

# **UK-REACH: transition to post-COVID focus**

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**Rachael Dowling**  
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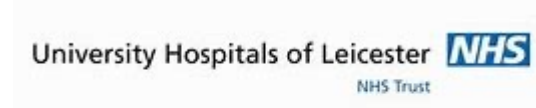
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**Ted Dove**  
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**Amit Gupta**



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**David Jenkins**  
**Prashanth Patel**  
**Amit Gupta**



**Member of the UK-REACH PEP and STAG group**

## Our Partners



# Areas to cover today...

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**Healthcare workers**



**Recap**



**Emerging data**

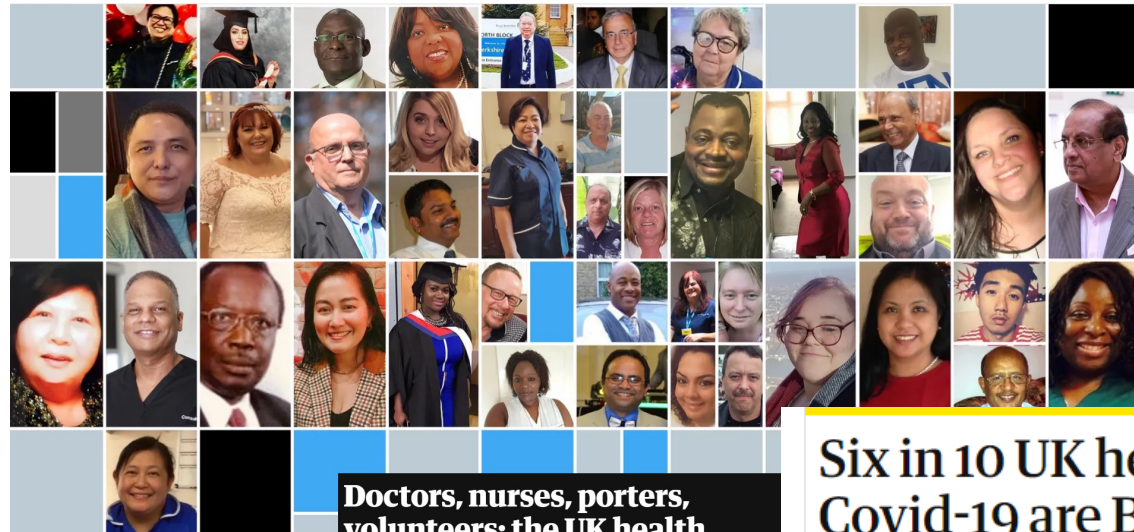


**Looking forward/Summary**

# Healthcare workers

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# Healthcare workers and COVID-19: early concern



▲ Some of the many health workers whom Britain has lost.  
**Doctors, nurses, porters, volunteers: the UK health workers who have died**

**Six in 10 UK health workers killed by Covid-19 are BAME**

**BAME healthcare workers are more likely to get Covid-19 than white medics, study reveals**

# Healthcare workers and COVID-19: limited data

Exclusive: deaths of NHS staff from covid-19 analysed

By Tim Cook, Emira Kursumovic, Simon Lennane | 22 April 2020

	Nurses and midwives	Healthcare support workers	Doctors and dentists	Other staff
Number	35	27	19	25
Age; yrs median (IQR [range])	51 (46-57 [23-70])	54 (42-64 [21-84])	62 (54-76 [36-79])	51 (34-58 [29-65])
Male; %	39	22	94	55
BAME; %	71	56	94	29
BAME workforce; %*	20	17	44	-

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## United Kingdom Research study into Ethnicity and COVID-19 outcomes in Healthcare workers



# UK-REACH: Urgent Public Health Study



[Home](#) [Partners](#) [Study team](#) [Contact](#)



- 1. If, how, and why, ethnicity affects COVID-19 clinical outcomes in HCWs**
- 2. Impact of COVID-19 on the physical and mental health of Black, Asian and ethnic minority HCWs**

# UK-wide and multiple partners

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**WP1**

- Expedited linkage and analysis of HCW datasets

**WP2**

- Longitudinal cohort study looking at changes in health outcomes, social circumstances and professional roles of HCWs

**WP3**

- Ethical and legal implications of linking professionals' registration data to healthcare data

**WP4**

- Qualitative research focused on understanding risk perceptions, support and coping mechanisms relevant to COVID-19

**WP5**

- Key recommendations through sustained joint working with a multi-professional, national stakeholder group


**WP6**

- Immune response to COVID-19 infection/vaccination and differences by ethnicity in HCWs (*National Core Studies funded*)


# WP2: Longitudinal cohort study



**Email invites**

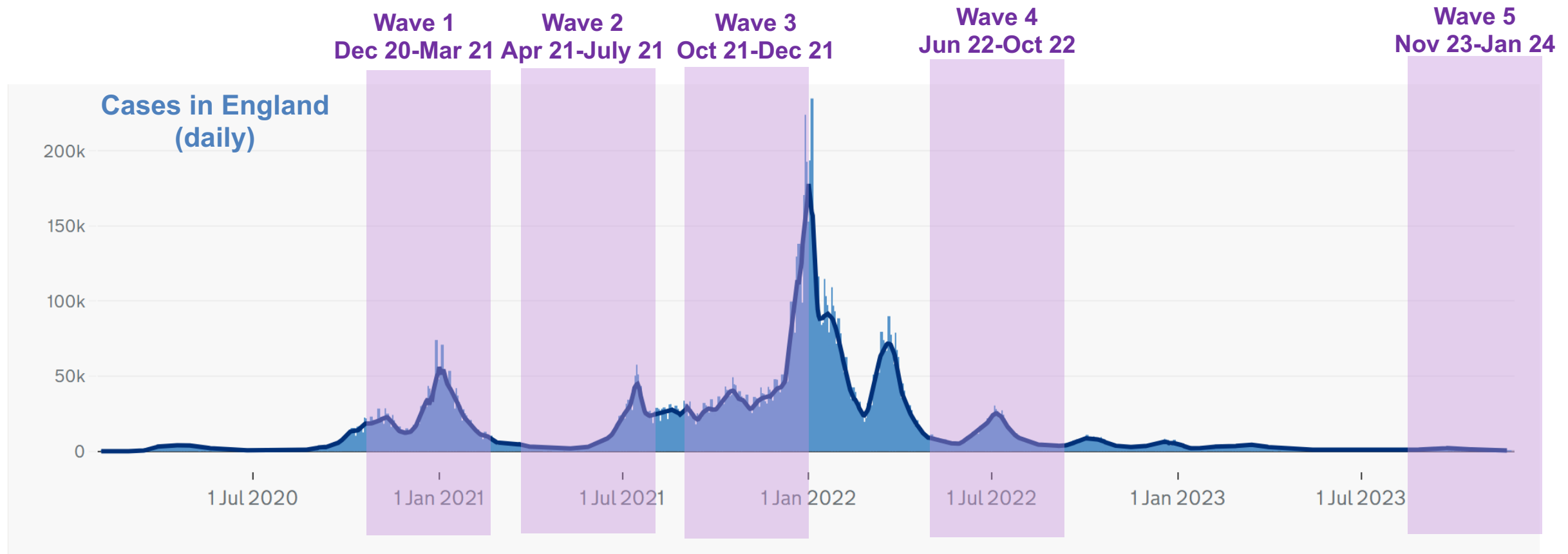


**Online consent  
Questionnaire**



**Demographics  
Job role and work  
Living arrangements  
Health  
Access to PPE  
Vaccine attitudes**

# Five waves of data collection to date



## Cohort Profile: The United Kingdom Research study into Ethnicity and COVID-19 outcomes in Healthcare workers (UK-REACH)

Luke Bryant<sup>1</sup>, Robert C Free<sup>1,2†</sup>, Katherine Woolf<sup>3</sup>, Carl Melbourne<sup>4</sup>, Anna L Guyatt<sup>4</sup>, Catherine John<sup>4</sup>, Amit Gupta<sup>5</sup>, Laura J Gray<sup>6</sup>, Laura Nellums<sup>7</sup>, Christopher A Martin<sup>1,8</sup>, J Chris McManus<sup>3</sup>, Claire Garwood<sup>1</sup>, Vishant Modhwadia<sup>1</sup>, Sue Carr<sup>9,10</sup>, Louise V Wain<sup>4</sup>, Martin D Tobin<sup>4</sup>, Kamlesh Khunti<sup>11</sup>, Ibrahim Akubakar<sup>12</sup> and Manish Pareek<sup>1,8\*</sup>; on behalf of the UK-REACH Collaborative Group<sup>†</sup>

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# Research in a rapidly changing environment

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**Revealed: record 170,000 staff leave NHS in England as stress and workload take toll**

**Health service shown to be under some of worst pressure in its history in week Rishi Sunak launched plan to retain and recruit workforce**

**Record 7.68m people waiting to start routine hospital treatment in England**

**July figure is up from 7.57m in June, says NHS England, and is highest number since records began in 2007**

Health

**Largest nursing strike in NHS history starts**

© 15 December 2022

Health

**Ministers set out plan to train and keep more NHS staff**

© 30 June

Health

**Junior doctor strike led to 175,000 cancellations**

© 18 March

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Cohort Profile: The United Kingdom Research study into Ethnicity and COVID-19 outcomes in Healthcare workers (UK-REACH)

## Cohort overview

Luke Bryant<sup>1</sup>, Catherine John<sup>2</sup>, Amit Gupta<sup>3</sup>, Laura J Gray<sup>4</sup>, Anna L Guyatt<sup>5</sup>, Christopher A Martin<sup>1,6</sup>, J Chris McManus<sup>3</sup>, Laura Nellums<sup>7</sup>, Christopher A Martin<sup>1,6</sup>, J Chris McManus<sup>3</sup>, Claire Garwood<sup>1</sup>, Vishant Modhawdia<sup>1</sup>, Sue Carr<sup>8,10</sup>, Louise V Wain<sup>4</sup>, Martin D Tobin<sup>4</sup>, Kamlesh Khunti<sup>9</sup>, Ibrahim Akubakar<sup>12</sup> and Manish Pareek<sup>1,6\*</sup>; on behalf of the UK-REACH Collaborative Group

Hesitancy for receiving regular SARS-CoV-2 vaccination in UK healthcare workers: a cross-sectional analysis from the UK-REACH study

## Vaccines/Vaccine Hesitancy

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## Risk Assessments

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## Access to PPE

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Risk factors associated with SARS-CoV-2 infection in a multiethnic cohort of United Kingdom (UK-REACH): A cross-sectional analysis

## COVID infection risk

Christopher A. Martin<sup>1,2</sup>, Daniel Pan<sup>1,2</sup>, Carl Melbourne<sup>3</sup>, Lucy Teece<sup>4</sup>, Avinash Aujayeb<sup>5</sup>, Rebecca F. Baggeley<sup>6</sup>, Luke Bryant<sup>7</sup>, Sue Carr<sup>8,9</sup>, Bindu Gregory<sup>10</sup>, Amit Gupta<sup>11</sup>, Anna L. Guyatt<sup>12</sup>, Catherine John<sup>13</sup>, J. Chris McManus<sup>14</sup>, Joshua Nazareth<sup>15</sup>, Laura B. Nellums<sup>16</sup>, Rubina Reza<sup>17</sup>, Sandra Simpson<sup>18</sup>, Martin D. Tobin<sup>19</sup>, Katherine Woolf<sup>20</sup>, Stephen Zingwe<sup>21</sup>, Kamlesh Khunti<sup>22</sup>, Keith B. Abrams<sup>23</sup>, Laura J. Gray<sup>24</sup>, Manish Pareek<sup>1,2\*</sup>, UK-REACH Study Collaborative Group

