

# REACH-OUT: Caring for the healthcare workforce post-COVID-19

A longitudinal mixed-methods study of post-COVID-19  
outcomes in healthcare workers from diverse ethnicities

Update Report - Autumn 2022

University of Leicester

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# Research Team & Partners

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Led by Dr Habib Naqvi, director of the NHS Race and Health Observatory and the team.

# Executive Summary

## Background

Healthcare workers (HCWs), particularly those from ethnic minority backgrounds, are at increased risk of COVID-19 infection and adverse outcomes. A proportion of COVID-19 survivors experience prolonged symptoms; this condition is now widely known as long COVID. The estimated burden of long COVID and related poor mental, physical and occupational outcomes in HCWs is likely to be large, and to significantly impact on the delivery of safe and high-quality care. However, these impacts on HCWs and on the health service and patient care are as yet unknown. The NHS Race and Health Observatory has partnered with the University of Leicester to investigate the long-term impacts of COVID on HCWs across the United Kingdom (UK) from diverse ethnic backgrounds and roles through a three-years study called 'REACH-OUT'.

## Aim

REACH-OUT builds on the UK-REACH (United Kingdom Research study into Ethnicity And COVID-19 outcomes in Healthcare workers) study to estimate the prevalence of long COVID among HCWs, characterise the syndrome, and understand the impacts of medium-term and post-acute/long COVID illness on the mental, physical, and occupational health of diverse communities of HCWs in the UK, and their work and home lives.

## Methods

We are conducting a mixed-methods study and will:

- 1 conduct a systematic review and meta-analysis to estimate the prevalence of long COVID among HCWs globally and identify symptoms of long COVID (and their clustering);
- 2 analyse baseline and follow-up questionnaire data by conducting a longitudinal quantitative survey study to estimate the prevalence of long COVID in HCWs, and whether this differs by age, sex, ethnicity and occupation; and
- 3 conduct qualitative research with HCWs, their families and their colleagues to understand the short- and medium-term impacts of long COVID. We will use the evidence generated to better understand how HCWs can be supported as they recover, and to make policy recommendations to support the recovery of the health care system.

# Foreword

**The COVID-19 pandemic has cast a long shadow. It will be many years before we are living beyond the legacy of this disease, if that time ever comes. Many of the changes we've seen over the past two years look set to be permanent and, in many ways, the social and economic realities of life in this country will never be the same again.**

This applies at a national level, but also at the level of the individual. Conversations about “long-COVID” have now been ongoing for many months, but there is still much we don't understand about the long-term impacts of this disease on the physical and mental health of individuals, nor the broader impacts to their working, social and family lives.

The question of how we support people with long-COVID is perhaps especially important and complex for our health and care workforce who, in delivering life saving care throughout the pandemic, were required to put themselves as daily heightened risk. Moreover, it is this same workforce who are now required to rebuild the NHS, to clear the elective backlog, and to provide a level of service that was proving stretching even before the pandemic.

This partnership between UK-REACH and the NHS Race and Health Observatory is especially interested in the impacts of long-COVID on our ethnic minority workforce. Not only do we know that these communities are over-represented in the “frontline” NHS workforce, but also that they were at higher risk from COVID itself.

The reasons are complicated. The causes of these inequalities are informed by structural and institutional racism. Where someone lives, how they live, the type of job they do, and their exposure to risk, among many other factors, are all at least partly dictated by the ongoing impacts of racism in this country.

This study will attempt to unpack some of these complexities by taking a long view of the impacts of the pandemic on ethnic minority members of the health and care workforce. It will examine not just the physical and mental health impacts of the disease, but also the ways in which these people have been impacted by the professional, institutional, and societal upheavals that have come with it. Spanning three years, this study will give us the best look yet at how the pandemic is impacting this group of people.

Prof. Manish Pareek  
**Chief Investigator**  
**UK-REACH**

Dr Habib Naqvi MBE  
**Director**  
**NHS Race and Health Observatory**

# Introduction

**Recent figures from the Office for National Statistics (ONS) estimate approximately two million people in the United Kingdom (UK) experience COVID-19 symptoms for longer than four weeks.<sup>1</sup> The estimated burden of long COVID and poor mental, physical and occupational outcomes in healthcare workers (HCWs), particularly those from ethnic minority backgrounds, is likely to be large.<sup>2</sup> However, the prevalence of long COVID and its ongoing mental, physical and occupational impacts on HCWs and on the health service and patient care are as yet unknown.**

In December 2021, The NHS Race and Health Observatory announced the start of a three-year study, 'REACH-OUT', to investigate the long-term impact of COVID on NHS HCWs across the UK from diverse ethnic backgrounds and roles. The REACH OUT study officially started in February 2022 and builds on the UK-REACH programme (United Kingdom Research study into Ethnicity And COVID-19 outcomes in Healthcare workers). In particular, it develops upon the UK-REACH longitudinal cohort study and UK-REACH qualitative study of HCWs from diverse ethnic backgrounds based across the UK. The study is led by a research team at the University of Leicester, working in collaboration with University College London, the University of Nottingham, national stakeholders and front-line HCWs.

