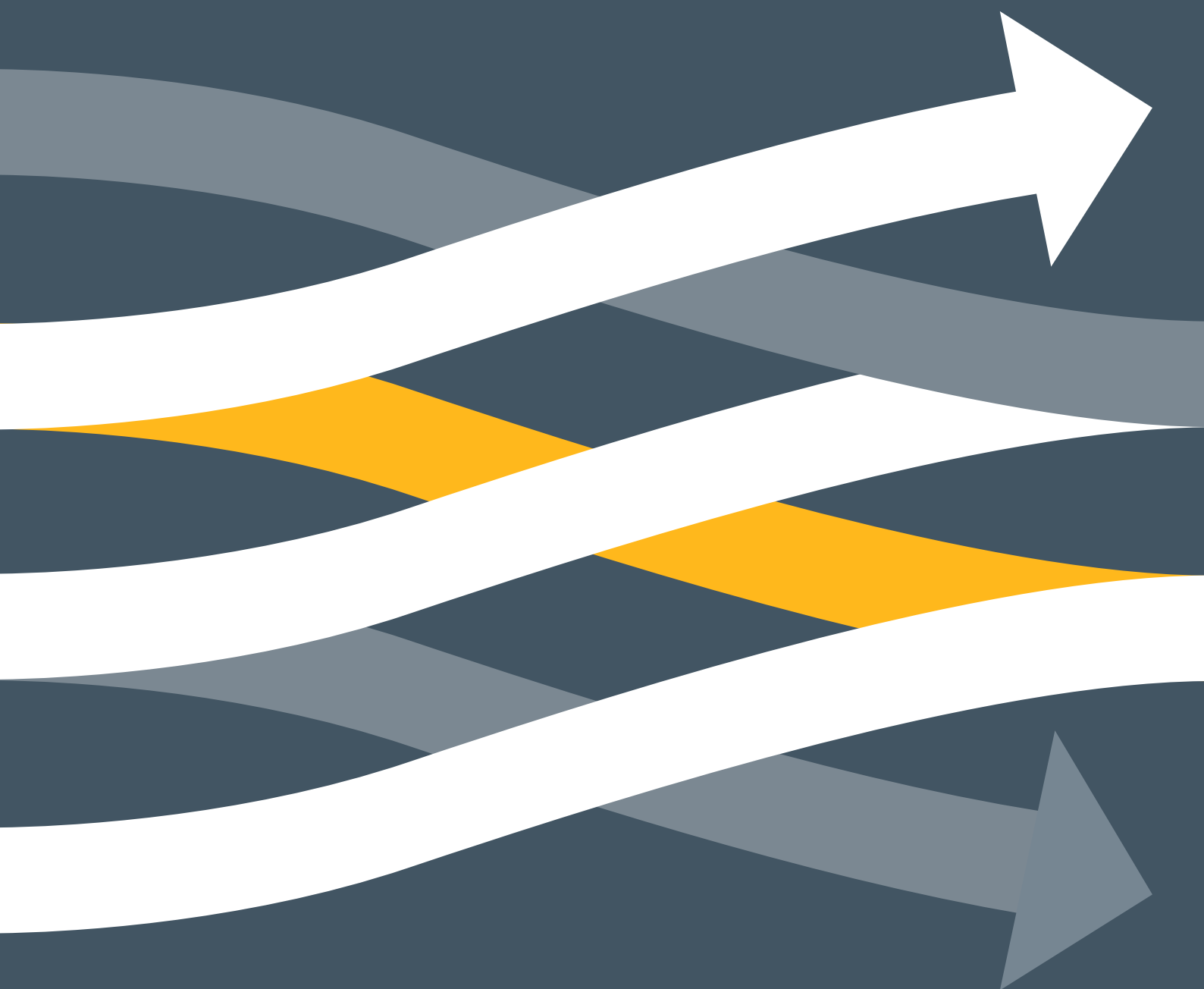


# Bradford's COVID Scientific Advisory Group (CSAG)

Research that protects a city



BRADFORD INSTITUTE  
FOR HEALTH RESEARCH

| MAKING RESEARCH REAL

**BREAKING NEWS****BORIS JOHNSON: COVID-19 HAS ALREADY STARTED SPREADING AMONG THE ELDERLY & VULNERABLE AND DEATHS ARE RISING ONCE AGAIN**

skynews.com | WILL INCLUDE 'MEDIUM', 'HIGH' AND 'VERY HIGH' CATEGORIES WITH PUBS AND BARS BEING CLOSED IN AREAS PLACED

<http://bit.ly/37whJsn>

“

**"Bradford actually has shown superb leadership.**

**"The local authority has, the directors of public health have, the local NHS have, in the way they've tackled this.**

**"If they had not done so, and consistently working with the communities of Bradford, we would be in a substantially worse place than we are at the moment.**

**"What Bradford is trying to do, as any town or city and area in the country is trying to do, is to find this balance between keeping the rates down without doing unnecessary harm to society, the economy and to all the other things that in the long run, have major implications.**

**"They have done a large number of imaginative things."**

**Professor Chris Whitty,**  
Chief Medical Officer for England  
*Addressing the nation at a No 10 briefing, October 2020*

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# FOREWORD

At the start of 2020, we were all gripped by the news from China and the television images from Italy and Spain.