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Luke Bryant<sup>1,†</sup>, Robert C Free,<sup>1,2†</sup> Katherine Woolf,<sup>3</sup> Carl Melbourne,<sup>4</sup> Anna L Guyatt<sup>5,†</sup>, Catherine John,<sup>4</sup> Amit Gupta,<sup>9</sup> Laura J Gray,<sup>6</sup> Laura Nellums,<sup>7</sup> Christopher A Martin,<sup>1,8</sup> J Chris McManus,<sup>3</sup> Claire Garwood,<sup>1</sup> Vishant Modhawdia,<sup>1</sup> Sue Carr,<sup>9,10</sup> Louise V Wain,<sup>4</sup> Martin D Tobin,<sup>4</sup> Kamlesh Khunti<sup>11</sup>, Ibrahim Akubakar<sup>12</sup> and Manish Pareek<sup>1,8\*</sup>; on behalf of the UK-REACH Collaborative Group<sup>†</sup>

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Katherine Woolf<sup>1,†</sup>, I Chris McManus<sup>2,†</sup>, Christopher A Martin<sup>3,†</sup>, Laura B Nellums<sup>4,†</sup>, Anna L Guyatt<sup>5</sup>, Carl Melbourne<sup>6</sup>, Luke Bryant<sup>7</sup>, Mayuri Gogoi<sup>8</sup>, Fatimah Wobi<sup>9</sup>, Amani Al-Oraibi<sup>10</sup>, Osama Hassan<sup>11</sup>, Amit Gupta<sup>12</sup>, Catherine John<sup>13</sup>, Martin D Tobin<sup>14</sup>, Sue Carr<sup>15,†</sup>, Sandra Simpson<sup>16</sup>, Bindu Gregory<sup>17</sup>, Avinash Aujayeb<sup>18</sup>, Stephen Zingwe<sup>19</sup>, Rubina Reza<sup>20</sup>, Laura J Gray<sup>21</sup>, Kamlesh Khunti<sup>22</sup>, Manish Pareek<sup>23,†</sup>, On behalf of the UK-REACH Study Collaborative Group<sup>†</sup>

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## Investigating the impact of financial concerns on symptoms of depression in UK healthcare workers: data from the UK-REACH nationwide cohort study

Martin McBride<sup>†</sup>, Christopher A. Martin<sup>†</sup>, Lucy Teece, Patricia Irizar, Megan Batson, Susie Lagrata, Padmasayee Papineni, Joshua Nazareth, Daniel Pan, Alison Leary, Katherine Woolf and Manish Pareek, the UK-REACH Study Collaborative Group

## Hesitancy for receiving regular SARS-CoV-2 vaccination in UK healthcare workers: a cross-sectional analysis from the UK-REACH study

Neyme Veli<sup>1,2†</sup>, Christopher A. Martin<sup>1,2†</sup>, Katherine Woolf<sup>3</sup>, Joshua Nazareth<sup>1,2</sup>, Daniel Pan<sup>1,2</sup>, Amani Al-Oraibi<sup>1</sup>, Rebecca F. Baggaley<sup>1</sup>, Luke Bryant<sup>1</sup>, Laura B. Nellums<sup>4</sup>, Laura J. Gray<sup>5</sup>, Kamlesh Khunti<sup>6</sup>, Manish Pareek<sup>1,2,7</sup> and The UK-REACH Study Collaborative Group

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## Discrimination, feeling undervalued, and healthcare workforce attrition: an analysis from the UK-REACH study

Christopher A Martin, Asta Medisauskaitė, Mayuri Gogoi, Lucy Teece, Joshua Nazareth, Daniel Pan, Sue Carr, Kamlesh Khunti, Laura B Nellums, Katherine Woolf, \*Manish Pareek, on behalf of the UK-REACH Study Collaborative Group

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

## Coverage, completion and outcomes of COVID-19 risk assessments in a multi-ethnic nationwide cohort of UK healthcare workers: a cross-sectional analysis from the UK-REACH Study

Christopher A Martin,<sup>1,2</sup> Katherine Woolf,<sup>3</sup> Luke Bryant,<sup>1</sup> Charles Goss,<sup>4</sup> Mayuri Gogoi,<sup>1</sup> Susie Lagrata,<sup>5</sup> Padmasayee Papineni,<sup>6</sup> Irtiza Qureshi,<sup>7</sup> Fatimah Wobi,<sup>8,9</sup> Laura Nellums,<sup>7</sup> Kamlesh Khunti,<sup>10</sup> Manish Pareek<sup>11</sup> and On behalf of the UK-REACH Study Collaborative Group

## Access to personal protective equipment in healthcare workers during the COVID-19 pandemic in the United Kingdom: results from a nationwide cohort study (UK-REACH)

Christopher A. Martin<sup>1,2†</sup>, Daniel Pan<sup>1,2†</sup>, Joshua Nazareth<sup>1,2†</sup>, Avinash Aujayeb<sup>3</sup>, Luke Bryant<sup>1</sup>, Sue Carr<sup>4,5</sup>, Laura J. Gray<sup>6</sup>, Bindu Gregory<sup>7</sup>, Amit Gupta<sup>8</sup>, Anna L. Guyatt<sup>9</sup>, Alan Gopal<sup>10</sup>, Thomas Hine<sup>9</sup>, Catherine John<sup>11</sup>, I. Chris McManus<sup>10</sup>, Carl Melbourne<sup>9</sup>, Laura B. Nellums<sup>11</sup>, Rubina Reza<sup>12</sup>, Sandra Simpson<sup>13</sup>, Martin D. Tobin<sup>14</sup>, Katherine Woolf<sup>10</sup>, Stephen Zingwe<sup>14</sup>, Kamlesh Khunti<sup>15</sup>, Manish Pareek<sup>12,†</sup> and On behalf of the UK-REACH Study Collaborative Group

### RESEARCH ARTICLE

## Risk factors associated with SARS-CoV-2 infection in a multiethnic cohort of United Kingdom healthcare workers (UK-REACH): A cross-sectional analysis

Christopher A. Martin<sup>1,2</sup>, Daniel Pan<sup>1,2</sup>, Carl Melbourne<sup>3</sup>, Lucy Teece<sup>4</sup>, Avinash Aujayeb<sup>5</sup>, Rebecca F. Baggaley<sup>6</sup>, Luke Bryant<sup>7</sup>, Sue Carr<sup>8,9</sup>, Bindu Gregory<sup>10</sup>, Amit Gupta<sup>11</sup>, Anna L. Guyatt<sup>12</sup>, Catherine John<sup>13</sup>, I. Chris McManus<sup>14</sup>, Joshua Nazareth<sup>15</sup>, Laura B. Nellums<sup>16</sup>, Rubina Reza<sup>17</sup>, Sandra Simpson<sup>18</sup>, Martin D. Tobin<sup>19</sup>, Katherine Woolf<sup>20</sup>, Stephen Zingwe<sup>21</sup>, Kamlesh Khunti<sup>22</sup>, Keith R. Abrams<sup>23</sup>, Laura J. Gray<sup>24</sup>, Manish Pareek<sup>1,2,†</sup>, UK-REACH Study Collaborative Group<sup>†</sup>

## Association between ethnicity and migration status with the prevalence of single and multiple long-term conditions in UK healthcare workers

Winifred Ekezie<sup>1,2,3,4†</sup>, Christopher A. Martin<sup>5,6,7,8†</sup>, Rebecca F. Baggaley<sup>7,8,9†</sup>, Lucy Teece<sup>9</sup>, Joshua Nazareth<sup>5,6,7,8</sup>, Daniel Pan<sup>5,6,7,8,10</sup>, Shirley Sze<sup>8,11</sup>, Luke Bryant<sup>6,7</sup>, Katherine Woolf<sup>12</sup>, Laura J. Gray<sup>7,9</sup>, Kamlesh Khunti<sup>1,2,3</sup>, Manish Pareek<sup>3,5,6,7,8</sup> and on behalf of the UK-REACH study collaborative group

Cohort Profile: The United Kingdom Research study into Ethnicity and COVID-19 outcomes in Healthcare workers (UK-REACH)

## Cohort overview

Luke Bryant<sup>1</sup>, Catherine John<sup>2</sup>, Amit Gupta<sup>3</sup>, Laura J Gray<sup>4</sup>, Anna L Guyatt<sup>5</sup>, Christopher A Martin<sup>1,6</sup>, J Chris McManus<sup>3</sup>, Laura Nellums<sup>7</sup>, Claire Garwood<sup>1</sup>, Vishant Modhawdia<sup>1</sup>, Sue Carr<sup>8,10</sup>, Louise V Wain<sup>4</sup>, Martin D Tobin<sup>4</sup>, Kamlesh Khunti<sup>11</sup>, Ibrahim Akubakar<sup>12</sup> and Manish Pareek<sup>1,2\*</sup>; on behalf of the UK-REACH Collaborative Group

Hesitancy for receiving regular SARS-CoV-2 vaccination in UK healthcare workers: a cross-sectional analysis from the UK-REACH study

## Vaccines/Vaccine Hesitancy

Neelme Verma<sup>1</sup>, Christopher A Martin<sup>1,2</sup>, Katherine Woolf<sup>3</sup>, Joshua Nazareth<sup>1,2</sup>, Daniel Pan<sup>1,2</sup>, Amani Al-Draibi<sup>1</sup>, Rebecca F Baggaley<sup>1</sup>, Luke Bryant<sup>1</sup>, Laura B Nellums<sup>4</sup>, Laura J Gray<sup>5</sup>, Kamlesh Khunti<sup>6</sup>, Manish Pareek<sup>1,2\*</sup> and The UK-REACH Study Collaborative Group

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## Access to PPE

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Discrimination, feeling undervalued, and healthcare workers' intentions to leave

## Discrimination: Workforce retention/intentions to leave

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Investigating the impact of financial concerns on symptoms of depression in UK healthcare workers: data from the UK-REACH nationwide cohort study

## Mental health/Financial concerns

Wahid Masoodi<sup>1</sup>, Christopher A Martin<sup>2</sup>, Daniel Pan<sup>3</sup>, Amani Al-Draibi<sup>4</sup>, Manish Pareek<sup>1,2\*</sup>, on behalf of the UK-REACH Study Collaborative Group

Association between ethnicity and migration status with the prevalence of single and multiple long-term conditions in UK healthcare workers

## Multiple long-term conditions/physical health

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### Mental health/Financial concerns

Manish Pareek, Christopher A. Martin, Katherine Woolf, Luke Bryant, Sue Carr, Laura J. Gray, Amit Gupta, Anna L. Guyatt, Catherine John, Carl Melbourne, Christopher A. Martin, Joshua Nazareth, Laura B. Nellums, Martin D. Tobin, Daniel Pan, Sarah Wood, and Manish Pareek; on behalf of the UK-REACH Study Collaborative Group



# Investigating the impact of financial concerns on symptoms of depression in UK healthcare workers: data from the UK-REACH nationwide cohort study

Published online by Cambridge University Press: 12 July 2023

Martin McBride , Christopher A. Martin, Lucy Teece, Patricia Irizar, Megan Batson, Susie Lagrata, Padmasayee Papineni, Joshua Nazareth, Daniel Pan, Alison Leary, Katherine Woolf, Manish Pareek and the UK-REACH Study Collaborative Group