The longitudinal study will run for three years, and will release 6-monthly updates throughout the duration. This report is the first such update. In it, we will provide background information about long COVID, a rationale for this study, and our defined aims and objectives. We will also describe the methods we will use and our next steps.

## **Note on terminology.**

Throughout this report, we use the collective term 'ethnic minority' when referring to groups who are not White British. The NHS Race and Health Observatory and the research team at UK-REACH fully acknowledge that this term is imperfect and contested. Where possible, the authors have been specific about the ethnic groups in question and have only used collective terms where absolutely appropriate. The NHS Race and Health Observatory have consulted on the use of terminology in the past and you can read about our principles [here](#). For this report, in the rare instance that a collective term is used, we have opted for the term 'ethnic minority' to maintain consistency with other outputs from the UK-REACH cohort study.

## Understanding Long COVID

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Coronavirus disease-2019 (COVID-19) has spread across the world causing over 6.3 million deaths and significant morbidity globally.<sup>3</sup> In the UK, there have been over 22.5 million confirmed cases of COVID-19 as of July 2022.<sup>4</sup> Evidence has emerged that some patients with COVID-19 experience long-term symptoms and complications that extend beyond the acute phase of infection. This is now widely known as long COVID.<sup>5</sup> The World Health Organization (WHO) defines long COVID as “occurring three months from the onset of COVID-19, with symptoms that last at least two months that cannot be explained by any alternative diagnosis”.<sup>6</sup> The National Institute for Health and Care Excellence (NICE) definition has a shorter timescale: “signs and symptoms that develop during or after the COVID-19 infection persisting for 4-12 weeks or more, that cannot be explained by any other diagnosis”.<sup>5</sup> The NICE definition produces two classifications: ‘ongoing symptomatic COVID-19’ from 4-12 weeks and ‘post-COVID syndrome’ from after 12 weeks.<sup>5</sup> Both definitions function as ‘exclusion criteria’ which could potentially lead to missed diagnoses of long COVID. Therefore, NICE recently proposed a more inclusive definition such as “signs and symptoms that continue or develop after acute COVID-19” which include both ongoing symptomatic COVID-19 and post-COVID-19 syndrome.<sup>7</sup>

The most common symptoms of long COVID include, but are not limited to, extreme tiredness, dizziness, ‘brain fog’ and joint pain.<sup>8-10</sup> However, many of these more persistent symptom profiles are less well-understood and researched than those experienced during the acute phase.<sup>11</sup> The aetiology underlying the symptoms observed is also unclear.<sup>12</sup>

According to the most recent UK Government’s Office for National Statistics (ONS) data (July 2022), approximately two million individuals in the UK reported experiencing COVID-19 symptoms for longer than four weeks.<sup>1</sup> Of these, 74% had COVID-19 for the first time at least 12 weeks previously, and 41% had COVID-19 at least a year ago.<sup>1</sup> As the COVID-19 pandemic has progressed, there has been increasing evidence that HCWs, especially those from ethnic minority backgrounds, may be at particularly high risk of poor physical and mental health outcomes.<sup>2</sup> HCWs have been at increased risk of COVID-19 infection and severe disease, and have also faced many challenges working through the pandemic, including the high work demand, shortage of staff, lack of personal protective equipment (PPE), rapid changes in protocols and guidance, and long working hours.<sup>2</sup> As a result, HCWs may also be more likely than the general population to suffer from long COVID, and to experience negative physical, mental health, and occupational outcomes, with a disproportionate burden among ethnic minorities.