It was clear that a new and devastating viral epidemic was heading to the UK and there seemed little we could do as individuals to stop it.

**It was also clear that our city of Bradford was going to be badly hit.**

The high levels of overcrowding and multi-occupancy housing would promote rapid transmission of the virus.

The multigenerational housing that we shared with Italians and Spanish families put our grandparents, the ones most at risk from harm, at high risk of infection.

The high levels of diabetes, obesity and heart disease put people who caught the virus at greater risk of severe infection and hospitalisation.

**We took stock of our local assets in the face of the impending pandemic and recognised that in Bradford we have many strengths.**

We had rich, linked data that would allow us to model and analyse the impact of the pandemic.

We have an enviable network of epidemiologists and health researchers at the Bradford Institute for Health Research and across our university partners.

Most importantly we have an incredible resource from our children and parents

participating in the Born in Bradford cohorts and their grandparents in our CARE75 cohort.

**During the long lockdowns we have been able to keep our finger on the pulse of the population through harnessing their insight and experiences.**

In March 2020, shortly after we had our first patients admitted to Bradford Royal Infirmary, we brought together our data, our scientists and our cohorts to support an evidence-based response to the pandemic.

**We created our own Bradford SAGE – the Covid Scientific Advisory Group or CSAG.**

Meeting three times a



week the group has provided our Clinical and District Gold Command teams with the latest evidence and analyses to support life-saving decisions in the hospital and across the city.

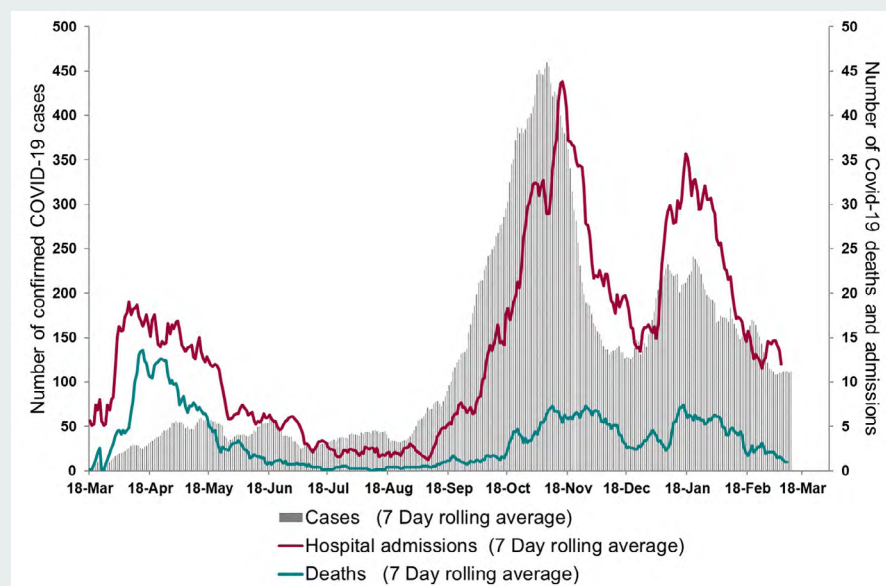
This report captures all the hard work from our clinicians, researchers and most importantly our Born in Bradford families to help address all the many uncertainties and unknowns that the pandemic threw our way.

It shows how researchers and policy makers can work together to underpin tough decision-making with science and evidence.

Crucially it also highlights how research from CSAG has created a virtuous loop of data and lived community experiences informing policy and practice, and which have in turn led to action to protect and improve the lives of our communities.

The people of Bradford have, as we anticipated, suffered greatly. Over 1000 citizens have died and many others are suffering the long term effects of long COVID.

Seven-day rolling average of COVID-19 confirmed cases, hospital admissions and registered deaths in Bradford District



We have shown the impact on people's mental health and highlighted the fears from financial and food insecurity.

Our data on hospital mortality has countered fake news about risk in hospital.

Our work on vaccine hesitancy has enabled a powerful, grassroots approach to reassurance and uptake.

The evidence from CSAG has led to interventions to support teachers and

children, and to increase long term investment for the most vulnerable. Our clinical research has trail-blazed new and better treatments for patients.

**The road to recovery will be long and bumpy, but we have demonstrated how science and evidence can ensure that we travel in the right direction.**

Professor John Wright,  
Kersten England CBE



# THEME 1:

UNDERSTANDING OUR  
FAMILIES AND CHILDREN



# Family and community impacts of COVID-19

## OVERVIEW

**A comprehensive study** involving Born in Bradford (including Born in Bradford, Born in Bradford's Better Start, BiB4All) families and the CARE75+ cohort.

A series of longitudinal surveys were developed **in partnership with local decision makers and communities**.

In-depth research was also carried out on the impacts of COVID-19 on **child wellbeing** and **health beliefs** and **attitudes** to COVID-19.

Through ActEarly, the study also collaborated with University College London partners to understand how these impacts may be **similar or different for residents of Bradford District and Tower Hamlets**.

## OBJECTIVES

To understand the impacts of the COVID-19 on various aspects of life including **wellbeing, health, household finances** and **education**.



