Protocol

Understanding and reducing COVID-19 vaccine hesitancy among ethnic minorities in the UK

Review #1: factors associated with vaccine hesitancy among ethnic minority groups

1 Background [for Review #1 and #2]

Since December 8th, 2020 the COVID-19 vaccination programme has been rolled out with more than 62 million doses given in the UK as of May 2021 (https://coronavirus.data.gov.uk/details/vaccinations). Achieving vaccination of the whole UK population is recognized as a key strategy for preventing disease and death from COVID-19. However, empirical studies and surveys have shown that there is a higher hesitancy for the vaccine among some ethnic minority groups than in the general population. {Robinson et al. 2021; Robertson et al. 2020; Royal Society for Public Health 2020}

Indeed, a retrospective cohort study using data from 23.4 million adults in England reported that uptake of COVID-19 vaccines is significantly lower among Black, Mixed, South Asian and Other ethnic groups compared with White groups.{MacKenna et al. 2021} By 17th March 2021, 96.7% of White British over-80s who were not living in care homes had been vaccinated compared with 89.9% of over-80s of Indian/British Indian heritage, 81.3% of those of Bangladeshi/British Bangladeshi heritage, 76.9% of those of Pakistani/British Pakistani heritage, 71.3% of those of Caribbean/Black British Caribbean heritage and 59.8% of those of African/Black British African heritage.{MacKenna et al. 2021} ONS (Office for National Statistics) data to 25 April 2021 on coronavirus and vaccine hesitancy in Great Britain show that 65% of the White population received the vaccine (one or two doses), compared with 45% of respondents from Ethnic Minority Groups overall (41% Mixed, 45% Asian or Asian British, 45% Black or Black British and 50% Other ethnic groups).{ONS 2021}

The World Health Organization (WHO) SAGE Working Group on Vaccine Hesitancy defines vaccine hesitancy as '*delay in acceptance or refusal of vaccination despite*

availability of vaccination services. Vaccine hesitancy is complex and context specific, varying across time, place and vaccines. It is influenced by factors such as complacency, convenience and confidence'.{MacDonald et al. 2015} Vaccine hesitancy is specified as one of the 10 health threats to global health by the WHO in 2019 (https://www.who.int/news-room/spotlight/ten-threats-to-global-health-in-2019).

The UK Government in their 11th Jan COVID-19 vaccine delivery plan acknowledges the need to ensure that the vaccination programme is inclusive by addressing particular concerns of individuals who are more hesitant among ethnic minority communities. {Department of Health & Social Care 2021} It is, therefore, vital to understand the reasons behind hesitancy and identify effective vaccination strategies for ethnic minority groups. As part of a larger project entitled 'Working with community groups to understand and reduce COVID-19 vaccine hesitancy among ethnic minority groups in the UK', we aim to conduct two rapid systematic reviews to address the following research questions:

- What are the factors related to COVID-19 vaccine hesitancy in ethnic minority groups? (Review #1)
- What strategies have been advanced to address vaccine hesitancy in ethnic minority groups? (Review #2)

The remainder of this document focuses on Review #1.

2 Objectives

The objective of this review (Review #1) is:

- To identify and summarise factors related to COVID-19 vaccine hesitancy in ethnic minority groups

3 Methods of the review

We will follow recommendations from the Cochrane Rapid Reviews Methods Group{Garritty et al. 2021} and Healthcare Improvement Scotland for rapid evidence synthesis.{Health Care Improvement Scotland 2019}

3.1 Criteria for considering studies for this review

The key eligibility criteria for this rapid review are summarised using a SPICE framework in Table 1. Details of each criterion are provided below.

Table 1 Summary of eligibility criteria for Review #1 based on the SPICE framework

Setting	Perspective	Phenomenon of interest	Comparison	Evaluation
(Where?)	*(For whom?)*	*(What?)*	*(Compared with what?)*	*(With what result?)*
In the community	Adults from ethnic minority population	Vaccine hesitancy related to COVID-19 and other respiratory viral infections	By implication only: compare different ethnic groups, or different subpopulations within ethnic groups	Factors related to vaccine hesitancy

Types of study setting

We will include studies conducted in the community setting. We will exclude clinical studies conducted in the clinic and hospital settings, as these settings are not likely to be relevant for the research question.