## Guidelines and Policies for Supporting Healthcare Workers Affected by Long COVID

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As an initial response to the challenge of long COVID, the NHS set out a 5-point plan in October 2020 to enhance NHS support to patients experiencing long-term effects of COVID-19.<sup>13</sup> These included additional funding for post-COVID assessment services; research on long COVID to better understand the condition and refine appropriate treatment; the launching of an online platform to provide general information on all aspects of recovering from COVID-19; and an NHS long COVID taskforce which includes people with lived experience of long COVID, NHS staff and researchers.<sup>13</sup> In June 2021, a further ten key next steps - 'The Long COVID Plan 21/22' - with a £100 million investment were outlined to build on the 5-point plan.<sup>14</sup> The plan focuses on enhancing services for general practice to support long COVID care and expand other NHS long COVID services.<sup>14</sup> It also highlights the focus on equity of access, outcomes and experiences by collecting data on ethnicity, gender and deprivation, against expected prevalence of long COVID. In addition, it underlines support for NHS staff suffering from long COVID.<sup>14</sup> In July 2022, NHS England drafted guidelines for supporting NHS staff affected by long COVID which includes details on what long COVID is, advice on sick pay, and how to record long COVID related absence, as well as other support services for those who suffer from long COVID.<sup>15</sup>

## Background Information about UK-REACH

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**UK-REACH (United Kingdom Research study into Ethnicity And COVID-19 outcomes in HCWs)** is a programme of work funded by the MRC-UKRI and NIHR to examine if, how and why ethnicity affects COVID-19 outcomes and the impact of COVID-19 on HCWs.

### **The UK-REACH prospective cohort study**

UK-REACH includes a prospective cohort study of 18,000 UK HCWs who have given consent for linkage to electronic healthcare records, and to be recontacted for future research. Data were collected by means of repeated questionnaires. Baseline (questionnaire 1) data were gathered between December 2020 and March 2021; questionnaire 2 data were collected between April 2021 and July 2021; and questionnaire 3 data were collected between October 18th and November 26th, 2021. 30% of UK-REACH participants are from ethnic minority groups (4% Black, 20% Asian and 6% Mixed/Other). In questionnaire 1, 22% of participants reported having had confirmed or suspected COVID-19 (PCR positive, antibody positive or symptomatic), of whom approximately 20% reported persistent COVID-19 symptoms (long COVID).

<sup>1</sup>see [UK-REACH data dictionary](#)



Questionnaire 1 data included detailed information about the following<sup>1</sup>:

- Demographics including age, sex, ethnicity and related variables (ONS ethnicity classifications, nationality, migration, ethnic identity, religion and religiosity);
- Work (occupational role(s), redeployment, working patterns, work environments including personal protective equipment access, COVID exposure, and perceptions of work);
- COVID infection (symptoms, self-reported status, PCR status and antibody status);
- Long COVID / persistent symptoms;
- Vaccination status and attitudes;
- Physical health (including health conditions, healthcare usage);
- Mental health (including anxiety, depression, post-traumatic stress, loneliness);
- Quality of life;
- Harassment and discrimination at work and in general;
- Home and family environments and relationships;
- Psychological traits and attitudes (including personality, fatalism, locus of control).

Questionnaires 2 and 3 data included repeated questions about COVID-19 infection; work, home and family life; discrimination; physical and mental health; and quality of life as well as more detailed questions on vaccination, persistent symptoms/long COVID, and its impacts on health, work and home life.

### **The UK-REACH qualitative study**

The UK-REACH study also includes qualitative research with clinical and non-clinical HCWs aged 16 and older from ethnic minority and White backgrounds with experience of working in UK healthcare settings during COVID-19. Focus groups and semi-structured interviews were carried out with a purposive sample of 164 HCWs across England, Scotland, Wales, and Northern Ireland between November 2020 and May 2021, with consent to recontact. Demographic and occupational data were also collected, including on age, sex, ethnicity, migration background, and employment role. 69% of participants were from ethnic minority backgrounds (including 38% Asian, 18% Black, 10% Mixed, and 3% Other ethnic backgrounds). The topic guide explored participants' experiences of working during COVID-19; their fears and concerns at work and outside of work; perceived risk factors; challenges faced in accessing information to keep themselves safe; concerns around stigma, discrimination and racism; perceptions around the vaccine; and facilitators and coping mechanisms. Qualitative data have also been collected through free-text questions in the prospective cohort study.

The UK-REACH stakeholder engagement group and Professional Expert Panel National stakeholder group includes representation from the NHS, major regulators, healthcare worker unions (BMA, RCM) and ethnic minority healthcare worker organisations (BAPIO, Filipino Nurses Association). In addition to the stakeholder engagement group, UK-REACH is working with a diverse group of HCWs through a Professional Expert Panel.