Click here for full report:  
<https://bit.ly/3d9ihq3>



## FINDINGS IN BRIEF

28%

Many families live in poor quality housing; this was more common in ethnic minority families.

37%

Employment insecurities were common, particularly in those who were furloughed, self-employed and not working or unemployed.

12%

Families were finding it very difficult to manage financially.

19%

Clinically significant symptoms of depression and anxiety have increased compared to levels before the pandemic.



## FINDINGS

A programme involving three inter-linked work packages: **Community soft intelligence, longitudinal quantitative studies and qualitative research.**

### Community Soft Intelligence (CSI)

The work was set in motion soon after the first lockdown started by engaging key community respondents across the district to understand what they believed would be key issues affecting the communities they work with.

This resulted in a report which highlighted that different communities in Bradford were affected by the pandemic in **distinctly different ways.**

The impact from this work included:

- KML charity which addresses poverty by supplying hygiene products such as soap, tampons, toothpaste and other hygiene products **in an area where this was needed but not previously supplied.**
- The issues of **digital poverty** affecting Refugee and Asylum seeker children were highlighted and a school in BD5 and a voluntary sector organisation raised funds to ameliorate this issue. This has since become a more prominent issue across the district.
- Eastern European Roma families and the issues affecting them were highlighted. This included, amongst other things,



Click here: <https://bit.ly/2S9CWk8> – and watch Hannah Nutting explain to our Born in Bradford families why their research role is so important ...

#### **better messages about keeping safe, and where to access help and support.**

This was provided in appropriate community languages.

- The report also highlighted the problem of **misinformation and fake news taking root in South Asian communities.** This then resulted in a range of multi-agency responses to tackle these issues.

This method of gathering data has been shared with several national partner organisations and the CSI work has now become a **central feature** of the CCG and Local Authority work. There is now a number of projects which have been commissioned to continue gathering this vital soft intelligence and then report it back to planners and implementers.

### Longitudinal Surveys

- Many families live in **poor quality** (N=574, 28%), and **overcrowded** (N=364, 19%) **housing**; this was more

common in ethnic minority families.

- Financial (N=738 (37%), food (N=396, 20%), employment (N=728, 37%) and housing (N=204, 10%) insecurities were common, particularly in those who were **furloughed, self-employed and not working or unemployed.**
- A worrying 12% (N=237) of families were finding it **very difficult to manage financially** and 9% (N=180) reported having to **regularly skip meals.**
- Clinically significant symptoms of **depression and anxiety have increased** compared to levels before the pandemic (from 11% to 19% and from 10% to 16% respectively).
- **Loneliness during lockdown** was most strongly associated with increases in depression (OR: 8.37, 95% CIs: 5.70-12.27) and anxiety (8.50, 5.71-12.65), followed by **financial insecurity** (6.23, 3.96-9.80; 6.03, 3.82-9.51). When level of financial





TV viewers were given an insight into how lockdown life was impacting on our Born in Bradford families when reporters interviewed mum-of-four Salma Nawaz and lead researcher Dr Josie Dickerson. Watch their story here: <https://bit.ly/3snqhtV>

insecurity was taken into account, Pakistani heritage mothers were **less likely** than White British mothers to experience an increase in depression (0.67, 0.51-0.89) and anxiety (0.73, 0.55-0.97).

- Responses to open text questions highlighted a **complex inter-play** of health anxieties, mental load, loss of social support and coping strategies, and financial insecurity contributing to mental ill health.
- **Positive aspects of lockdown** were also reported, including a more relaxed pace of life.
- 2 in 3 children **have not done enough physical activity** during lockdown and there is a small but important amount of children who were unhappy, worried about going back to school and worried about being bullied.

## Qualitative Research

More in-depth impact of our work in this area can be found in the separate reports

on **children's wellbeing** (see page 11) and **health beliefs, misinformation and vaccine hesitancy** (see page 16). As a brief summary, we found:

- Children interviewed were independent to a degree but still needed **a lot of parental support and reassurance** in order to maintain good wellbeing and healthy behaviours during the crisis.
- The pandemic and lockdown had caused many of them **anxiety, insecurity and concern for their loved ones**.
- The absence of the routine that going to school offered and a drastic reduction in social contact had led to **boredom and sluggishness**.
- Many had been **cut off from their friends and wider family**.
- Participants had been exposed to a multitude of different and often conflicting stories about COVID-19 and this had **caused confusion and distress**.
- Both national and local misinformation and perceptions of/experiences with the health services during this time had **fostered mistrust and reticence to use services**.
- Exposure to misinformation had undoubtedly influenced some of the participants' **hesitancy to have the COVID-19 vaccine**.