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# Financial concerns

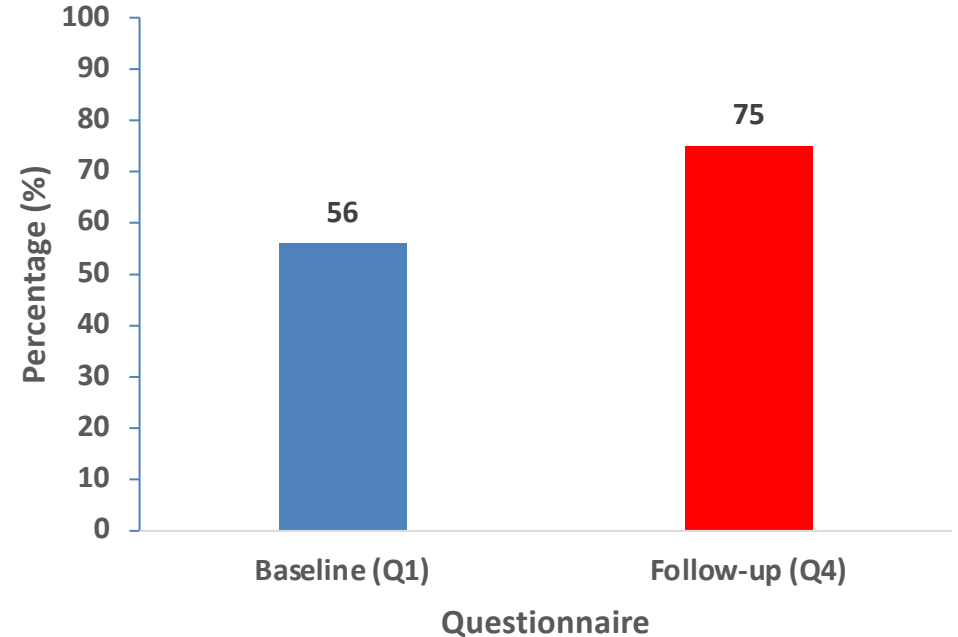
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- **Analysis using questionnaire data from baseline (December 2020-March 2021) and wave 4 (June-October 2022)**
- **Are a HCWs concerns about their future financial situation associated with the development of depressive symptoms (as defined by meeting or exceeding PHQ2 screening criteria)?**
- **How worried are you about your future financial situation? (from Q1)**
  - **1, Not at all | 2, A little bit | 3, Moderately | 4, Quite a bit | 5, Extremely | 99, Prefer not to answer**
- **Main outcome (from Q4)**
  - **PHQ2 – binary -  $<3$  vs  $\geq 3$**

# Financial concerns

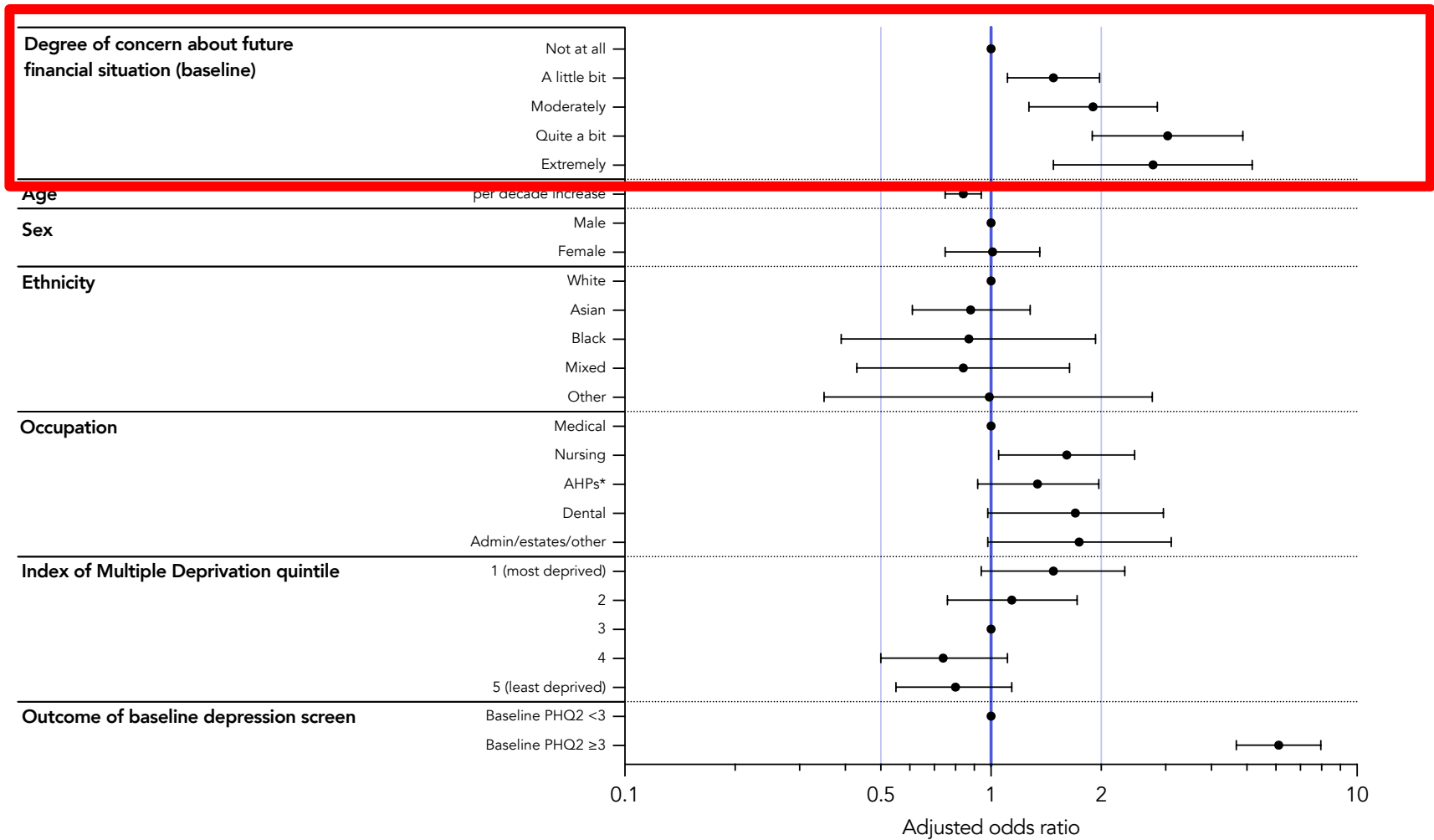
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- **At baseline**
  - **12.1%** - screening criteria for depression
  - **Financial concerns**





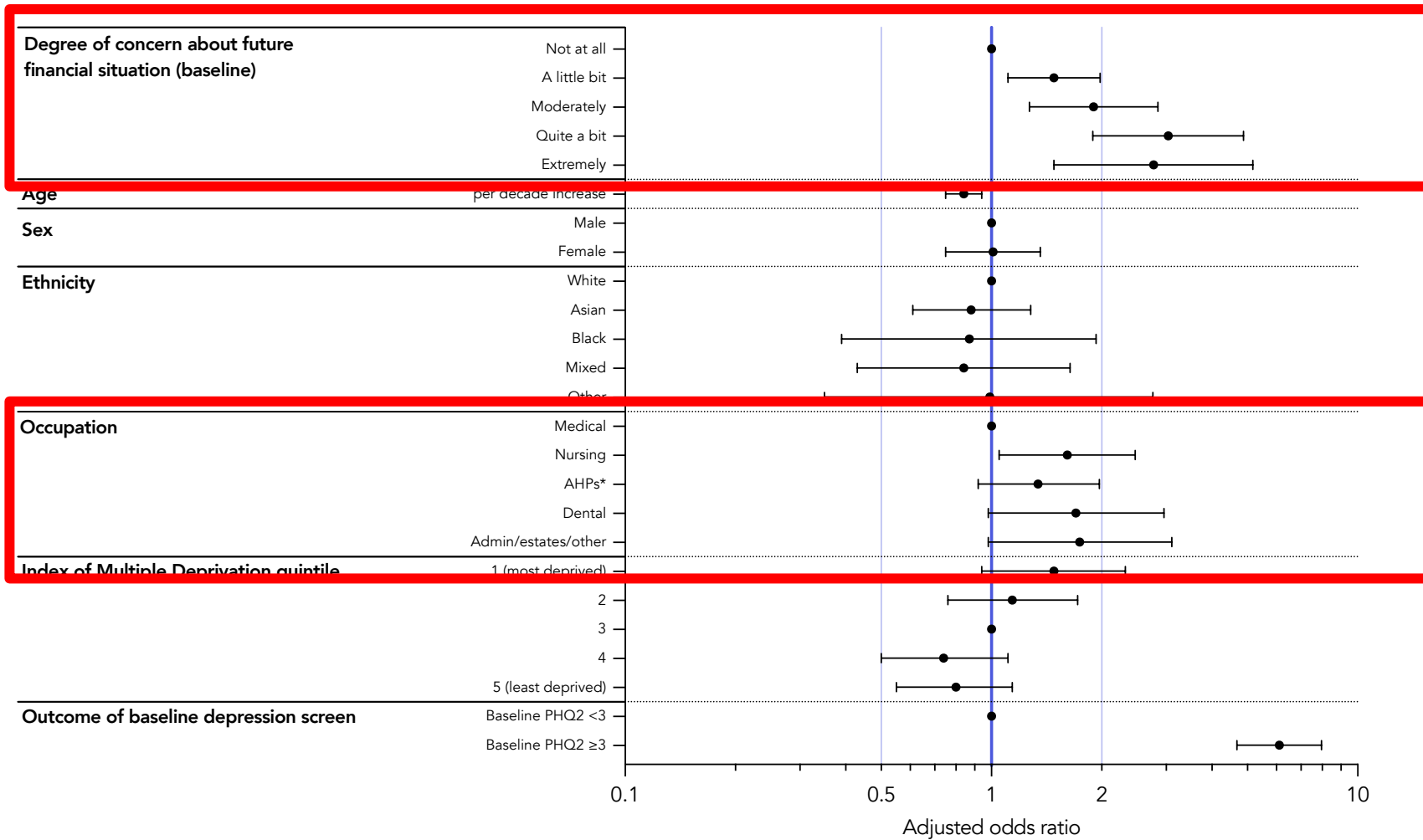
**Figure 1. Multivariable logistic regression demonstrating the relationship between financial concerns at baseline, and meeting depression screening criteria at follow up after adjustment for demographics, occupation and baseline depression screening outcome**



\*included in the AHPs group are healthcare scientists, pharmacists, ambulance workers and those in optical roles.

Figure 1 details the result of a multivariable logistic regression analysis. Results are displayed as adjusted odds ratios (circles) and 95% confidence intervals (bars). Circles without bars are shown for the reference group of a categorical variable. Odds ratios are mutually adjusted for all variables in the Figure.