## Rationale for the REACH-OUT study

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In response to the potential consequences of long COVID, a wide range of nationally-funded research studies have been initiated in the UK to better understand the long term impact of SARS-CoV-2 infection on physical and mental health, and how to enhance the diagnosis and treatment of long COVID.<sup>2</sup> However, these studies have largely, to date, focused on the general population, with a critical gap in research on long COVID among HCWs, and ethnic minority groups in particular. HCWs from ethnic minority backgrounds play a vital role in our response to the COVID-19 pandemic, comprising around 42% of doctors and more than 19% of other clinical staff (e.g., nurses, paramedics, midwives), within the NHS workforce.<sup>16</sup> The disproportionate impact of COVID-19 on HCWs has serious implications for the effective operation of the health system. A study focused on the first UK national lockdown found that HCWs are seven times more likely to get severe COVID-19 compared to other workers.<sup>17</sup> However, up until now, there has been limited attention to how post-acute illness and long COVID are affecting the home and work lives of HCWs, and those from ethnic minority backgrounds in particular. Furthermore, the burden of long COVID and its ongoing mental, physical, and occupational impacts on this population are still unknown. This scarcity of literature is particularly problematic for this novel and poorly understood condition, with critical implications for the sustainable delivery of safe and high-quality care. Alongside this it is important to understand in detail the lived experiences of affected HCWs from different ethnic groups, and how they can best be supported, as well as how to support the recovery of the health system going forward.

## Aims and Objectives

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[REACH-OUT](#) builds on the UK-REACH Study of COVID-19 in UK HCWs from diverse ethnic backgrounds, a mixed-methods study with 18,000+ participants. REACH-OUT aims to estimate the prevalence of long COVID among HCWs, characterise the syndrome, and understand the impacts of medium-term and post-acute/long COVID illness on the mental, physical, and occupational health of diverse communities of HCWs in the UK, and their work and home lives. The specific objectives are to:

- Conduct a systematic review and meta-analysis to estimate the prevalence of long COVID among HCWs globally and identify symptoms of long COVID (and their clustering)

- Use longitudinal survey data linked to health records to determine and identify factors that moderate the short- and medium-term impact of COVID illness on the mental and physical health, work, and home lives of ethnic minority HCWs.
- Carry out qualitative research with HCWs from diverse ethnic backgrounds who have had COVID-19 to investigate their experiences of COVID-19 illness, including persistent symptoms/long COVID, the impact on their mental and physical health, work, provision of care, and their home lives, support and coping mechanisms at work and home, and their perceptions of what could have been improved.

In May 2022, we published an Opinion piece in the BMJ, titled "Caring for the carers: understanding long covid in our diverse healthcare workforce" summarising the need for this study and outlining the methods in order to raise awareness of the study among healthcare professionals and academics. [Click here to read](#)

# Methods

REACH-OUT comprises of three work packages shown in Figure 1 and described below.