## IMPACT

- Findings were used in regular briefings and shared with partners, such as head teachers, **to increase understanding of how the pandemic was impacting people in the District**.
- Findings have been used throughout the pandemic to support regular briefings to **senior council officers and elected members** on the impact of the pandemic on families and children. In particular, the impact on **mental health and poverty/food poverty**.
- Findings informed a **local mental health needs assessment** (<http://bit.ly/3eGZS6o>), this formed part of a system wide approach to mental health impacts of the pandemic and a **prevention concordat for better mental health prevention** (<http://bit.ly/300ynQ8>) which has been shared nationally. The findings provided evidence for business cases for **mental health funding** as a direct response to COVID-19.
- Findings were used in part to **frame the Council Plan** that was refreshed in Autumn 2020. It also fed into the work the district are doing with the **UNICEF Child Friendly District** proposal. Born in Bradford and our partnership working have been central to this. It is hoped that this work will feed into the development of the **District Plan 2021-2025**. (<https://bit.ly/2OWqDJu>)

# *'Her whole little life has changed dramatically': A qualitative study into children's mental wellbeing in Bradford during COVID-19*

## OVERVIEW

**Children's mental wellbeing** during COVID-19 was one of three topic areas identified as a priority for qualitative research in order to help decision makers in Bradford understand the social impacts of COVID-19 and assist their response.

Phone and video interviews were conducted between August and September 2020 with children aged between 10-13 and their parents from 21 Born in Bradford families.

Children and their parents discussed their experiences during Spring/Summer 2020, including their **daily routines, mood and feelings about the pandemic/lockdown.**

## OBJECTIVES

To gain an understanding, from a snapshot of families already involved in the Born in Bradford research programme, of **the types of issues and pressures experienced by families** during the pandemic and the effects this had on their **mental health.**



Click here for full report:  
<https://bit.ly/3lRh4aV>



## FINDINGS

- Children were independent to a degree but still needed **a lot of parental support and reassurance** in order to maintain good wellbeing and healthy behaviours during the crisis.
- The pandemic and lockdown had caused many of them **anxiety, insecurity and concern for their loved ones.**
- The absence of the routine that going to school offered and a drastic reduction in social contact had led to **boredom and sluggishness**, and many had been **cut off from their friends and wider family.**

## IMPACT

- Findings were shared widely with different Boards and Committees, used in regular briefings and shared with partners to **increase understanding of how the pandemic was impacting people** in the District.
- This work has fed into the Council's thinking around **children's mental health** and has been included in regular briefings to members and senior officers.

# The range and accessibility of food aid provision in Bradford, and the impact of COVID-19

## OVERVIEW

**Food insecurity** is a major public health issue with detrimental implications for mental and physical health among adults and children.

**Existing inequalities** in access to food have been highlighted and exacerbated by the COVID-19 pandemic.

The importance of food aid (here also termed community food assets) to provide immediate food support to people experiencing **poverty and hunger** has been heightened by COVID-19 and the resultant economic fallout.

However, there is **limited knowledge** of both the range and characteristics of food aid in Bradford and the extent to which COVID-19 has impacted the availability and accessibility of food support.

Bradford District is a multi-ethnic, multi-faith area with high levels of socio-economic inequality; **it has been particularly negatively affected by COVID-19.**



Click here for full report:  
<https://bit.ly/3IP7iWS>



169

A rapid mapping exercise and survey, undertaken between August and November 2020, identified 169 community food assets operating in the Bradford District, of which 139 remained operational throughout the first lockdown period (March to June 2020).

59

59 food aid services were newly set up during the first lockdown period, of which 79% delivered food (prepared meal or food parcels).

42%

Educational institutions played an important role in the provision of food aid during the first lockdown period: 42% of services which started their operations in response to the pandemic were school based.

86%

86% of food aid services identified as operating throughout the first lockdown period (March to June 2020) were free to access (n=120), with the remaining 13% of provision at some cost to service users (n=18).



## FINDINGS

A rapid mapping exercise and survey, undertaken between August and November 2020, identified **169 community food assets operating in the Bradford District, of which 139 remained operational throughout the first lockdown period** (March to June 2020).

**59 food aid services were newly set up during the first lockdown period**, of which 79% delivered food (prepared meal or food parcels).

Services categorised as emergency assistance (e.g., food banks, food delivery services and soup runs (n=116 (83%)) were **more common during the first lockdown** than services providing non-emergency assistance with food eg community cafes (n=23 (17%)).

**Educational institutions played an important role** in the provision of food aid during the first lockdown period: 42% of services which started their operations in response to the pandemic were school based.

86% of food aid services identified as operating throughout the first lockdown period (March to June 2020) **were free to access** (n=120), with the remaining 13% of provision at some cost to service users (n=18).

Of the food aid providers known to be operational over the first lockdown period, **48% were secular (n=66), 42% were Christian (n=59) and 9% were Muslim. 1% of**

**food aid provision was Sikh (n=1).**

22% of organisations distributing food during the first lockdown were able to tailor their food provision to cultural preferences and dietary needs (n=31); **19% stated their ability was dependent on donations and available food supply (n=26)**; and 9% responded that they could only offer a standardised service (n=12).

Food aid services

experienced multiple challenges in responding to increased demand during the first lockdown, including **difficulties of organising staff, volunteers and service users amid social distancing rules; reduced volunteer availability; and the need for additional funding** to adapt their operations to adequately cater for vulnerable individuals shielding at home.