**Figure 1. Multivariable logistic regression demonstrating the relationship between financial concerns at baseline, and meeting depression screening criteria at follow up after adjustment for demographics, occupation and baseline depression screening outcome**



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# Conclusions

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- **Financial concerns are increasing in prevalence and predict the later development of depressive symptoms in UK HCWs**
- **Those in nursing, midwifery and other allied nursing roles may have been disproportionately affected.**
- **Potential effects on sickness absence and staff retention.**
- **Policy makers should act to alleviate financial concerns to reduce the impact this may have on a workforce affected by understaffing.**

Cohort Profile: The United Kingdom Research study into Ethnicity and COVID-19 outcomes in Healthcare workers (UK-REACH)

## Cohort overview

Luke Bryant<sup>1</sup>, Carl Melbourne<sup>4</sup>, Anna L. Guyatt<sup>2</sup>, Catherine John<sup>2</sup>, Amit Gupta<sup>2</sup>, Laura J. Gray<sup>2</sup>, Laura Nellums<sup>7</sup>, Christopher A. Martin<sup>1,8</sup>, J. Chris McManus<sup>3</sup>, Claire Garwood<sup>1</sup>, Vishant Modhawadia<sup>1</sup>, Sue Carr<sup>9,10</sup>, Louise V. Wain<sup>4</sup>, Martin D. Tobin<sup>4</sup>, Kamlesh Khunti<sup>11</sup>, Ibrahim Akubakar<sup>12</sup> and Manish Pareek<sup>1,2\*</sup>, on behalf of the UK-REACH Collaborative Group

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
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[Christopher A Martin](#) • [Asta Medisauskaite](#) • [Mayuri Gogoi](#) • [Lucy Teece](#) • [Joshua Nazareth](#) • [Daniel Pan](#) • [Sue Carr](#) •  
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 [PlumX Metrics](#)

Martin CA, Medisauskaite A, Gogoi M, Teece L, Nazareth J, Pan D, et al. **Discrimination, feeling undervalued, and health-care workforce attrition: an analysis from the UK-REACH study.** *Lancet* 2023; 402(10405):845-848.

# Healthcare workforce attrition

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- **Cross-sectional analysis using questionnaire data from October – December 2021 (n=4,916)**
- **“Has the COVID-19 pandemic made you consider or act upon any of the following in relation to your work?”**
  - **Reducing hours / changing field / leaving healthcare / reducing clinical duties / early retirement / other**
- **Binary outcome – has considered or acted upon making changes (1) vs has not (0)**

# Healthcare workforce attrition

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- **2358 (48.0%) of 4916 staff considered or acted on changing or leaving their role (1668 [33.9%] considered and 690 [14.0%] acted on)**



# Demographics & occupation

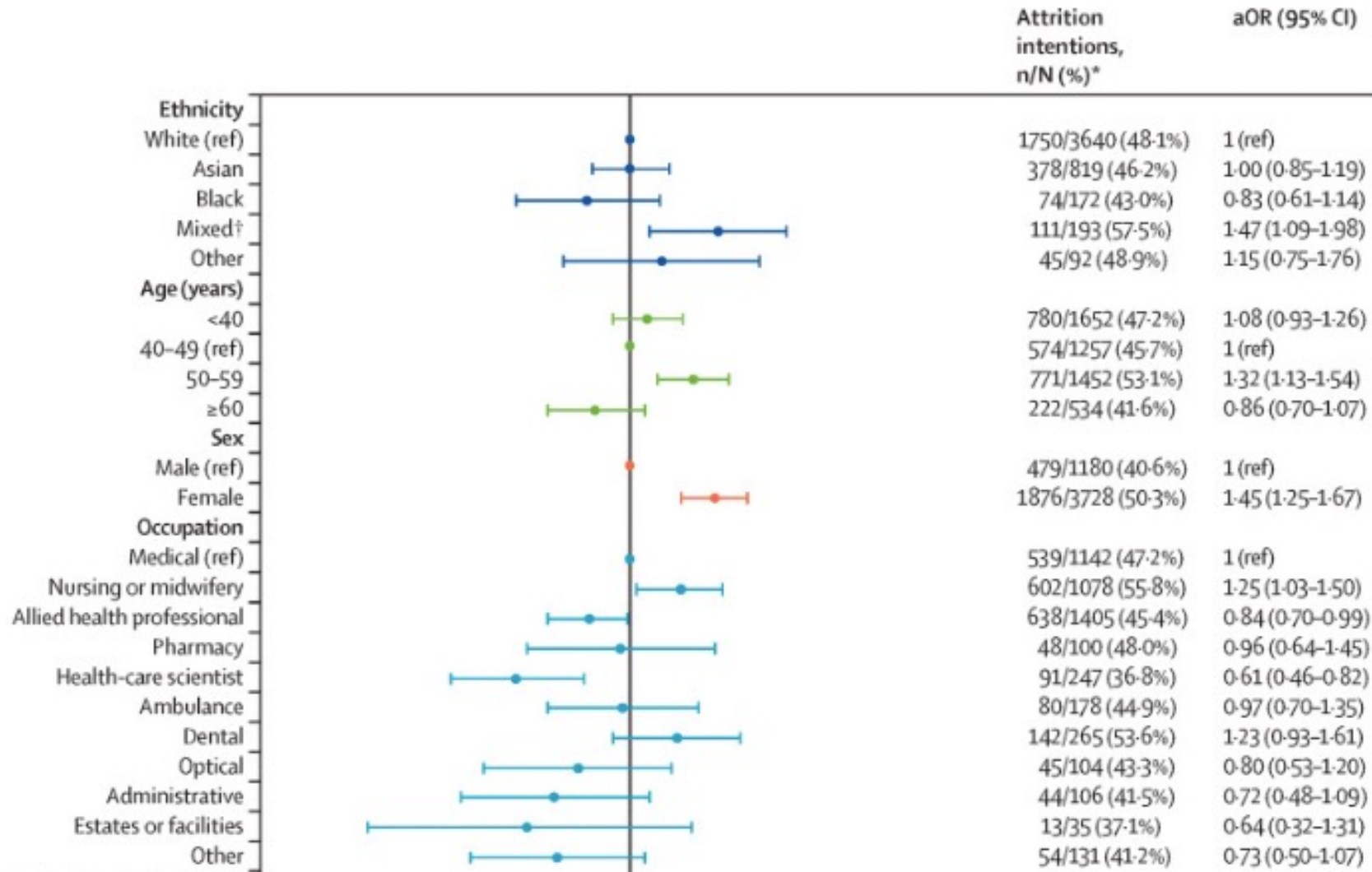
## INCREASED ODDS OF ATTRITION INTENTIONS/ACTIONS