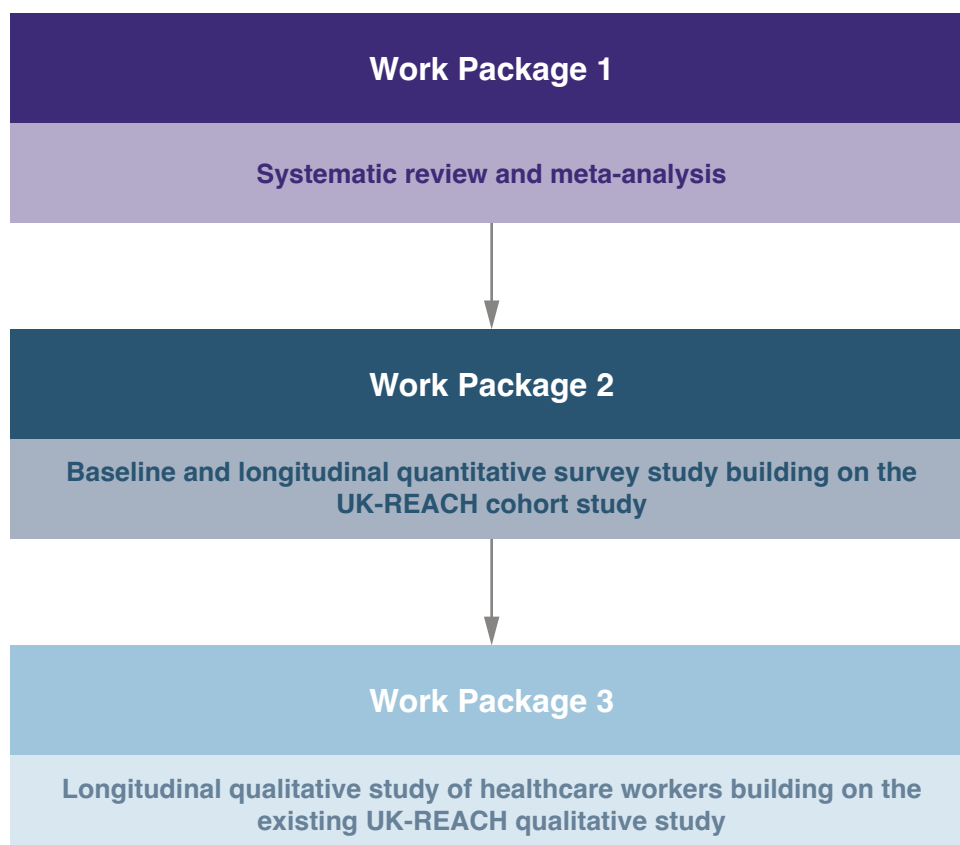


Figure 1: Overview of the REACH-OUT work packages

# Work package 1: Systematic review and meta-analysis of prevalence of long COVID among healthcare workers

The study protocol is registered with the International Registration of Systematic reviews (PROSPERO), a platform for the international registration of prospective systematic reviews (CRD42022312781). [Click here to access](#)

The systematic review and meta-analysis protocol entitled “Prevalence of long COVID among healthcare workers: a systematic review and meta-analysis protocol” has been submitted to BMJ Open for publication (May 27th, 2022) and is under review.

The aim of this systematic review and meta-analysis is to estimate the pooled prevalence and identify the symptoms of long COVID among HCWs infected with SARS-CoV-2 virus, globally. We will then stratify our results by country, age, sex, ethnicity, SARS-CoV-2 vaccination status and occupation.

## Objectives

1. Estimate the pooled prevalence of long COVID among HCWs with a history of SARS-CoV-2 infection globally.
2. Estimate the prevalence of long COVID among HCWs infected with a history of SARS-CoV-2 infection globally.
3. Identify the symptoms (and their clustering) among HCWs with long COVID.

## Protocol design and registration

The development and design of the study protocol was in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-analyses Protocol (PRISMA-P)<sup>18</sup>, and was registered with PROSPERO (CRD42022312781).

## Eligibility criteria

All peer-reviewed and pre-print articles reporting any primary data on the prevalence and/or the symptoms of long COVID following confirmed, probable or suspected SARS-CoV-2 infection among adult ( $\geq 16$  years old) HCWs (clinical and non-clinical staff), worldwide such as mixed-methods studies, observational studies (including cross-sectional studies, retrospective and prospective cohort studies), case-control studies, and randomised and non-randomised controlled trials will be included.

Following the NICE definition of post-COVID-19 syndrome, we define long COVID

in this review as persistent/prolonged (constant, fluctuating or relapsing) symptoms and/or functional disability following SARS-CoV-2 infection for equal to or more than four weeks from onset of symptoms or from time of diagnosis, in people where the infection is self-reported, clinically diagnosed, and/or diagnosed through a laboratory test. As definitions have varied and changed overtime, we will also include any study that defines/reports the condition as 'long COVID' or persistent symptoms following SARS-CoV-2 infection in addition to studies reporting symptoms that align with our definition (even if studies have not defined it as 'long COVID').

Qualitative study designs not reporting prevalence data, and secondary analysis (i.e., systematic reviews), will be excluded. Correspondence pieces and articles about predictive modelling, basic science or using animal data will be excluded.

### Information sources

The following databases will be searched for articles, from the 31st of December 2019 onward MEDLINE (via Ovid), CINAHL (via EBSCO), EMBASE (via Ovid), PsycINFO (via EBSCO) and medRxiv (preprint server).

The reference lists of eligible articles will also be searched manually to identify additional relevant studies, not identified in the original database search.

### Search strategy

The PRISMA-Search Reporting Extension (PRISMA-S)<sup>19</sup> and the Peer Review of Electronic Search Strategies (PRESS) Evidence-Based Checklist<sup>20</sup> will be used to ensure the search strategy covers the review questions appropriately. A Boolean search strategy will be used with a combination of Medical Subject Headings (MeSH) and relevant text words to search systematically for relevant studies. The asterisk will be used for abridged terminology. Search terms have been created in consultation with the research team and a research librarian to ensure that all relevant search terms are included, to develop a successful search strategy for each source of information and, therefore, to enhance the transparency and comprehensiveness of the review.<sup>21</sup> Search terms were developed from reviewing relevant research, systematic reviews, and reports. The search terms will be piloted several times to refine their sensitivity and specificity before the searches are conducted.

