger, and have lower education levels and lower income.⁴⁷ There is evidence of social media outlets circulating COVID-19 misinformation.^{45 48–51} This highlights the importance of disseminating clear vaccination messages to empower the public to address misinformation in their networks (table 4). Negative attitudes towards the media, government, medicine and healthcare could be overcome by messaging and vaccine delivery from trusted community figures.⁵² Other studies have found a strong correlation between a trusted healthcare professional or physician's recommendation of a vaccine and higher uptake.^{39 53} However, this may not be adequate for those who are disengaged with medicine and healthcare.

Table 4 COVID-19 vaccination attitudes and COVID-19 sources of information: implications and recommendations for clinicians and policymakers

Topic	Subtheme	Implication/recommendation
Attitudes towards COVID-19 and a COVID-19 vaccine	<ul style="list-style-type: none"> ▶ A degree of optimism that a COVID-19 vaccine would become available while some were aware it might take time. ▶ Some understood the importance of a COVID-19 vaccine. ▶ Different beliefs surrounding who should receive the vaccine. ▶ Belief that people should have the choice. ▶ Some believed that other health behaviours were equally, if not more important to maintain. 	<ul style="list-style-type: none"> ▶ Public health messages should continue to inform the public about vaccines and how to access them. ▶ Rationale for and order of priority groups for COVID-19 vaccination should be clearly stated. ▶ Public health messaging should continue to encourage positive health behaviours in addition to getting vaccinated. ▶ More research is needed to explore the attitude towards compulsory vaccination in different groups or settings.
	<ul style="list-style-type: none"> ▶ Recognition of importance of clinical trials. 	<ul style="list-style-type: none"> ▶ Continue to quote the emerging evidence from vaccine trials. ▶ Actively recruit more diverse participants to clinical trials.
	<ul style="list-style-type: none"> ▶ Many would wait until others had tried the vaccine until accepting it themselves. 	<ul style="list-style-type: none"> ▶ Positive 'success' stories of vaccination should be developed and disseminated by individuals and organisations authentically representing diverse groups in terms of age, gender, ethnicity, region and occupations.
	<ul style="list-style-type: none"> ▶ People were concerned about COVID-19 vaccine safety and efficacy, which linked closely to concerns about vaccine development. ▶ Perception of health and risk meant that some may not accept a vaccine immediately. 	<ul style="list-style-type: none"> ▶ Concerns should be addressed by providing clear, accessible information about COVID-19 vaccine development and safety. ▶ Vaccine information should be presented and disseminated in a relatable and understandable manner, including efficacy against deaths, hospital admission, value in protecting family, long COVID and side effects. ▶ The development of vaccine messaging should involve collaboration with diverse groups.
	<ul style="list-style-type: none"> ▶ Belief that culture and religion had influences on the attitudes of certain groups towards vaccines. 	<ul style="list-style-type: none"> ▶ Involve local community and religious groups to understand and address the population's concerns and needs for accessing vaccination.
COVID-19 vaccine acceptability facilitators	<ul style="list-style-type: none"> ▶ Desire to return to 'normality' identified as a motivator. ▶ Occupation influenced some participants' intentions of accepting a vaccine. ▶ Protecting the health and well-being of themselves and others was a motivator. 	<ul style="list-style-type: none"> ▶ Stress the value of vaccination in returning life back to normal, for example, ability to celebrate festivals and to protect vulnerable family members and friends. ▶ Evidence-based, appropriately targeted, context-specific COVID-19 vaccine messaging for occupations at risk. ▶ Provision of vaccine in occupational settings or practical support such as paid time off to get vaccinated.
	<ul style="list-style-type: none"> ▶ Environmental context and resources were identified as facilitators, for example, availability and accessibility. 	<ul style="list-style-type: none"> ▶ Policymakers should ensure that vaccines are available at accessible times and locations.
	<ul style="list-style-type: none"> ▶ Some would encourage others to accept a vaccine. 	<ul style="list-style-type: none"> ▶ Messaging should emphasise the benefits of vaccination in also protecting close family (including those under 18 years) and friends, including those with comorbidity.
COVID-19 vaccine barriers	<ul style="list-style-type: none"> ▶ Low trust and doubt were identified as barriers to vaccine acceptability. 	<ul style="list-style-type: none"> ▶ Public trust should be rebuilt by local and national government by providing consistent, clear, evidence-based messaging and actions and by working with the community as partners, co-designing messages.
	<ul style="list-style-type: none"> ▶ Disengagement with medicine and healthcare services was a barrier to vaccine acceptability. 	<ul style="list-style-type: none"> ▶ Invest in community groups to help build engagement with formal services, for example, Community Champions working with healthcare providers and grassroots organisations to increase engagement.
	<ul style="list-style-type: none"> ▶ Misinformation was a concern among some participants. ▶ Social influences were identified as a barrier. 	<ul style="list-style-type: none"> ▶ Communications should preferably be disseminated via trusted and respected channels and figures on both a local and national level, rather than from the government or politicians.
	<ul style="list-style-type: none"> ▶ There was opposition to vaccines in general among a minority of participants. 	<ul style="list-style-type: none"> ▶ Surveillance, surveys and qualitative work on vaccine uptake and acceptability should continue to inform and understand attitudes, beliefs and behaviours.