Types of perspective (or population)

The review focuses on the perspectives of adults from ethnic minority groups. We will also consider for inclusion studies among the general adult population with attention given to how factors affecting vaccine uptake may differ between different ethnic groups. We are primarily interested in adults' decision about their own vaccinations. Studies solely focusing on the perspectives of children and adolescents will be excluded as well as studies of parental refusal or delay of childhood vaccines. Studies done outside the UK but which involve ethnic groups that are minorities in the UK will be excluded unless the study specifically highlighted minority groups within that jurisdiction. For example, a study conducted in India among the general Indian population would be excluded unless the study focused on minority groups within the Indian context.

Types of phenomenon of interest

We define the eligible phenomenon of interest as vaccine hesitancy related to COVID-19 vaccine, or vaccines for other respiratory viral infections such as influenza/flu vaccine. The Tdap (tetanus, diphtheria, and pertussis [whooping cough]) and flu vaccination programme on pregnant women will be included. Other vaccines for non-respiratory infections and travel vaccines will not be considered suitable for inclusion.

Types of comparison

We will include studies that make implicit or explicit comparisons between different ethnic minority groups, or between different sub-populations (e.g. by age, gender, level of education, employment status) within ethnic minority groups.

Types of evaluation of interest

We will include studies that evaluated:

- Factors related to vaccine hesitancy such as knowledge, beliefs and attitude
- Reasons behind vaccine hesitancy

To be included, studies or reports need to present data for the relevant factors or reasons in their title or abstract. Studies that evaluated vaccination uptake will be included as far as they also ask participants about their reasons for accepting or refusing vaccination.

Types of study design

We will include qualitative studies, mixed-methods studies or any other study design that could offer insight into vaccine hesitancy among ethnic minority groups.

3.2 Search strategy for identification of studies

3.2.1 Electronic searches

An Information Specialist will develop a sensitive literature search strategy to identify published, peer-reviewed studies. The search strategy will include database index terms and free text to encompass the facets of COVID-19 and other respiratory viruses, ethnic minorities, and vaccine hesitancy. Search strategies will be agreed

with community organisations to ensure we are not missing relevant search terms. We will search the major clinical and social science databases, including Medline, Embase, CINAHL, ASSIA, and the Social Science Citation Index. The extracted results will be limited to articles published in English in the last five years (2016-21) but the search itself will not restrict language or study type. All references will be exported to Endnote for recording and deduplication. An outline search for Ovid Medline is at Annex *.

We plan to re-run literature searches within 2 months from the anticipated publication/submission of the reviews (end of July 2021).

3.2.2 Searching other sources

The reference lists of all studies selected for full text appraisal will be screened for additional studies. The websites of major international government departments, public health organisations, community and minority organisations, and curated collections of COVID-19 literature will be searched for relevant publications. Community organization representatives of the research team will also be contacted to locate additional studies or reports including publications in languages other than English.

3 Data collection and analysis

3.3.1 Study selection

Two independent reviewers will screen the titles and abstracts of at least 20% of the results identified by the search to validate the process. These will then go through moderation and consensus, with all remaining abstracts screened by one reviewer. Full text versions of potentially relevant articles will be retrieved and assessed for eligibility by the same two reviewers. Should we identify a very large number of eligible studies, we will use purposive sampling to ensure inclusion of studies with rich data.{Cochrane Effective Practice and Organisation of Care 2017}

3.3.2 Data extraction

Data extraction will be performed by one reviewer using a bespoke form and checked by a second reviewer for accuracy and completeness.