A detailed search terms and strategy table will be developed for the four databases. An alert will be set for the databases to allow the reviewer (AA) to remain up to date with the medical literature currently being published.

### Selection process

All studies identified using our search strategy will be independently assessed for eligibility through title and abstract screening by a team of eight researchers due to the urgency of this study, followed by a full text screening, carried out by a minimum of two researchers and according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist.

### Data items

For each eligible study, we will extract the following data using a structured piloted data extraction form in Microsoft Office Excel with the fields: title, author name(s), author contact details, year of publication, journal name, study design, country setting/context, data collection years (start date and end date), inclusion criteria, exclusion criteria, sample size (N), participant characteristics/demographics (e.g., age, sex, ethnicity, occupational role, existing co-morbidities, hospital (re)admission), symptoms of long COVID, cases of long COVID (n), the prevalence of long COVID, and prevalence of long COVID by age, sex, country, ethnicity and vaccination status.

### Data collection process

At least four researchers will undertake data extraction independently, and discrepancies will be identified and resolved through discussion with the whole research team. Missing data in selected studies will be requested from study authors, where possible.

### Outcomes and prioritization

Our primary outcome is the prevalence of long COVID among HCWs around the world. We will be looking at differences in prevalence by age, sex, country, ethnicity and vaccination status. Additional outcomes include (1) the nature and severity of long COVID symptoms and their clustering and (2) the trajectory of the symptoms of long COVID

### Quality assessment

While extracting the data, the risk of bias will be assessed in relation to the review questions. The Joanna Briggs Institute (JBI) critical appraisal checklist for prevalence studies will be used for each study which will enable us to distinguish between reliable studies, and studies with a strong possibility of bias, in the data synthesis stage. A discussion between the researchers will be conducted for any disagreements that occur during the quality appraisal, and consensus will be achieved. Quality scores for the results of the assessment will be reported in a table. Studies will not be excluded on the basis of quality. However, sensitivity analyses will be carried out to examine the impact of study quality on the outcomes.

### Data synthesis

A meta-analysis of the data will be carried out using Stata 16.1 to calculate pooled estimates for the prevalence of long COVID following SARS-CoV-2 infection among HCWs infected, globally, if appropriate and feasible given the data. The results will be presented with a 95 % confidence interval (CI) as an estimated effect across studies. Heterogeneity will be assessed through the use of  $I^2$  statistic.

Where appropriate, sub-group analysis will be carried out for the pooled prevalence of long COVID in relation to country and ethnicity.

## Work package 2: Baseline and longitudinal quantitative survey study of healthcare workers from diverse ethnic backgrounds who have had COVID-19

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The aim of this research study is to estimate the prevalence of long COVID among HCWs in the UK-REACH cohort study, characterise the syndrome, and understand the impacts of medium-term and post-acute/long COVID illness on the mental, physical, and occupational health of diverse communities of HCWs in the UK, and their work and home lives.

### Objectives

1. Analyse data from three previous questionnaire data from the UK-REACH cohort study to estimate the prevalence of long COVID in HCWs within the cohort, and whether this differs by age, sex, ethnicity and occupation.
2. Conduct further questionnaires to understand the short- and medium-term impacts of long COVID within the cohort.

### Study design

The study will build on the UK-REACH cohort and employ a national prospective longitudinal cohort study in all four nations of the UK.

### Data collection and data analysis

Data from questionnaires 1, 2 and 3 of the UK-REACH study are already linked together and available for analysis. For questionnaires 1, 2 and 3, approximately 30%, 27% and 27.3% were from ethnic minority groups, respectively. Linking the three questionnaires, a total of 3,762 participants answered the ethnicity question on all three questionnaires. Of which, around 25.5% were from ethnic minority backgrounds (16.6% Asian, 3.4% Black, 4% Mixed, 1.5% Other) as shown in figure 2. These questionnaires will be analysed individually and when linked together to estimate the baseline prevalence of long COVID, persistent symptoms and symptom clusters.