## IMPACT

- A **food strategy group for the District** has been established and the recommendations of the report are being considered for adoption as part of the action plan development by this group.
- Local authority to continue to provide financial support to community food asset organisations in the immediate period, working in partnership to ensure that **services are culturally appropriate to meet the needs of the population** (considering opportunities to do this with local SMEs).
- Local authority to partner with key stakeholders to **increase intelligence of the availability, positioning and objectives of community food assets** to better understand and address barriers to inclusion, particularly related to ethnicity/religion<sup>1</sup>.
- Local authorities to **improve the availability of local financial assistance schemes** to reduce the need for food aid among people on a low income, considering the role of community food assets in raising awareness of cash grants.
- Once able to, local authorities to **support and assess the role of non-emergency food assets** in addressing the root causes of food insecurity.

<sup>1</sup> During the production of this report, a new web-based access system for food projects in Bradford has been created by the Storehouse. This is an important resource facilitating understanding of and access to community food aid. See: <https://bradfordfoodbanks.org.uk/>



# Children's physical activity during COVID-19 from the Born in Bradford cohort

## OVERVIEW

The social isolation and movement restrictions during the Covid-19 pandemic mean that engagement in daily physical activity is incredibly important for everyone's health and wellbeing.

Understanding why and how physical activity differs between ethnic and socio-economic groups is of vital importance to enable tailored support for all groups during the pandemic and particularly because the consequences of the pandemic are likely to further increase already well-established ethnic and deprivation inequalities.

Self-reported physical activity, and daily frequency/time leaving the home (including garden/yard) was collected via survey from 949 children aged 9-13 years old.

## FINDINGS

- **Only a quarter of children** were active enough for benefits for their health during the first COVID-19 lockdown (this has more than halved compared to pre-COVID)
- **Significantly more** White British children met physical activity guidelines than Pakistani children or children from other ethnic groups
- **30% of children were not leaving the house** (including garden/yard) on a normal day during lockdown. Significantly more Pakistani and other ethnic minority children than White British were staying at home, and this explained the difference in physical activity seen between the groups. Promoting leaving the home safely (face, hands, space) to be active outdoors is important for all children and particularly important for ethnic minority children, to address physical activity inequalities.
- When children left the house for greater than 60 minutes their odds of meeting guidelines were **massively increased**. Promoting safe extended periods (>60 minutes) of activity outdoors is important to support children's physical activity, health and wellbeing.
- The measurements used were questionnaire based, which means we can expect **the problems to be worse** due to self-report questionnaires sometimes over-reporting physical activity.



## IMPACT

- The findings have been shared locally and have provided an evidence base **to secure funding** for future programmes in the District such as the JU:MP programme's JUMP@outdoors which has been funded by Sport England. (Also featured on BBC R4 and BBC Look North)



Click here for full report:  
<https://bit.ly/3rXyWn0>

# THEME 2:

## HEALTH BELIEFS AND VACCINE HESITANCY



# *'People want to believe the truth but they don't know what the truth is':* Health beliefs, health experiences and attitudes towards a COVID-19 vaccine in Bradford

## OVERVIEW

Health beliefs and health experiences during COVID-19 and attitudes towards a COVID-19 vaccine were one of three topic areas identified as a priority for qualitative research in order to help decision makers in Bradford understand the social impacts of COVID-19 and assist their response.

As a result, interviews were conducted with 20 people **from different backgrounds and areas of Bradford** between September and October 2020.

## OBJECTIVES

The aim of the study was to understand **people's relationship to health services and health information** in Bradford District during COVID-19, focusing on **attitudes, trust, access and experience**.



Click here for full report:  
<https://bit.ly/31fH4n4>

## COVID 19 VACCINE : SCAM, SHAM OR SAVIOUR?

### LIVE DISCUSSION AND Q&A

Monday 30th November 7 PM - 8:30 PM

#### HOSTED BY



HADAR ZAMAN  
HEAD OF SCHOOL FOR PHARMACY  
AND MEDICAL SCIENCES AT



SAMERA SHABIR  
STUDENT AFFAIRS OFFICER AT THE  
UNIVERSITY OF BRADFORD

## FINDINGS

- Participants had been exposed to a multitude of different and often conflicting stories about COVID-19 and this had **caused confusion and distress**.
- Both national and local misinformation and perceptions of/ experiences with the health services during this time had **fostered mistrust and reticence to use services**.
- Exposure to misinformation had **undoubtedly influenced some of the participants' hesitancy** to have the COVID-19 vaccine.

## IMPACT

- The report was able to **inform local decision makers early** on about the complexity of people's health beliefs around COVID-19, their experience of health services and the challenge of misinformation in Bradford.
- This enabled them to be better prepared to **understand and tackle vaccine hesitancy** at a local level.