**Mixed ethnicity (vs White)**

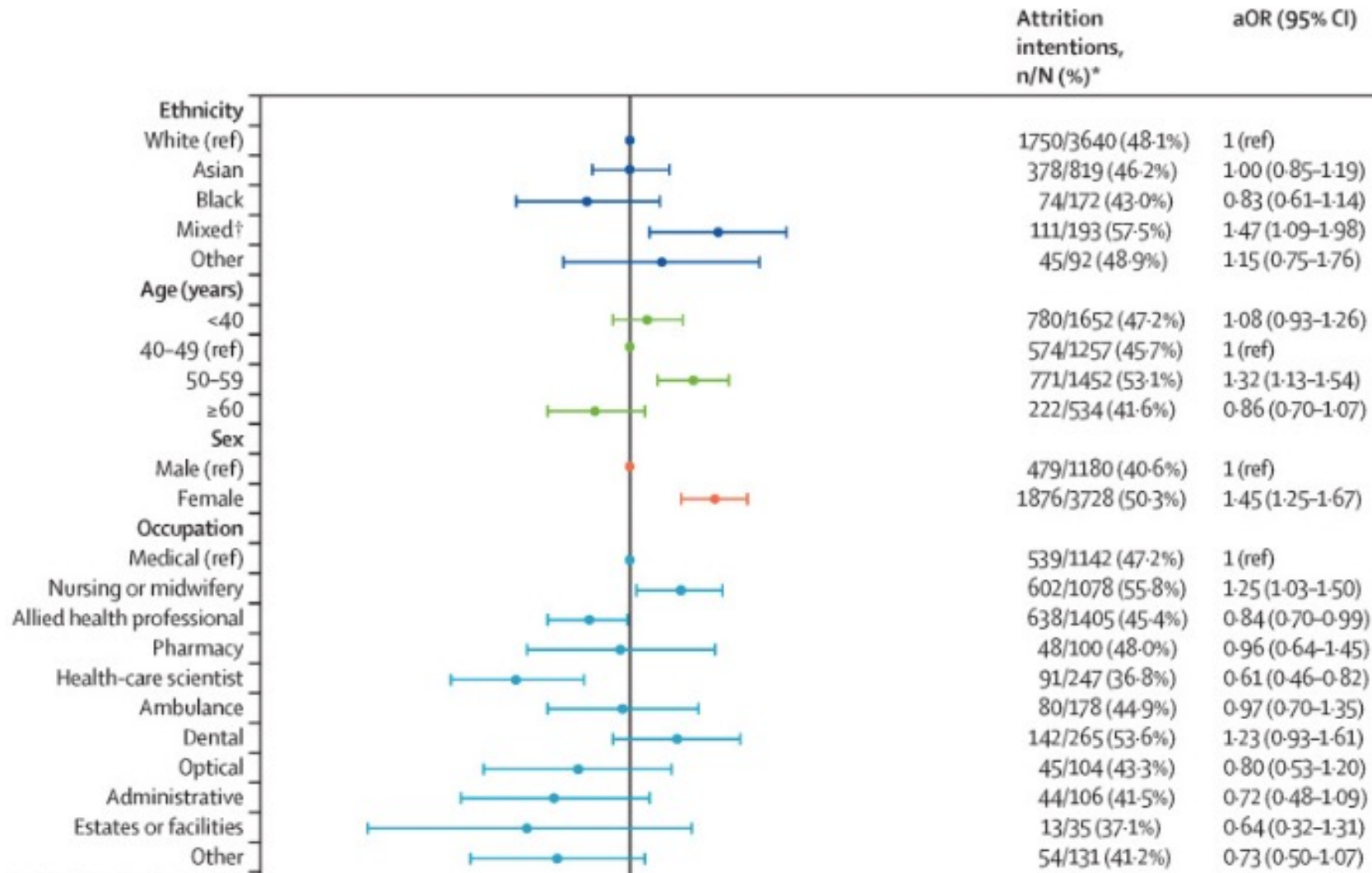
**Age 50 – 59 (vs 40 – 49)**

**Female (vs male)**

**Nursing or midwifery role  
(vs medical)**



# Demographics & occupation



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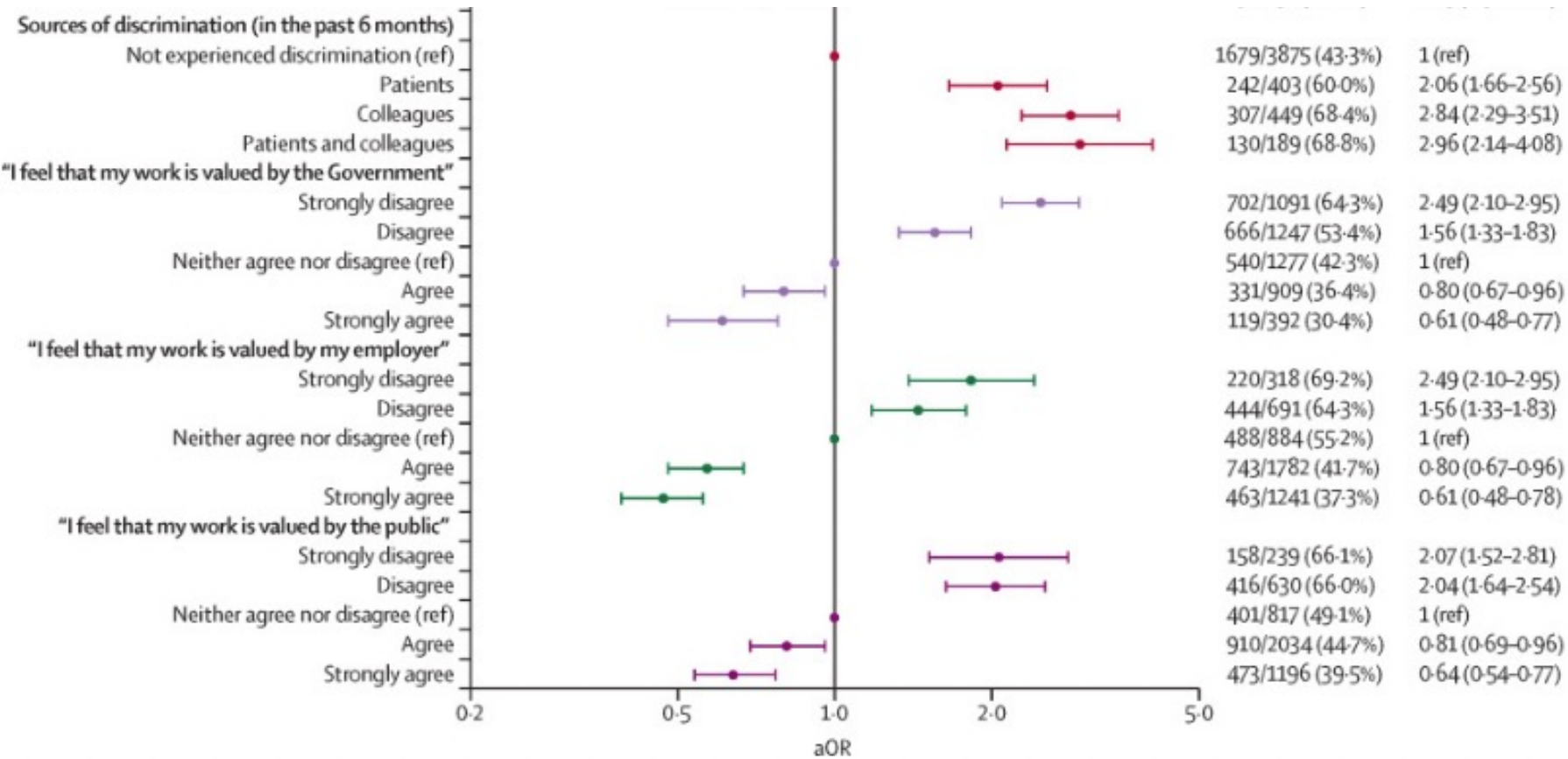
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## DECREASED ODDS OF ATTRITION INTENTIONS/ACTIONS

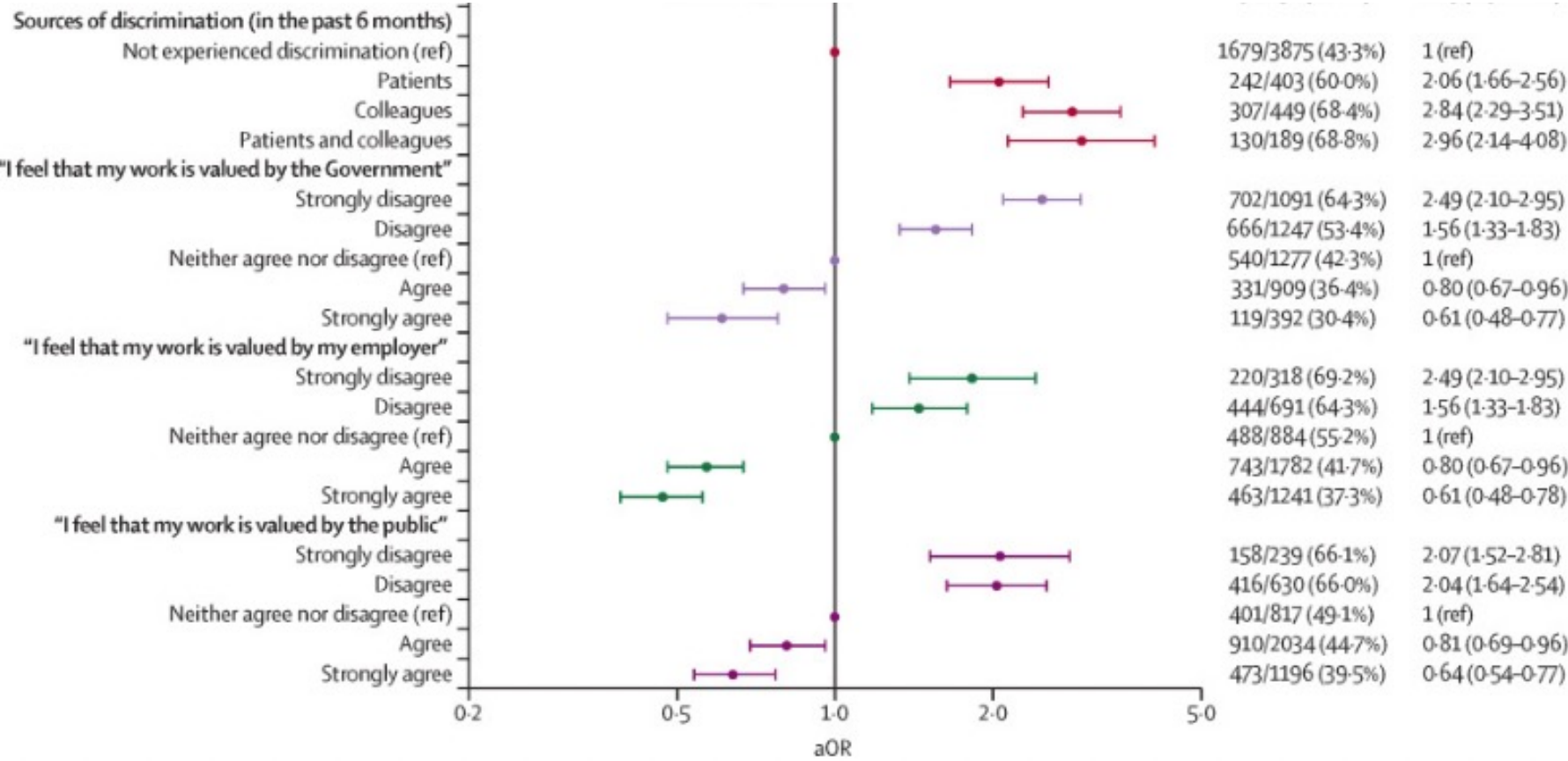
AHP role (vs medical)

Healthcare scientist role (vs medical)

# Discrimination and feeling valued



# Discrimination and feeling valued



**INCREASED ODDS OF  
ATTRITION  
INTENTIONS/ACTIONS**

**Having experienced  
discrimination in the last 6  
months**

**Feeling work is not valued  
by:**

- Government
- Employer
- Public

# Conclusions

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- **Nearly half of HCWs reported intentions to change or leave their healthcare role – more likely if from certain demographic/occupational groups, feeling undervalued, experiencing discrimination**
- **NHS is already short of 103 000 full-time equivalent staff, with shortages projected to grow to 179 000 in the next 2 years.**
- **Increasing burden on remaining staff, most likely exacerbating attrition and ultimately risking patient safety.**
- **Solutions needed at both national and organisational levels to reduce discrimination, improve staff satisfaction and wellbeing, and improve retention to prevent the workforce crisis from worsening.**

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### Mental health/Financial concerns

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# Association between ethnicity and migration status with the prevalence of single and multiple long-term conditions in UK healthcare workers



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# Multiple long-term conditions

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- Healthcare workers' (HCW) well-being has a direct effect on patient care
- Little known about the prevalence and patterns of long-term medical conditions in HCWs, especially those from ethnic minorities/migrants
- Analysis using questionnaire data from baseline (December 2020-March 2021)
- Outcomes
  - Presence/absence of particular comorbidities
  - MLTCs ( $\geq 2$  long-term conditions vs  $< 2$  long-term conditions)

**Table 2** Prevalence of long-term conditions (LTCs) reported by UK healthcare workers in the baseline questionnaire of the UK-REACH cohort study

Long-term condition	Frequency Total <i>n</i> = 12,100	% prevalence (95%CI)
Anxiety	1804	14.9 (14.3–15.6)
Asthma	1471	12.2 (11.6–12.8)
Depression	1296	10.7 (10.2–11.3)
Hypertension	1056	8.7 (8.2–9.2)
Diabetes	486	4.0 (3.7–4.4)
Immunosuppression	413	3.4 (3.1–3.8)
Heart disease	321	2.7 (2.4–3.0)
Cancer	111	0.9 (0.8–1.1)
Neurological	110	0.9 (0.8–1.1)
Other lung disease	109	0.9 (0.8–1.1)
Kidney disease	91	0.8 (0.6–0.9)
Liver disease	63	0.5 (0.4–0.7)
Stroke	44	0.4 (0.3–0.5)
Organ transplant	15	0.1 (0.1–0.2)

95%CI 95% confidence interval

**Table 2** Prevalence of long-term conditions (LTCs) reported by UK healthcare workers in the baseline questionnaire of the UK-REACH cohort study

Long-term condition	Frequency	% prevalence (95%CI)
Total n = 12 100		
Anxiety	1804	14.9 (14.3–15.6)
Asthma	1471	12.2 (11.6–12.8)
Depression	1296	10.7 (10.2–11.3)
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95%CI 95% confidence interval

Ethnicity and migration status	Total	Number reporting one of the five most commonly-reported long-term conditions (%)				
		Anxiety	Depression	Asthma	Diabetes	Hypertension
White UK-born	7,444	1,310 (17.6)	979 (13.2)	967 (13.0)	243 (3.3)	610 (8.2)
White overseas-born	1,048	157 (15.0)	96 (9.2)	93 (8.9)	30 (2.9)	73 (7.0)
Asian UK-born	834	100 (12.0)	69 (8.3)	121 (14.5)	26 (3.1)	34 (4.1)
Asian overseas-born	1,492	102 (6.8)	61 (4.1)	119 (8.0)	132 (8.8)	190 (12.7)
Black UK-born	152	16 (10.5)	10 (6.6)	24 (15.8)	10 (6.6)	18 (11.8)
Black overseas-born	369	23 (6.2)	13 (3.5)	28 (7.6)	18 (4.9)	64 (17.3)
Mixed UK-born	383	57 (14.9)	41 (10.7)	74 (19.3)	11 (2.9)	24 (6.3)
Mixed overseas-born	130	16 (12.3)	13 (10.0)	14 (10.8)	7 (5.4)	16 (12.3)
Other UK-born	45	6 (13.3)	4 (8.9)	10 (22.2)	1 (2.2)	5 (11.1)
Other overseas-born	203	17 (8.4)	10 (4.9)	21 (10.3)	8 (3.9)	22 (10.8)