For studies that fulfilled our inclusion criteria, we will abstract the following information:

- Study design
- Study dates or participant recruitment date
- Study setting (country / minority community)
- Vaccines being targeted
- Participant inclusion and exclusion criteria
- Participant characteristics
- Number of participants
- Details of factors evaluated (including categorisation of intervention according to the SAGE WG Model of determinants of Vaccine Hesitancy [see below])
- Study funding sources, and/or possible conflicts of interest

We will also abstract information about any interventions study authors suggest as potential solutions to the hesitancy factors they identify in studies included in Review #1.

3.3.3 Quality assessment of included studies

We will assess the methodological quality of included studies using the Quality of Reporting tool (QuaRT) (see Appendix 2).{Carroll et al. 2011} QuaRT aims to assess whether the following methodological details are clearly and adequately described in the publication:

- The question and study design
- how the participants were recruited or selected, and
- the methods of data collection and analysis used

The full criteria of the QuaRT tool are presented in Appendix 2. The quality assessment will be performed by one reviewer and checked by a second reviewer for accuracy and completeness.

Note that another quality assessment tool that may be useful is the Critical Appraisal Skills Programme (CASP) tool, which is presented in Appendix 2.

3.3.4 Synthesis of the extracted evidence

We will use a 'best-fit' framework approach for analysis, a pragmatic method suitable for rapid synthesis.{Booth et al. 2015} We will create the *a priori* framework for the synthesis from the literature on factors that affect or are likely to affect vaccine uptake in the general (non-ethnic) population. One framework that may potentially be useful is the WHO SAGE working group (WG) model of determinants of vaccine hesitancy, which group factors into three categories: contextual influences, individual/social group influences, and vaccine- and vaccination-specific issues (see Appendix 1).{Larson et al. 2014}{WHO SAGE working group dealing with vaccine hesitancy 2014} Our starting framework will list these factors alongside information about the ethnic minority groups investigated in the study. We will synthesise the evidence narratively.

References (for Review #1 and #2)

Alonso-Coello P, Schunemann S, Moberg J,Brignardello-Petersen R, Akl E, Davoli M, Treweek S, Mustafa R, Rada G, Rosenbaum S, Morelli A, Guyatt G, Oxman AD: GRADE Working Group. GRADE Evidence to Decision (EtD) frameworks: A systematic and transparent approach to making well-informed healthcare choices. 1. Introduction. BMJ 2016;353:i2016

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Carroll C, Booth A, Cooper K. A worked example of "best fit" framework synthesis: A systematic review of views concerning the taking of some potential chemopreventive agents. BMC Medical Research Methodology. 2011;11(29)

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Guyatt GH, OxmanAD, KunzR, VistGE, Falck-YtterY, SchunemannHJ. What is "quality of evidence" and why is it important to clinicians? BMJ (Clinical Research Ed.) 2008;336(7651):995-8.

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MacDonald et al. Vaccine hesitancy: Definition, scope and determinants, Vaccine, Volume 33, Issue 34, 2015, Pages 4161-4164, 2015. https://doi.org/10.1016/j.vaccine.2015.04.036

MacKenna B, Curtis HJ, Morton CE et al. Trends, regional variation, and clinical characteristics of COVID-19 vaccine recipients: a retrospective cohort study in 23.4 million patients using OpenSAFELY. medRxiv preprint 2021 Jan 26. doi: https://doi.org/10.1101/2021.01.25.21250356

Office for National Statistics. Coronavirus and vaccine hesitancy, Great Britain: 31 March to 25 April 2021 – Hesitancy towards the coronavirus (COVID-19) vaccine, based on the Opinions and Lifestyle Survey covering the period 31 March to 25 April 2021. Release date: 6 May 2021. https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandwellbeing/bulletins/coronavirusandvaccinehesitancygreatbritain/31marchto25april

Relevant data set available from: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandwellbeing/datasets/coronavirusandvaccinehesitancygreatbritain

Royal Society for Public Health. New poll finds BAME groups less likely to want COVID vaccine. 2020. https://www.rsph.org.uk/about-us/news/new-poll-finds-bame-groups-less-likely-to-want-covid-vaccine.html