# Understanding COVID-19 misinformation and vaccine hesitancy in context

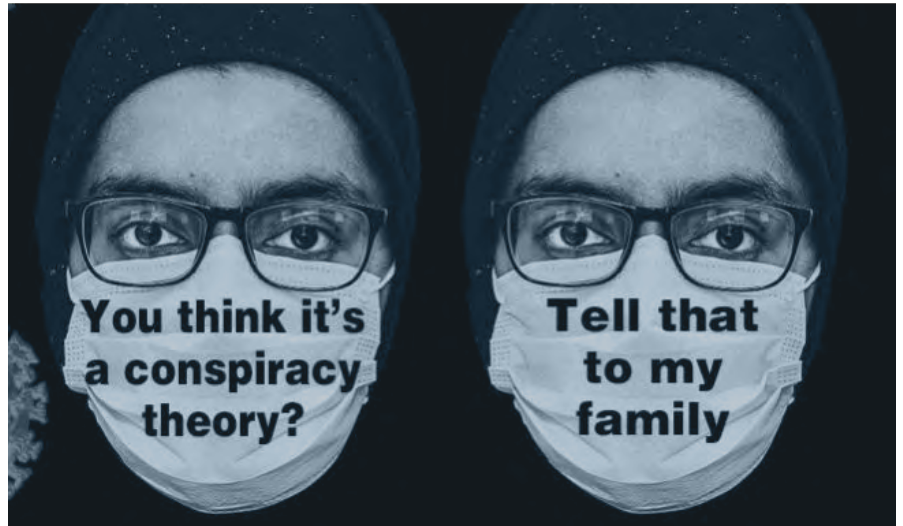
## OVERVIEW

COVID-19 vaccines can offer a route out of the pandemic, yet initial research and community soft intelligence work within Bradford suggested that many were unwilling to be vaccinated. **A rise in the spread of misinformation is thought to have played a significant role in this vaccine hesitancy.**

In order to maximise vaccine uptake, it was important to understand **why misinformation has been able to take hold at this time and why it may pose a more significant problem within certain populations and places.**

## OBJECTIVES

The aim of the study was to understand people's **COVID-19 beliefs**, their **interactions with health (mis)information** during COVID-19 and **attitudes towards a vaccine.**



## FINDINGS

**In-depth phone interviews conducted with 20 people from different ethnic groups and areas of Bradford during Autumn 2020.**

- Participants spoke about **a wide range of emotive misinformation** they had encountered regarding COVID-19, resulting in confusion, distress and mistrust.
- Vaccine hesitancy could be attributed to three prominent factors: **safety concerns, negative stories and personal knowledge.**
- The more **confused, distressed and mistrusting** participants felt about their social worlds during the pandemic, the **less positive** they were about a vaccine.

## IMPACT



- Our work was **some of the first nationally** to identify concerns about the vaccine.
- This then led through District Gold to a wide-ranging campaign **to redress misinformation** – through social and mainstream media and community leaders.
- This included pioneering the opening of **vaccine hubs in Mosques** to increase access and trust; harnessing **trusted voices and role models**, such as Imams; developing **neighbourhood approaches** to build trust (via COVID Ambassadors) <http://bbc.in/3vI0hBs>



# I TOOK THE VACCINE. I'M SAVING LIVES. ARE YOU?

VACCINE UPTAKE IS ESSENTIAL IN  
THE BATTLE AGAINST COVID-19.

MUFTI MOHAMMED ZUBAIR BUTT

## 'Intensity of misinformation' about Covid-19 spread in Bradford, study finds


By Felicity Macnamara | [@FelicityM\\_Tanda](#)  
Chief Reporter



“When you’re offered the  
COVID-19 vaccine, **please take it.**”

The vaccine is essential in the  
battle against coronavirus and  
**it will save lives insha’Allah.”**

DR SAFINA HAQUE GP

NIHR | Applied Research Collaboration  
Yorkshire and Humber

## ATTITUDES TOWARDS THE COVID-19 VACCINE

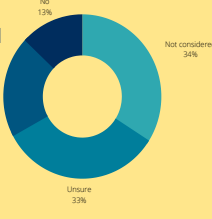
JANUARY 2021

PRELIMINARY FINDINGS OF THE ATTITUDES  
TOWARDS THE COVID-19 VACCINATION FROM  
FAMILIES IN THE BORN IN BRADFORD COHORT

### Attitude to COVID-19 vaccination by ethnicity

Ethnicity	NOT CONSIDERED	UNSURE	YES	NO
White British	19%	29%	43%	9%
Pakistani Heritage	41%	36%	13%	10%
Other	32%	31%	21%	15%

### Only 20% of those living in the most deprived areas would accept a vaccine



### 30% of people who lack trust in the NHS would not have the vaccine

Trust Level	NOT CONSIDERED	UNSURE	YES	NO
Great deal of trust	6%	10%	10%	0%
Tend to trust	0%	0%	0%	0%
Distrust	0%	0%	0%	30%

[arc-yh.nihr.ac.uk](http://arc-yh.nihr.ac.uk) | [@NIHR\\_ARC\\_YH](#)

For more information  
about the findings and  
impact resulting from our  
vaccine hesitancy research,  
please read this blog:  
<https://bit.ly/3vZHoEE>

Covid Confused Positive Hesitancy  
Distress Concerns Negative Safety  
Vaccine Covid Safety  
Misinformation Pandemic Safety  
Mistrust Knowledge  
Emotive Covid Pandemic Positive Misinformation Distress