The longitudinal study consists of approximately 18,000 HCWS. A total of 5,632 consented participants completed questionnaire 2 (response rate = 31.4% of consented participants) and 6,535 completed questionnaire 3 (response rate = 36.5% of consented participants). Due to the nature of longitudinal studies, drop-out of participants is common and expected. In addition, HCWs in particular face unique pressures, limiting the amount of time available for them to complete the questionnaires. However, We are analysing each questionnaire by ethnicity and we have not noticed a drop-out from ethnic minority HCWs.

We will collect further questionnaires of the UK-REACH cohort study in the next two years and link data to electronic healthcare records. We will re-consent those who already participated in the UK-REACH study for future questionnaires.



## Methods

We will repeat questions from questionnaires 1, 2 and 3 about COVID-19 infection and symptoms, long COVID, mental and physical health, quality of life, work and home life, and discrimination (see UK-REACH data dictionary).

We will ask new detailed questions about the availability and effectiveness of treatments and support in and outside work for managing the impacts of acute and long COVID.

Questionnaire 4, with a focus on post-COVID-19 outcomes, including long COVID and workforce recovery in HCWs from diverse ethnic backgrounds ran from June to October 2022.

### The Ethnicity of Respondents from linked data

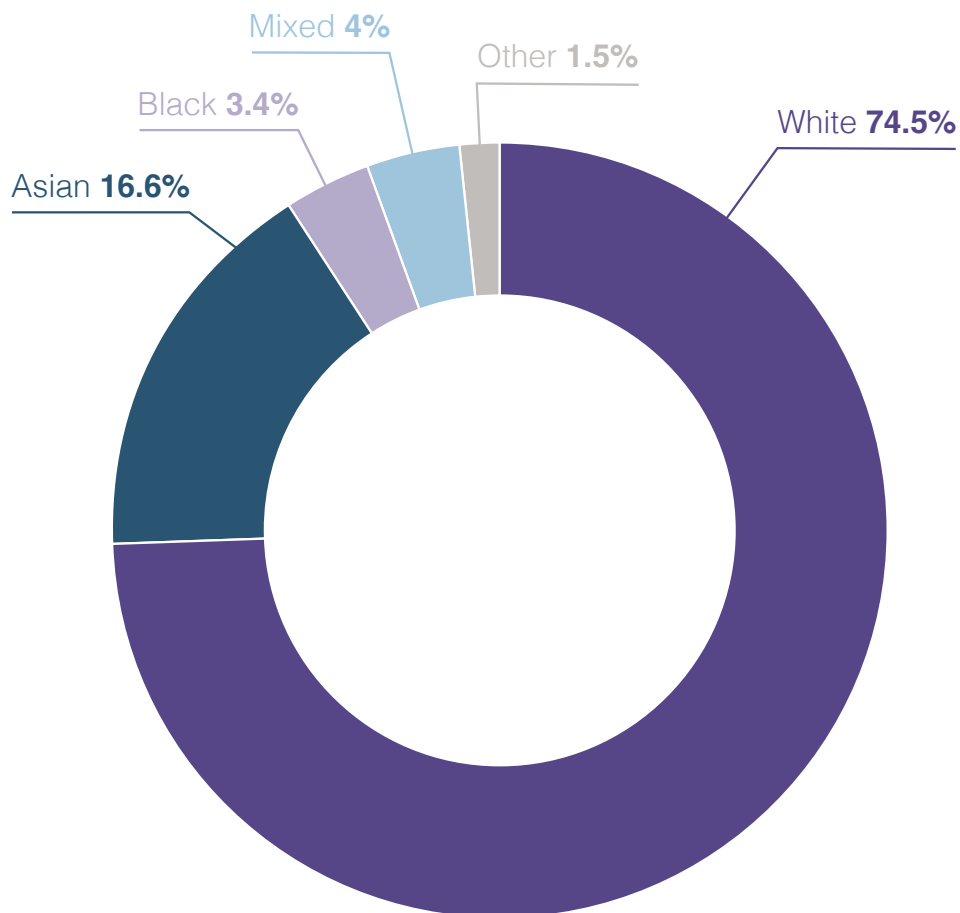


Figure 2: The percentage of ethnicity of linked data from the three previous questionnaires



## Work package 3: Longitudinal qualitative study of healthcare workers building on the existing UK-REACH qualitative study of UK healthcare workers

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The aim of this study is to investigate the experiences of HCWs from diverse ethnic backgrounds who have had COVID-19, including long COVID, and the impact on their physical and mental health, work, and wider community.