Robinson E et al., International estimates of intended uptake and refusal of COVID-19 vaccines: A rapid systematic review and meta-analysis of large nationally representative samples, Vaccine, Volume 39, Issue 15, 2021, Pages 2024-2034. https://doi.org/10.1016/j.vaccine.2021.02.005

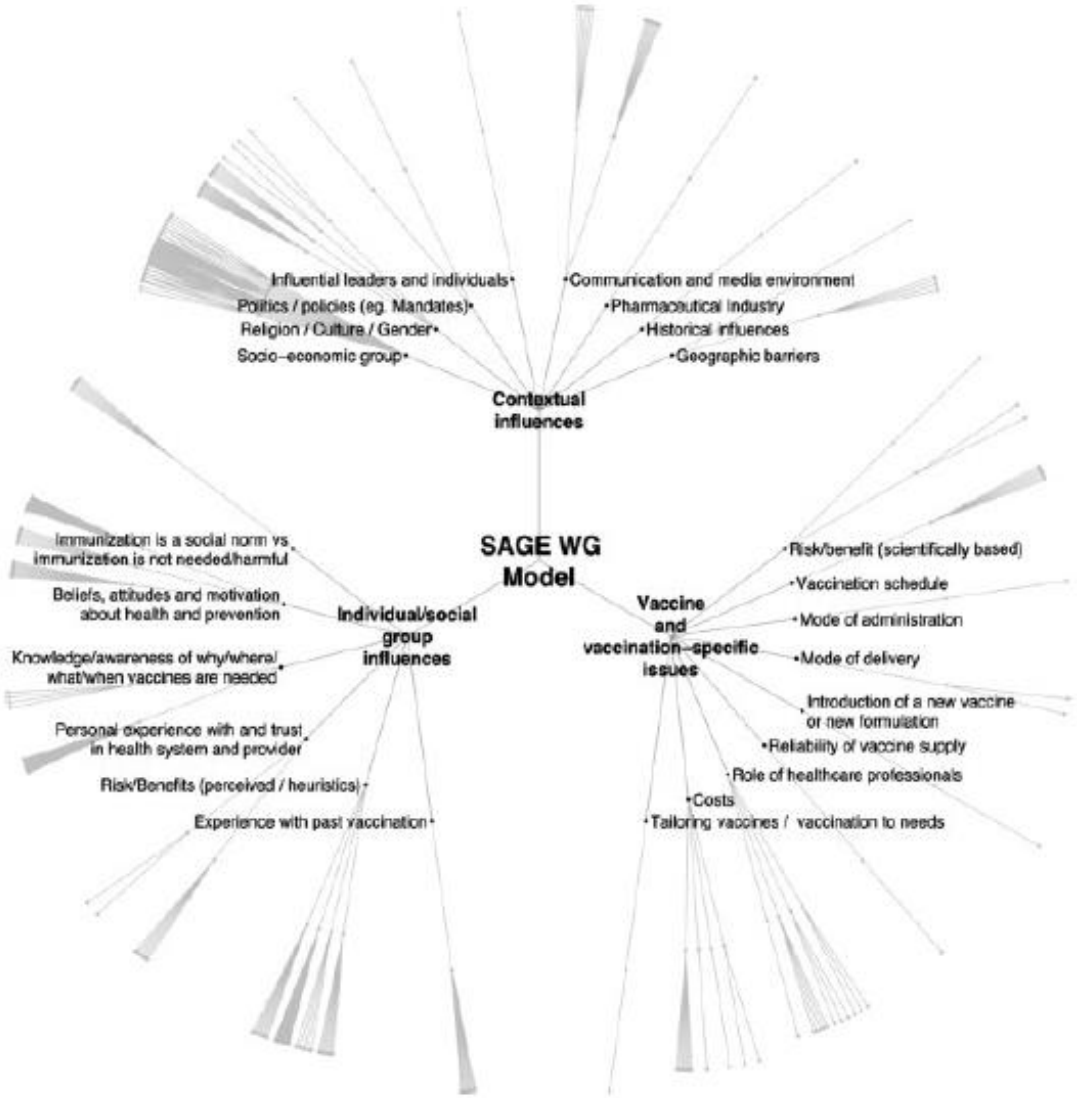
Robertson E et al. Predictors of COVID-19 vaccine hesitancy in the UK household longitudinal study, Brain, Behavior, and Immunity, Volume 94, 2021, Pages 41-50. https://doi.org/10.1016/j.bbi.2021.03.008