## Bradford's vaccine ambassadors to inoculate against conspiracy theories

HANNAH  
AL-OTHMAN



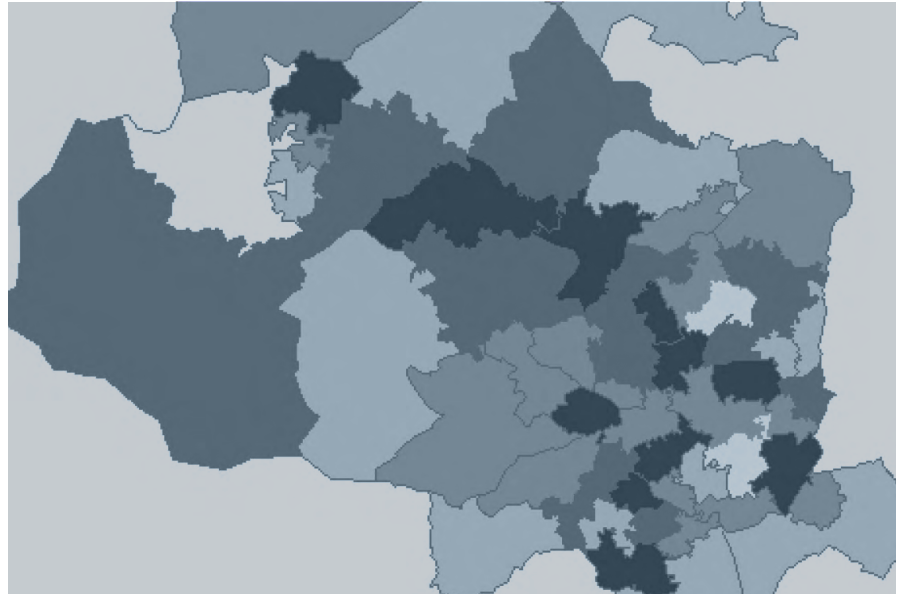
Infirmary have been working with religious and community leaders to address what Wright said were "real concerns" that people have about Covid, and in particular vaccination. Neesle, an organisation that supports single mothers in Bradford, is working with university to train Covid "vaccine ambassadors". It has recruited 20 young people – mostly from Pakistani, Indian...

theories, Khan said, are "mind-boggling. We came up against some discussions where people thought 5G masts were being put up, and they're spraying out Covid every three or four days. "I've had calls from mothers saying, "My husband has been locking the children indoors and not allow...

# Geographical patterns of COVID-19 mortality and vaccine coverage in Bradford

## OVERVIEW

In Bradford District, mortality from COVID-19 has been highest in the areas with high levels of deprivation or older populations. However, initial analysis shows that the most deprived areas have had the lowest vaccination coverage so far. This project explored the background to this, and whether there are lessons to be learned.



## FINDINGS

- These findings suggest that the vaccination coverage is lowest in some of the areas with **greatest risk** of COVID-19 mortality.
- This inequality in coverage will lead to **further inequalities** in COVID-19 infection and mortality, and in wider health, social and economic impacts.
- The findings show the need to **monitor vaccination coverage** over time in order to ensure that areas with the greatest COVID-19 risk have high levels of vaccination.
- The findings also suggest the need for further flexibility to **prioritise vaccination** with communities at highest risk in Bradford, and continued work to support uptake of the vaccine among eligible groups.

## IMPACT

- The analysis has demonstrated emerging inequalities in COVID-19 vaccine uptake enabling the District to **focus attention** on this issue.
- The initial analysis has provided a **baseline for vaccine inequalities** and future updates.
- The analysis demonstrates the **pooling and connected data** and the benefits of the Council, NHS and researchers **collaborating**.



Click here for full report:  
<https://bit.ly/3qTw35l>

# THEME 3:

IDENTIFYING DIFFERENT VULNERABILITIES  
ASSOCIATED WITH COVID-19 PANDEMIC AND  
RESTRICTIONS





# The impact of COVID-19 lockdown measures on the lives of older people (≥75 years)

## OVERVIEW

The COVID-19 pandemic has brought about major changes to the lives of people in the United Kingdom (UK).

In March 2020, the UK government enforced a nationwide lockdown and introduced social distancing measures to prevent the spread of the virus.

**People aged over 70 years were classed as *Clinically Vulnerable* and considered at a higher risk of severe illness from COVID-19.**

They were directed to take particular care to minimise contact with others and remain at home whenever possible.

These measures were imposed to reduce the risk of contracting COVID-19. However, there may be **negative consequences for people who are vulnerable to loneliness and social isolation and who may have challenges accessing health services and essential provisions.**



Click here for full report:  
<http://bit.ly/2ZBqP2l>

## OBJECTIVES

To understand the potentially **unseen consequences** of the most severe form of lockdown in relation to:

- Self-isolation/social distancing
- Health anxiety
- General health
- Physical activity
- Depression
- Anxiety
- Loneliness
- Access to health, pharmacy, social/council and voluntary services
- Food shopping

## FINDINGS

**A total of 142 people** took part in a short telephone survey between the May 14 and June 1 2020. They were all people living in Bradford who were participants, or former participants, in



the **Community Ageing Research 75+ (CARE75+)** study.

- 52% **did not worry** about their health
- 76% rated their health as **'good', 'very good' or 'excellent'**
- <10% met the criteria indicative of **depression** (PHQ-8), or **anxiety** (GAD-2)
- 42% were **less active** than before lockdown
- 27% were **lonely** at least some of the time
- Over half of participants identified **positive aspects**.