### Objectives

1. Conduct in-depth semi-structured interviews and focus groups to examine:
  - HCWs' experiences of acute infection (initial COVID-19 illness);
  - Whether participants have experienced any persistent symptoms/long COVID, and what these symptoms have been like over time;
  - The impact of acute and long COVID on mental and physical health, their work life, provision of care, and their home lives.
2. Carry out in-depth semi-structured interviews and focus groups with household members and healthcare colleagues to explore:
  - The impact of HCWs' acute infection and long COVID on household members, including home life, mental and physical health and well-being, and wider community and work context;
  - Healthcare colleagues' perceptions around the impact of HCWs' acute infection and long COVID on the workplace, including provision of care, implications for healthcare colleagues' work responsibilities, and the wider work and patient community;
  - Healthcare/occupational changes that have occurred or strategies that have been implemented by healthcare colleagues or the organisation in response to HCWs with acute or long COVID;
  - Key support or coping mechanisms of household members or healthcare colleagues.

### Data collection and data analysis

We will purposively sample approximately 15 HCWs with previous COVID-19 infection (guided by saturation), in relation to ethnic background, gender, job role, and age. Interviews and focus groups will take place in Autumn 2022 with follow-up in Summer 2023 (30 – 40 interviews in total, guided by saturation). Participants will be recruited from among the 164 HCWs interviewed for UK-REACH; we will invite those who have had COVID-19 (with or without persistent symptoms) to participate, and re-contact remaining participants to invite any who have had COVID-19 since they were initially interviewed. If necessary, we will also invite cohort study participants who report persistent symptoms to participate.

## Professional Expert Panel

We also aim to recruit approximately five household and healthcare colleague participants from the Autumn 2022 cohort and another three from Summer 2023 to participate in interviews in Winter 2023/24 (additional 10 participants). We will recruit household members through snowball sampling (for example inviting participants to tell their family members about the research), and engagement with our network of community groups. We will recruit healthcare colleagues from the original UK-REACH cohort, professional groups, and snowball sampling. Data will be collected remotely (e.g., via MS Teams) and recorded. Data will be transcribed, anonymised, and analysed using framework and thematic analysis.

# Professional Expert Panel

A webpage for REACH-OUT was launched as part of UK-REACH website (<https://www.uk-reach.org/main/Reachout/Index>).

To increase engagement with HCWs, NHS partners, healthcare worker unions and other key policy stakeholders, Amani Al-Oraibi presented about the project at the Health and Wellbeing Conference by FNA-UK (May 22, 2022) at the Royal College of Physicians in London.

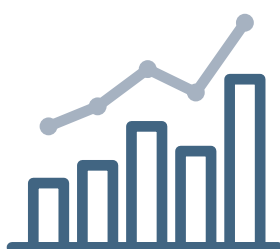
In order to achieve the aims of our research, we have a national engagement and involvement group which includes healthcare professionals working in clinical and non-clinical roles. This group, referred to as the Professional Expert Panel (PEP), has been created to enable HCWs from different roles and ethnicities to inform and support the investigators of REACH-OUT by bringing in their unique insights and perspectives, including their lived experiences with long COVID and how COVID-19 has impacted their home and work lives in the long term.

We will have four biannual stakeholder and professional expert panel group meetings, for which we will summarise a synthesis of the quantitative and qualitative findings and develop policy recommendations.

Meetings will be followed by a rapid policy-focussed report. Data will also be disseminated to the wider community, healthcare, and academic groups through reports and scientific publications.

# What Comes Next?

The contents of this six-month report represent the description and methods of REACH-OUT. So far we have published an opinion piece in the BMJ highlighting the need for the study and raising awareness among key stakeholder groups; registered WP1 protocol for the systematic review; completed the literature search; began data extraction and synthesis; and designed and launched the questionnaire with currently close to 3500 respondents. Our next progress report (in six months) will be policy-focused and will include preliminary findings from WP1, WP2 and progress on WP3 which will be discussed with the PEP members. Our next steps are shown in Figure 3.



1

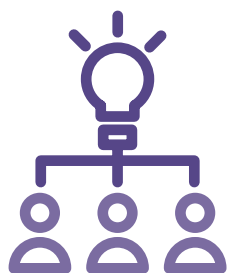
a) Finalise the screening, data extraction, quality assessment, and meta-analysis for WP1.

b) Analyse the baseline questionnaire data for phase 1 of WP2.



2

Prepare ethics documents for WP3 (i.e., interview guide, participant information sheet, consent forms, email invites).



3

Engage with the PEP group to discuss the analysis findings, qualitative interview guide and brain storm about dissemination opportunities.

Figure 3: REACH-OUT next steps

# References

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