SchünemannHJ, HigginsJPT, VistGE, GlasziouP, AklEA, SkoetzN, GuyattGH. Chapter 14: Completing 'Summary of findings' tables and grading the certainty of the evidence. In: Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, Welch VA (editors). Cochrane Handbook for Systematic Reviews of Interventions version 6.1 (updated September 2020).

Thomas, B., Ciliska, D., Dobbins, M. and Micucci, S. (2004) A Process for Systematically Reviewing the Literature: Providing the Research Evidence for Public Health Nursing Interventions. Worldviews on Evidence-Based Nursing, 1: 176-184. https://doi.org/10.1111/j.1524-475X.2004.04006.x

WHO SAGE working group dealing with vaccine hesitancy. Strategies for addressing vaccine hesitancy – a systematic review. October 2014. https://www.who.int/immunization/sage/meetings/2014/october/1_Report_WORKING_GROUP_vaccine_hesitancy_final.pdf

Appendix 1 SAGE Working Group (WG) "Model of determinants of Vaccine Hesitancy" (Reproduced from Figure 1 of Larson et al. 2014){REF Larson 2014}



Appendix 2. Critical appraisal - QuaRT and CASP

Table. Overview of the four dimensions in the QuaRT tool

Criteria categorisation and definition	Tick a box	Enter the relevant text from the article
The question and study design **Yes** if it states, e.g. "a case study approach was used because . . .", "interviews were used because . . ." **No** if paper does not specify question and study design **Unclear** if unsure	□ Yes □ No □ Unclear	
The selection of participants **Yes** if paper describes selection explicitly as e.g. purposive, convenience, theoretical etc. **No** if just details of participants are given **Unclear** if unsure	□ Yes □ No □ Unclear	
Methods of data collection **Yes** if details of data collection method are given e.g. piloting; topic guides for interviews; number of items in a survey; use of open or closed items; validation; etc. **No** if just states "focus group" or "questionnaire" **Unclear** if unsure	□ Yes □ No □ Unclear	
Methods of analysis **Yes** if details of analysis are given, eg. transcription, form of analysis (with reference), etc. **No** if just states "content analysis" or data were "analysed" **Unclear** if unsure	□ Yes □ No □ Unclear	

Source:
REF Table 4 of "A guide to conducting rapid qualitative evidence synthesis for health technology assessment", Health Care Improvement Scotland, October 2019;
REF2 Carroll C, Booth A, Cooper K. A worked example of "best fit" framework synthesis: a systematic review of views concerning the taking of some potential chemopreventive agents. BMC medical research methodology. 2011;11:29.

Table. CASP qualitative research checklist

(Each question can be answered with 'yes', 'no' or 'cannot tell')

1. Was there a clear statement of the aims of the research?
2. Is a qualitative methodology appropriate?
3. Was the research design appropriate to address the aims of the research?
4. Was the recruitment strategy appropriate to the aims of the research?
5. Was the data collected in a way that addressed the research issue?
6. Has the relationship between researcher and participants been adequately considered?
7. Have ethical issues been taken into consideration?
8. Was the data analysis sufficiently rigorous?
9. Is there a clear statement of findings?
10. How valuable is the research?

Source:

REF Critical Appraisal Skills Programme (2018). CASP Qualitative Studies Checklist. Available at: https://casp-uk.b-cdn.net/wp-content/uploads/2018/03/CASP-Qualitative-Checklist-2018_fillable_form.pdf