Continued

Table 4 Continued

Topic	Subtheme	Implication/recommendation
Friends and family, social media	<ul style="list-style-type: none"> ▶ Family was a source of information for some participants, rather than media outlets. ▶ People reported that negative WhatsApp messages spread rapidly among their networks. ▶ Information was received via social media among some participants. 	<ul style="list-style-type: none"> ▶ Positive trustworthy vaccine messages disseminated via social media could be advantageous for rapid dissemination of information and increase vaccine uptake in young people. ▶ Public health messages should be disseminated via multiple channels. ▶ Ensure that community outreach includes range of representatives of different ages and genders to facilitate family conversations.
Media, news and guidance	<ul style="list-style-type: none"> ▶ Traditional media were cited as a source of information, for example, news, BBC, newspaper. ▶ A participant reported directly using government guidance rather than through the media. ▶ Some participants or their family watched news from non-UK-based media outlets. ▶ Government daily COVID-19 press conferences or briefings were a source of information. ▶ Websites such as BBC a source of information. ▶ Awareness of ethnic minority COVID-19 statistics through the news. 	<ul style="list-style-type: none"> ▶ Both traditional and alternative communication channels should be used to communicate clear messaging and guidance based on behavioural science.
	<ul style="list-style-type: none"> ▶ Perception that the media had its own agenda. ▶ Belief that the media should show more balanced stories. ▶ Media and news caused fear among some participants. ▶ Confusion at the media due to inconsistent messaging. ▶ Negative impact of media and news on mental health. 	<ul style="list-style-type: none"> ▶ Avoid using fear and instead share positive, supportive communications.
Research literature	<ul style="list-style-type: none"> ▶ Seeking information on the COVID-19 vaccine and trials themselves. ▶ Reading academic or scientific literature. 	<ul style="list-style-type: none"> ▶ This is positive for those who have access to these sources however could increase disparities for those with limited access to such sources of information. ▶ Increase capacity for science in schools and adult education to improve understanding of science underpinning vaccines.
Concerns about misinformation	<ul style="list-style-type: none"> ▶ Participants concerned about the spread of misinformation through WhatsApp and social media. ▶ Some participants took on the role of dispelling misinformation among their network. ▶ Volunteering for a local community radio station to help dispel misinformation. ▶ Use of websites to identify 'fake news'. 	<ul style="list-style-type: none"> ▶ Public health messages surrounding vaccines should be tailored depending on sociocultural context. ▶ 'Influencers' should be empowered and provided with the necessary skills and resources to address misinformation among their networks. ▶ Different community leaders have different impact, value and reach in different contexts. ▶ Accessibility and equity of correct information is key. Translation of messages is only one aspect of this.

BBC, British Broadcasting Company.

Strengths and limitations of the study

This is one of the largest qualitative studies on attitudes to vaccination in the UK general public and in contrast to others, incorporates most UK ethnic minority groups, the COVID-19 pandemic and perceived risk.^{6 25 26 31 33 42 47 54–57} Although attitudes and intentions do not necessarily directly translate to actual vaccine uptake, these can be good predictors and help understand the nuances behind quantitative trends in vaccine acceptance and uptake. To avoid exclusion of typically under-represented groups, recruitment involved approaching charities that aim to empower and advocate for ethnic minority communities and improve their access to services. Qualitative research aims to gain as many different views as possible from the population studied. Therefore, it is not necessarily representative

of the whole population, which would require a large survey. Our study specifically aimed to gain a range of views across different ethnic groups. Selection bias could have occurred, as those with a greater interest in COVID-19 may have volunteered. Furthermore, we did not reach every ethnic minority group in the UK.

Data collection was June–October 2020 before COVID-19 vaccines were licensed. Attitudes to vaccines are highly responsive to current information around a COVID-19 vaccine, current state of the pandemic and perceived risk. Data collection was prior to much of the intervention work, putting the attitudes and intentions expressed in this study in a context of minimal community engagement and support. This captures a baseline snapshot of attitudes, providing the option to explore and assess the impact of such interventions.

Most data collection was undertaken in English, possibly excluding sectors of the population who may access COVID-19 information through different sources due to language. Similar themes were identified from the English FGs and Punjabi interviews, with exception of some religious views, indicating consistency of results. Much of the data collection and analysis was conducted by white British researchers which could have impacted interpretation of findings; however, FGs and interviews were held remotely which may have reduced this and acquiescence bias. The facilitator ensured that all participants were asked questions and prompted to speak. The first five FGs included a range of ethnicities while others mainly comprised participants of the same ethnicity. Both FG types yielded similar data, however.

Implications for clinicians and policymakers

Interventions and policies must be appropriate and effective for diverse populations where vaccine acceptability and uptake are low, to reduce inequalities and increase vaccine equity. This study's findings have local and national implications for clinicians and policymakers (table 4) which fall under three overarching areas: providing information that addresses specific concerns of communities; authentic community outreach; and using the right channels to disseminate credible information and counteract misinformation. Public health messages surrounding vaccines should be tailored depending on sociocultural context.

Unanswered questions, future research and implications

Since this work was completed, the results and recommendations have been presented to government bodies. Faith-based and ethnic group communities are now more actively involved in local and more tailored COVID-19 communications in the UK.⁵⁸ There are efforts to locate vaccination clinics in more accepted local assets, such as places of worship, including mosques and churches.⁵⁸ Local COVID-19 vaccine community champions and influencers in minority groups are being identified and encouraged.⁵⁸⁻⁶⁰

Nonetheless, more high-quality research and evaluation is needed to demonstrate the effects of different interventions on COVID-19 vaccine uptake.⁴ Locally led outreach should engage marginalised groups and explore attitudes and behaviours where there is low vaccine uptake to mitigate barriers.¹³ Future research must gain further understanding of similarities and differences within specific groups to adopt a context-specific approach to vaccine resources and policies, and proactively involve diverse patient and public groups. Surveillance should continue to monitor vaccination uptake, with both quantitative and qualitative studies to explore the needs of diverse ethnic groups and any ongoing disparities in uptake and whether they continue to be related to concerns in vaccine safety, perception of COVID-19 risk, trust, information sources or access.

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