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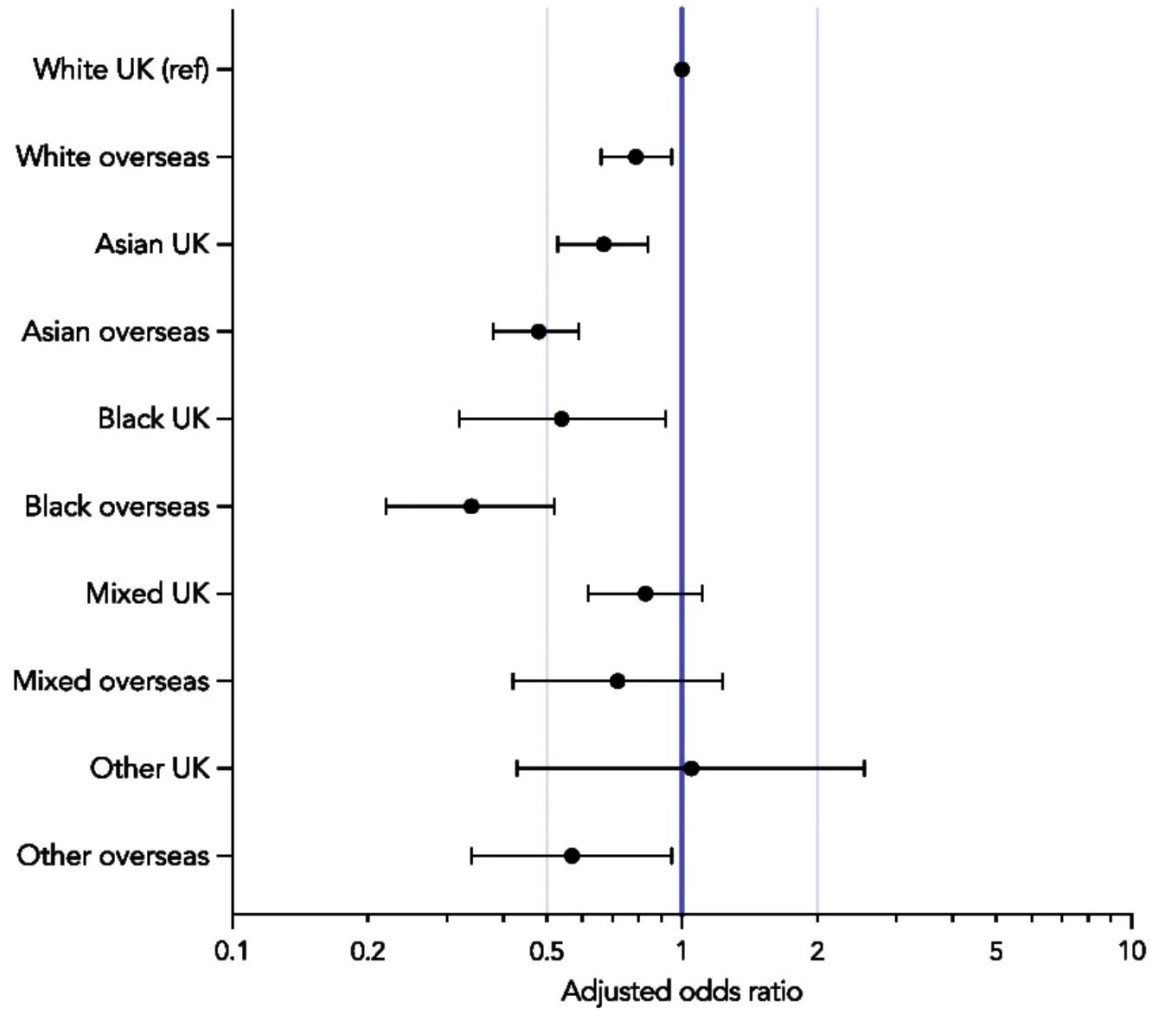
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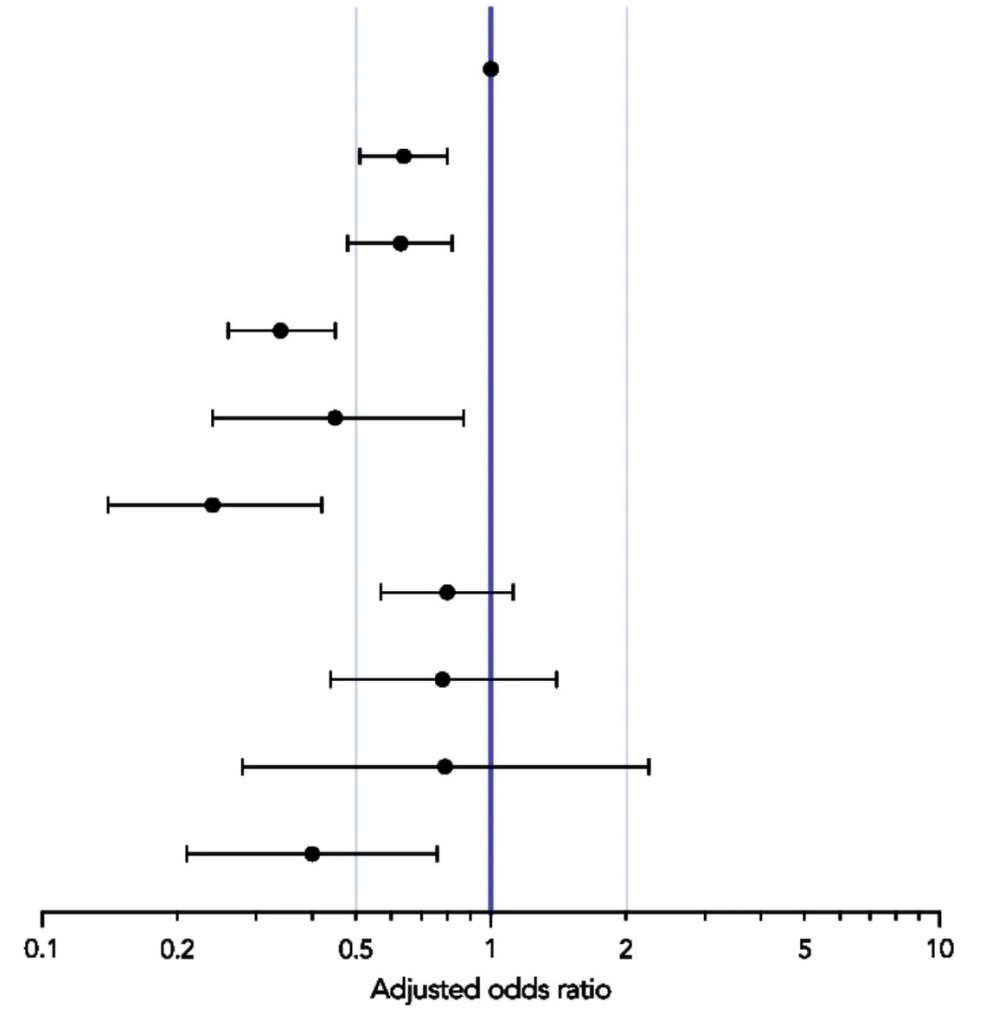
95%CI 95% confidence interval

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### A. ANXIETY

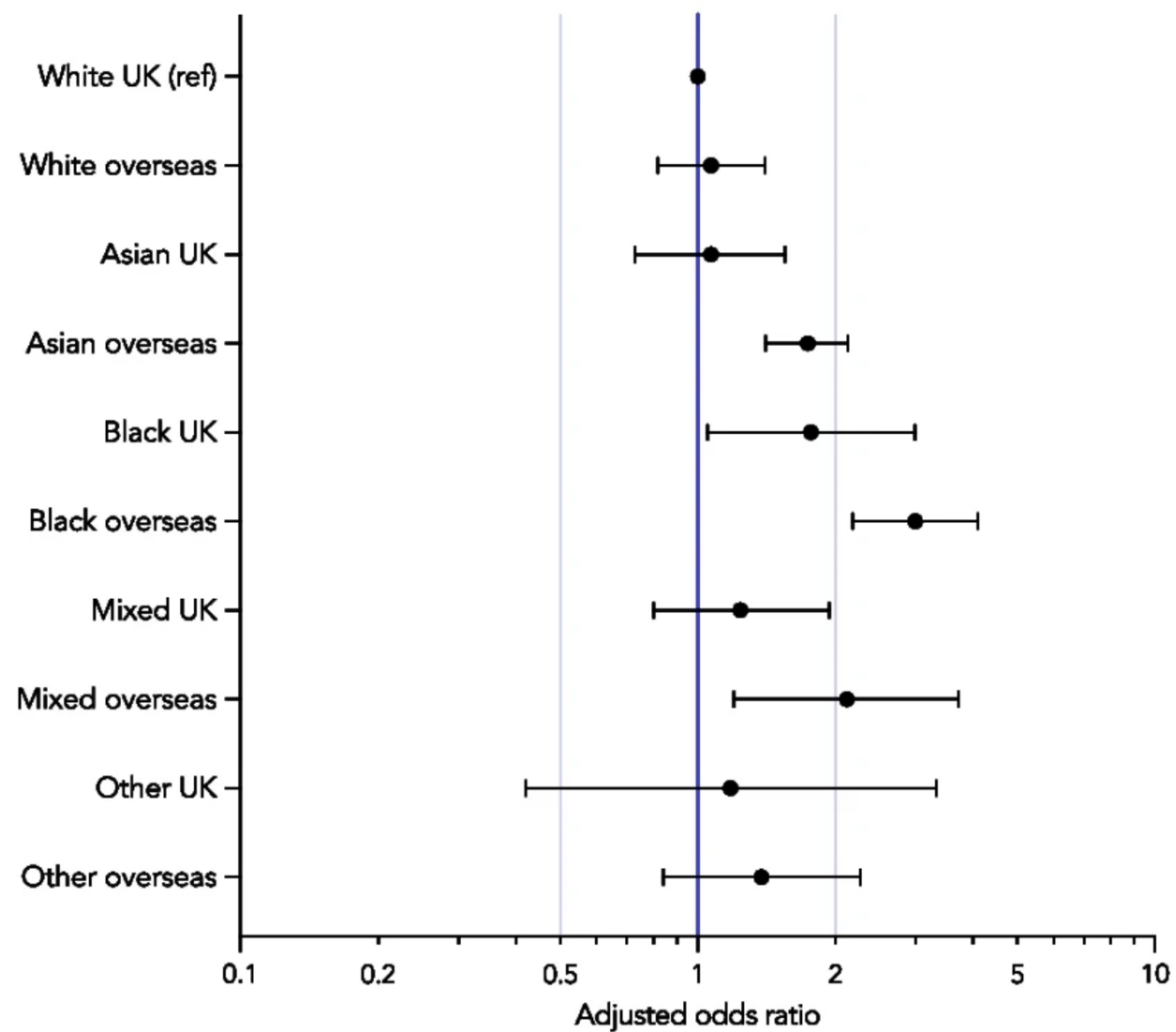


### B. DEPRESSION

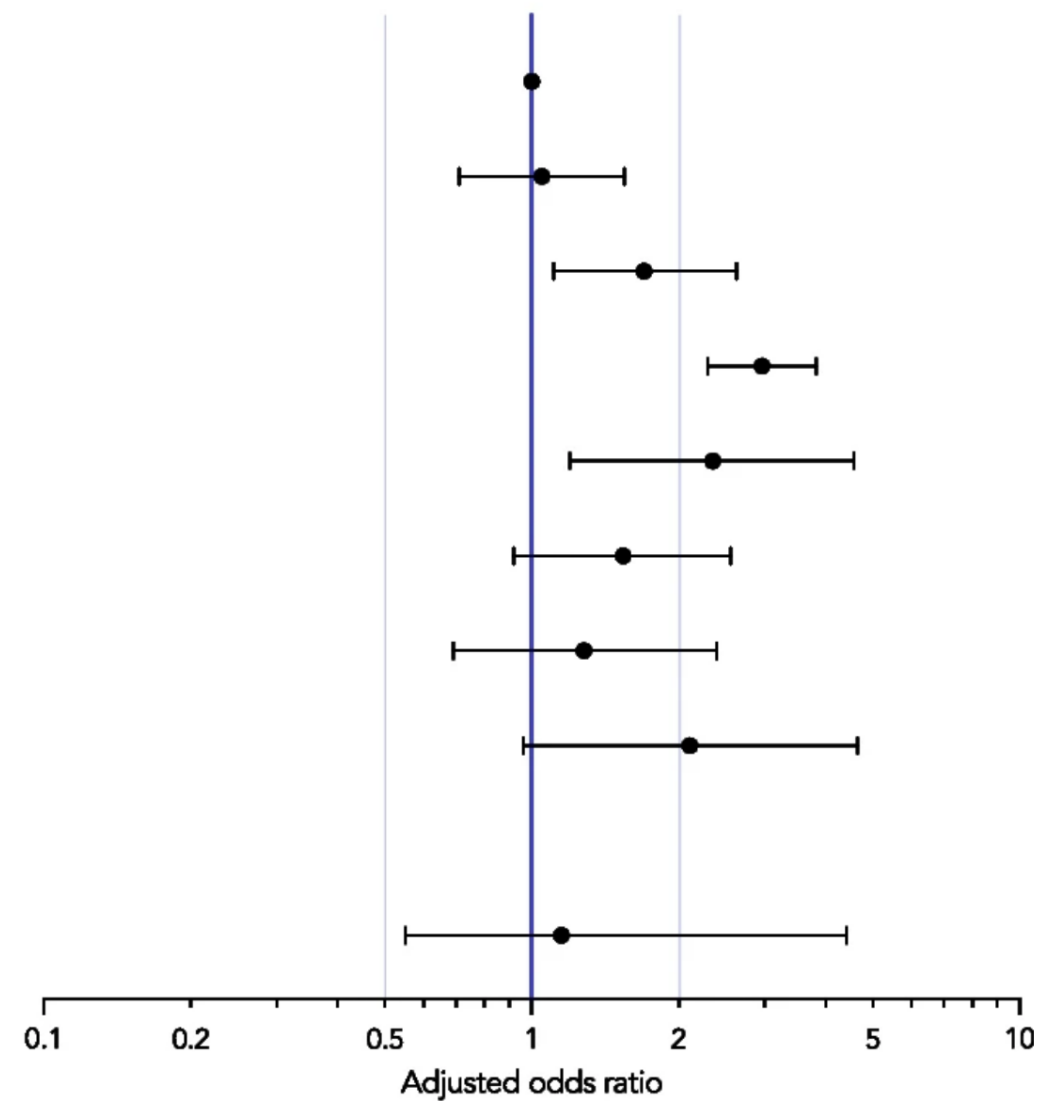




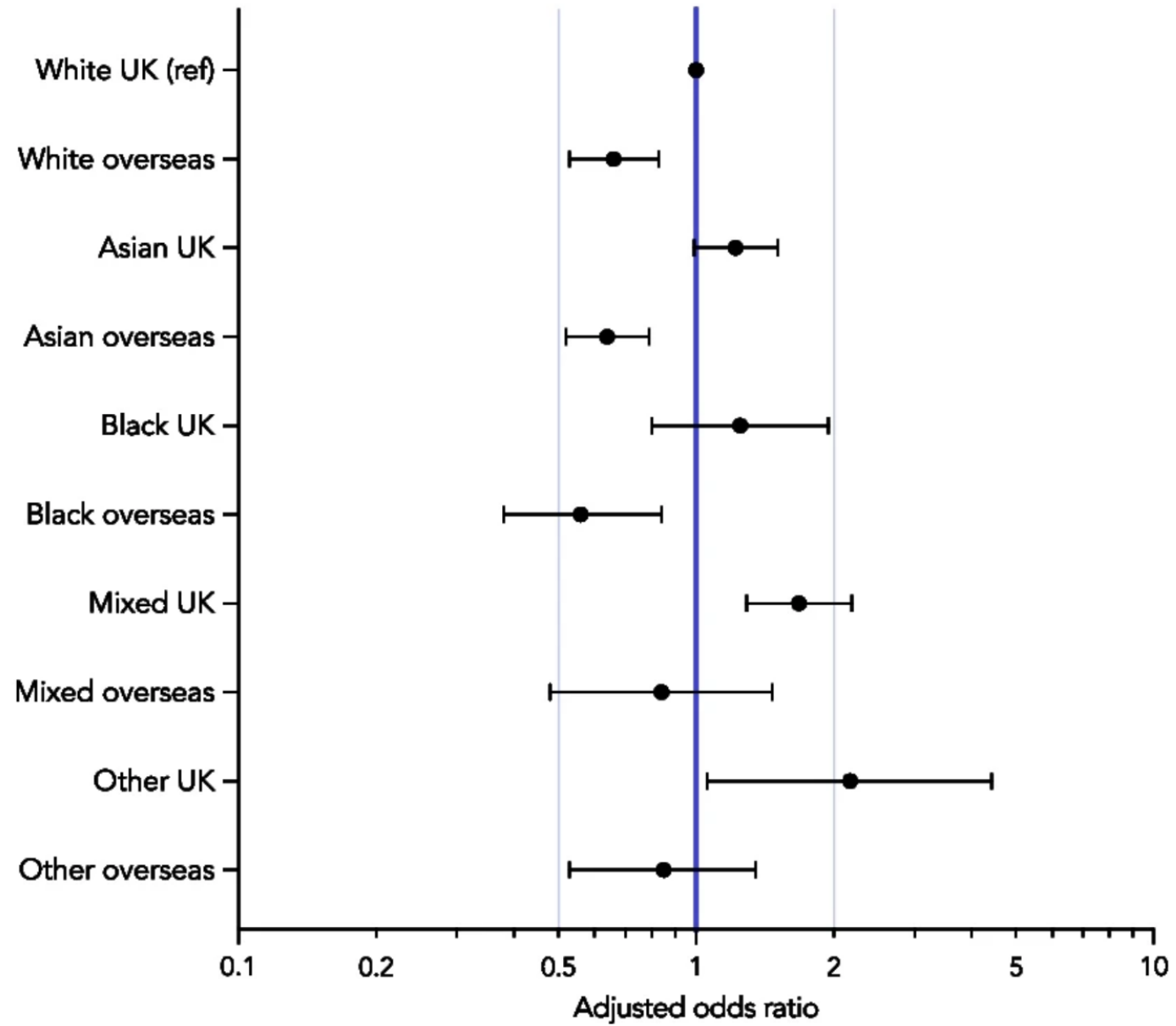
### C. HYPERTENSION



### D. DIABETES



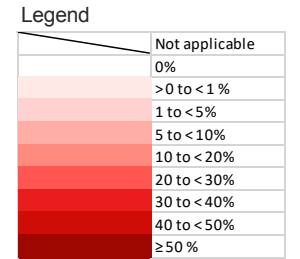
## E. ASTHMA



# Prevalence of multiple long-term conditions 15%

## A. UK-born

	Organ transplant (n=7)	Diabetes (n=291)	Heart disease (n=218)	Hypertension (n=691)	Stroke (n=34)	Kidney disease (n=61)	Liver disease (n=45)	Asthma (n=1,196)	Other lung cond (n=84)	Cancer (n=85)	Neurological (n=87)	Immunosuppressed (n=325)	Depression (n=1,103)	Anxiety (n=1,489)
Organ transplant		0.3		0.3				0.1	1.2	2.4		0.9		0.1
Diabetes	14.3		11.0	14.3	11.8	9.8	17.8	3.8	2.4	7.1	5.7	5.5	5.2	3.8
Heart disease		8.2		8.5	17.6	8.2	6.7	3.5	17.9	7.1	4.6	4.6	3.4	3.4
Hypertension	28.6	34.0	27.1		47.1	34.4	17.8	8.2	20.2	17.6	16.1	10.5	9.0	7.6
Stroke		1.4	2.8	2.3		3.3		0.7	1.2	1.2	2.3	0.9	0.1	0.3
Kidney disease		2.1	2.3	3.0	5.9		4.4	1.2	1.2	4.7	2.3	2.5	0.9	0.9
Liver disease		2.7	1.4	1.2		3.3		0.3				1.2	0.8	0.5
Asthma	14.3	15.8	19.3	14.2	23.5	23.0	8.9		23.8	10.6	19.5	19.4	18.7	18.0
Other lung cond	14.3	0.7	6.9	2.5	2.9	1.6		1.7		5.9	4.6	5.2	1.8	1.6
Cancer	28.6	2.1	2.8	2.2	2.9	6.6		0.8	6.0		2.3	4.3	1.6	1.0
Neurological		1.7	1.8	2.0	5.9	3.3		1.4	4.8	2.4		4.3	2.4	1.6
Immunosuppressed	42.9	6.2	6.9	4.9	8.8	13.1	8.9	5.3	20.2	16.5	16.1		5.9	4.3
Depression		19.6	17.0	14.3	2.9	16.4	20.0	17.2	23.8	21.2	29.9	20.0		48.3
Anxiety	28.6	19.2	23.4	16.4	11.8	21.3	15.6	22.4	28.6	17.6	27.6	19.7	65.2	



## B. Overseas-born

	Organ transplant (n=8)	Diabetes (n=195)	Heart disease (n=103)	Hypertension (n=365)	Stroke (n=10)	Kidney disease (n=30)	Liver disease (n=18)	Asthma (n=275)	Other lung cond (n=25)	Cancer (n=26)	Neurological (n=23)	Immunosuppressed (n=88)	Depression (n=193)	Anxiety (n=315)
Organ transplant		0.5	1.0	1.1		3.3		0.7				3.4		0.6
Diabetes	12.5		23.3	19.7	10.0	20.0	66.7	5.5	16.0	11.5	8.7	8.0	8.3	6.7
Heart disease	12.5	12.3		8.8	30.0	20.0	16.7	3.3	16.0	15.4		8.0	5.7	4.8
Hypertension	50.0	36.9	31.1		10.0	50.0	38.9	13.5	28.0	15.4	13.0	17.0	14.5	9.5
Stroke		0.5	2.9	0.3		3.3		0.4			4.3		0.5	
Kidney disease	12.5	3.1	5.8	4.1	10.0		5.6	1.1	4.0	3.8		3.4	1.6	1.3
Liver disease		6.2	2.9	1.9		3.3		1.1				3.4	1.6	1.0
Asthma	25.0	7.7	8.7	10.1	10.0	10.0	16.7		32.0	7.7	8.7	10.2	11.9	12.1
Other lung cond		2.1	3.9	1.9		3.3		2.9		7.7		8.0	2.1	1.6
Cancer		1.5	3.9	1.1		3.3		0.7	8.0		4.3	4.5	0.5	1.0
Neurological		1.0		0.8	10.0			0.7		3.8		3.4	2.6	1.3
Immunosuppressed	37.5	3.6	6.8	4.1		10.0	16.7	3.3	28.0	15.4	13.0		4.7	5.1
Depression		8.2	10.7	7.7	10.0	10.0	16.7	8.4	16.0	3.8	21.7	10.2		37.5
Anxiety	25.0	10.8	14.6	8.2		13.3	16.7	13.8	20.0	11.5	17.4	18.2	61.1	

Variable	N reporting MLTCs/N total (%) 1817/12,100 (15.0)	A		B	
		Adjusted odds ratio (95%CI)	P value	Adjusted odds ratio (95%CI)	P value
<b>Ethnicity/migration status</b>					
White UK-born	1267/7444 (17.0)	Ref	-	Ref	-
White overseas-born	122/1048 (11.6)	0.68 (0.55–0.83)	<0.001	0.69 (0.56–0.85)	<0.001
Asian UK-born	95/834 (11.4)	0.80 (0.63–1.00)	0.05	0.69 (0.54–0.87)	0.002
Asian overseas-born	171/1492 (11.5)	0.75 (0.62–0.90)	0.002	0.63 (0.52–0.77)	<0.001
Black UK-born	18/152 (11.8)	0.65 (0.39–1.07)	0.09	0.47 (0.28–0.79)	0.004
Black overseas-born	35/269 (9.5)	0.52 (0.36–0.74)	<0.001	0.39 (0.27–0.56)	<0.001
Mixed UK-born	63/383 (16.5)	1.13 (0.85–1.50)	0.39	1.10 (0.82–1.47)	0.54
Mixed overseas-born	19/130 (14.6)	0.94 (0.57–1.55)	0.81	0.85 (0.51–1.42)	0.52
Other UK-born	7/45 (15.6)	1.05 (0.47–2.39)	0.90	0.83 (0.36–1.93)	0.67
Other overseas-born	20/203 (9.9)	0.61 (0.38–0.98)	0.04	0.47 (0.29–0.77)	0.002
<b>Age</b> , per decade increase	-	1.11 (1.06–1.16)	<0.001	1.08 (1.03–1.13)	0.002
<b>Sex</b>					
Male	423/2876 (14.7)	Ref	-	Ref	-
Female	1394/9199 (15.2)	0.86 (0.76–0.98)	0.02	0.89 (0.78–1.02)	0.08
<b>Occupation</b>					
Medical	280/2745 (10.2)	Ref	-	Ref	-
Nursing	537/2489 (21.6)	2.13 (1.79–2.53)	<0.001	1.55 (1.29–1.86)	<0.001
Allied Health Professional <sup>a</sup>	689/5,057 (13.6)	1.28 (1.09–1.51)	0.003	1.15 (0.97–1.36)	0.11
Dental	99/734 (13.5)	1.32 (1.02–1.70)	0.04	1.10 (0.85–1.43)	0.47
Admin/estates/other	130/642 (20.3)	1.98 (1.56–2.52)	<0.001	1.40 (1.09–1.79)	0.009

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Other UK-born	7/45 (15.6)	1.05 (0.47–2.39)	0.90	0.83 (0.36–1.93)	0.67
Other overseas-born	20/203 (9.9)	0.61 (0.38–0.98)	0.04	0.47 (0.29–0.77)	0.002
<b>Age</b> , per decade increase	-	1.11 (1.06–1.16)	<0.001	1.08 (1.03–1.13)	0.002
<b>Sex</b>					
Male	423/2876 (14.7)	Ref	-	Ref	-
Female	1394/9199 (15.2)	0.86 (0.76–0.98)	0.02	0.89 (0.78–1.02)	0.08
<b>Occupation</b>					
Medical	280/2745 (10.2)	Ref	-	Ref	-
Nursing	537/2489 (21.6)	2.13 (1.79–2.53)	<0.001	1.55 (1.29–1.86)	<0.001
Allied Health Professional <sup>a</sup>	689/5,057 (13.6)	1.28 (1.09–1.51)	0.003	1.15 (0.97–1.36)	0.11
Dental	99/734 (13.5)	1.32 (1.02–1.70)	0.04	1.10 (0.85–1.43)	0.47
Admin/estates/other	130/642 (20.3)	1.98 (1.56–2.52)	<0.001	1.40 (1.09–1.79)	0.009

<b>IMD quintile</b>						
1 (most deprived)	199/1063 (18.7)	1.21 (1.00–1.47)	0.05	1.11 (0.92–1.35)	0.28	
2	281/1758 (16.0)	1.01 (0.84–1.20)	0.96	0.99 (0.83–1.19)	0.94	
3	367/2204 (16.7)	Ref	-	Ref	-	
4	373/2593 (14.4)	0.85 (0.73–0.99)	0.04	0.89 (0.76–1.04)	0.16	
5 (least deprived)	387/3064 (12.6)	0.73 (0.63–0.86)	<0.001	0.80 (0.68–0.94)	0.005	
<b>Body mass index (kg/m<sup>2</sup>)<sup>b</sup></b>						
Underweight	13/151 (8.6)			0.92 (0.51–1.64)	0.77	
Healthy weight	419/4512 (9.3)			Ref	-	
Overweight	532/3645 (14.6)			1.59 (1.39–1.82)	<0.001	
Obesity class 1	352/ 1678 (21.0)			2.29 (1.96–2.69)	<0.001	
Obesity class 2	175/604 (29.0)			3.17 (2.56–3.92)	<0.001	
Obesity class 3	117/323 (36.2)			4.00 (3.10–5.17)	<0.001	
<b>Physical activity index</b>						
Active	435/3993 (10.9)			Ref	-	
Moderately active	372/2568 (14.5)			1.24 (1.06–1.44)	0.006	
Moderately inactive	438/2567 (17.1)			1.34 (1.15–1.56)	<0.001	
Inactive	495/2407 (20.6)			1.60 (1.38–1.86)	<0.001	
<b>Smoking status</b>						
Never smoker	1140/8736 (13.1)			Ref	-	
Ex-smoker	510/2659 (19.2)			1.28 (1.13–1.45)	<0.001	
Current smoker	15/599 (25.9)			1.73 (1.41–2.13)	<0.001	
<b>Units of alcohol per week</b>						
None	850/5,007 (17.0)			Ref	-	

<b>IMD quintile</b>						
1 (most deprived)	199/1063 (18.7)	1.21 (1.00–1.47)	0.05	1.11 (0.92–1.35)	0.28	
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3	367/2204 (16.7)	Ref	-	Ref	-	
4	373/2593 (14.4)	0.85 (0.73–0.99)	0.04	0.89 (0.76–1.04)	0.16	
5 (least deprived)	387/3064 (12.6)	0.73 (0.63–0.86)	<0.001	0.80 (0.68–0.94)	0.005	
<b>Body mass index (kg/m<sup>2</sup>)<sup>b</sup></b>						
Underweight	13/151 (8.6)			0.92 (0.51–1.64)	0.77	
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Overweight	532/3645 (14.6)			1.59 (1.39–1.82)	<0.001	
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<b>Units of alcohol per week</b>						
None	850/5,007 (17.0)			Ref	-	

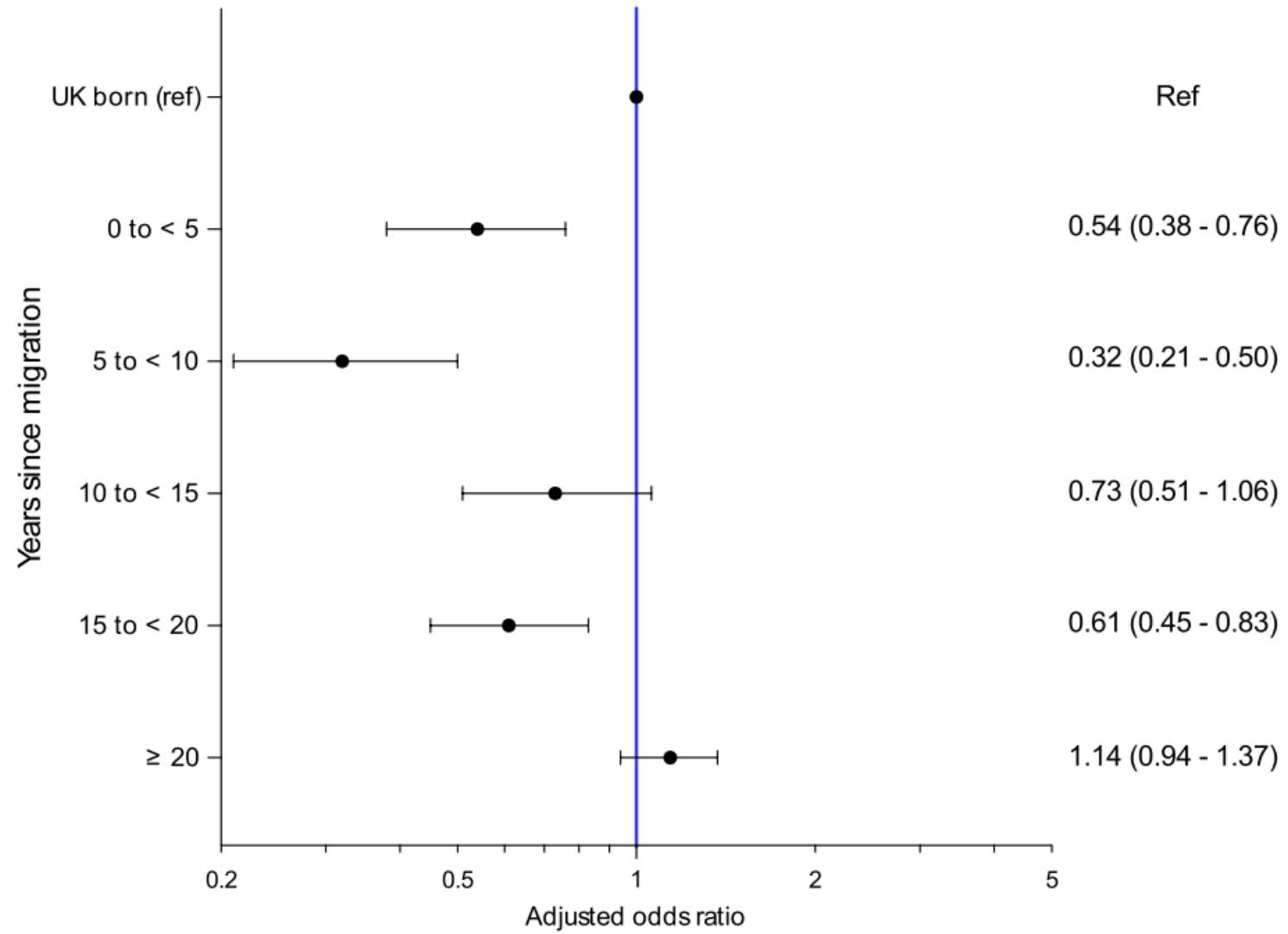


Figure 2. Duration of migration since arrival in the UK. Odds ratios for being in the top 5% of income in the UK, by duration of migration since arrival in the UK. Reference category is UK born.



# Conclusions

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- **Among UK HCWs, the prevalence of common LTCs and odds of reporting MLTCs varied by ethnicity and migrant status.**
- **The lower odds of MLTCs in migrant HCWs reverted to the odds of MLTCs in UK-born HCWs over time.**
- **Further research on this population should include longitudinal studies with linkage to healthcare records.**
- **Interventions should be co-developed with HCWs from different ethnic and migrant groups focussed upon patterns of conditions prevalent in specific HCW subgroups to reduce the overall burden of LTCs/MLTCs.**

# Looking forward

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**UK-REACH**

Understanding COVID-19 outcomes  
for ethnic minority healthcare workers



**UK-REACH**  
DIRECT



**UK-REACH**  
REACH-OUT

**Ongoing analyses**

**Promotion of  
ethnic minority  
staff**

**Redeployment  
experiences**

**Longitudinal  
changes in mental  
health**



## Ongoing analyses

**Predictors of  
breakthrough  
infection/transmis-  
sion and  
correlates of  
protection**



## **Ongoing analyses**

**Prevalence and patterns of long-COVID**

**Longitudinal changes**

**Support and interventions**

# Summary

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- **UK-REACH continues to provides key insights**
- **National asset to examine a range of areas relating to staff well-being**
- **Collaboration with NHS-CHECK and other cohort provide opportunity to enhance activities and impact**

# Any questions?

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