## IMPACT

- Most participants reported good health with low levels of health anxiety, anxiety and depression.
- **Many were able to identify positive aspects to lockdown and may be better equipped to deal with lockdown than anticipated.**
- Strategies may be required to **ameliorate the negative impact of loneliness** for a minority of older people, and help some **resume previous activity levels and pursuits.**
- Findings added to the District's understanding of how the COVID-19 pandemic has affected **different population groups in different ways.**



# Reducing the impact of lockdown exit on vulnerable groups

Early in the pandemic lockdown, we provided an overview of initial ideas and principles to minimise the impact of lockdown exit on vulnerable groups and wider inequalities.

Five initial principles were presented:

- Mitigate the **impact on inequalities**
- Ensure **lockdown exit and recovery** are inclusive
- **Support children and young people** in lockdown exit and recovery
- Build on **positive aspects** of lockdown
- Ensure exit and recovery are **evidence-informed and evidence-generating**

Partners involved include the CSAG Vulnerable Groups workstream, and Bradford Metropolitan District Council.

## IMPACT

- The document influenced thinking at an early stage in the pandemic, helping shape the **mental health needs assessment** and work of the Public Health team and other Council departments.
- It provided a foundation for the **"Groups who are vulnerable to the wider health, social and economic impacts of COVID-19 in Bradford"** document that was later published.

Be part of Bradford Research

Bradford is part of the global race for a vaccine

FIVE STEPS TO SAFER WORKING TOGETHER

- I have carried out a COVID-19 risk assessment and shared the results with the people who work here
- I have cleaning, handwashing and hygiene procedures in place with guidance
- I have taken all reasonable steps to help people work safely at home
- I have taken all reasonable steps to maintain social distancing in the workplace
- Where people cannot maintain social distancing, we have done everything practical to manage transmission risk

Shirley Caygda Date 25.9.20

#bepartofbradfordresearch

Proud that I'm helping us live in a  
**world without COVID-19**

To find out more at: [bepartof.bradfordresearch.nhs.uk](https://bepartof.bradfordresearch.nhs.uk)  
E. [bepartof.bradfordresearch@bthft.nhs.uk](mailto:bepartof.bradfordresearch@bthft.nhs.uk)  
T. (01274) 383448



# THEME 4:

## MODELLING OF POTENTIAL COVID-19 CASES AND BEST TREATMENT





# An overview of models for predicting demand for COVID-19 hospital inpatient care in local areas of the UK

## OVERVIEW

This paper was written in the first week of April 2020, in the early stage of the COVID-19 epidemic in the UK.

**Local health services in the UK needed an idea of when hospital demand was likely to peak.**

We aimed to critically appraise the value for UK local health service planners of five major COVID-19 models (Imperial College, Sheffield, Edge Health, Oxford, and Draper & Dash) with respect to the prediction of the peak timing and magnitude of infection, and the demand for hospitalisation.

The Imperial College model is the most statistically advanced and robust model, useful at a national level. **Yet it lacked transparency and adjustability at local level.**

A flexible and practical model, such as that from Sheffield, lacks sophistication but is potentially the most useful to local health services planners.



It is easy to update with new parameter estimates related to both the **transmission of the virus**, and **emerging evidence in a local area** regarding clinical factors, **so helping local health services monitor a dynamic situation.**

## FINDINGS

- The latest projection from both the IC model and the results from the revised Sheffield model suggested the **timing of peak infection and hospitable demand** would be around mid-April 2020. Some local areas may experience later peaks due to differences in the onset of initial seeding of infection.

## IMPACT

- The overview enabled selection of a **single model of COVID-19 demand**, most appropriate to the District, which was used in planning across health and care services.
- It supported **coordinated planning and response** based on shared planning assumptions at a time of **considerable uncertainty** early in the pandemic.

# Forecasting models on COVID-19

## OVERVIEW

In this work, we aimed to build an applied time-series econometrics forecasting model **to predict the number of new cases and inpatients** at Bradford Teaching Hospitals NHS Foundation Trust (BTHFT) using the SAIL data.

The SAIL data was collected via Zoe COVID-19 app. This is a national dataset and this included self-reported COVID

symptoms.

Our idea was to first create **a Bradford cohort** using multivariate weighting methods. Then we created **a time series dataset** including weighed rates of self-reported COVID symptoms in Bradford.

Finally we used vector autoregression model (VAR) to **estimate these relationships** and made **7 day forecasts of new cases**

**and inpatients** at BTHFT based on these estimates.

## FINDINGS

- Early analysis showed some potential and further developments are being undertaken to explore whether it is possible **to build an early warning system** of potential cases and hospitalisations

## CPAP face masks v ventilators

Early in the pandemic, official advice was that patients with severe COVID-19 should be put onto ventilators on ICU.

Yet results from China suggested that the use of CPAP face masks, with prone positioning and close monitoring, might give **better results** and **avoid ICU being overwhelmed**.

**Bradford took this approach and had very good results.**

This involved bringing in extra CPAP machines of the type that are normally used in homes, and physiotherapists, doctors, and nurses **working in new ways to bring the service safely to the wards**.

Compared with a large

group of UK COVID-19 patients in the first wave, **Bradford used ventilators half as much and had 15% fewer deaths.**

After peer review, our

paper was recommended for publication in the *Journal of the Intensive Care Society* – preprint at: <http://bit.ly/37yhwFi>. At the time of writing (March 2021) it has been read over 5,000 times on medrxiv.

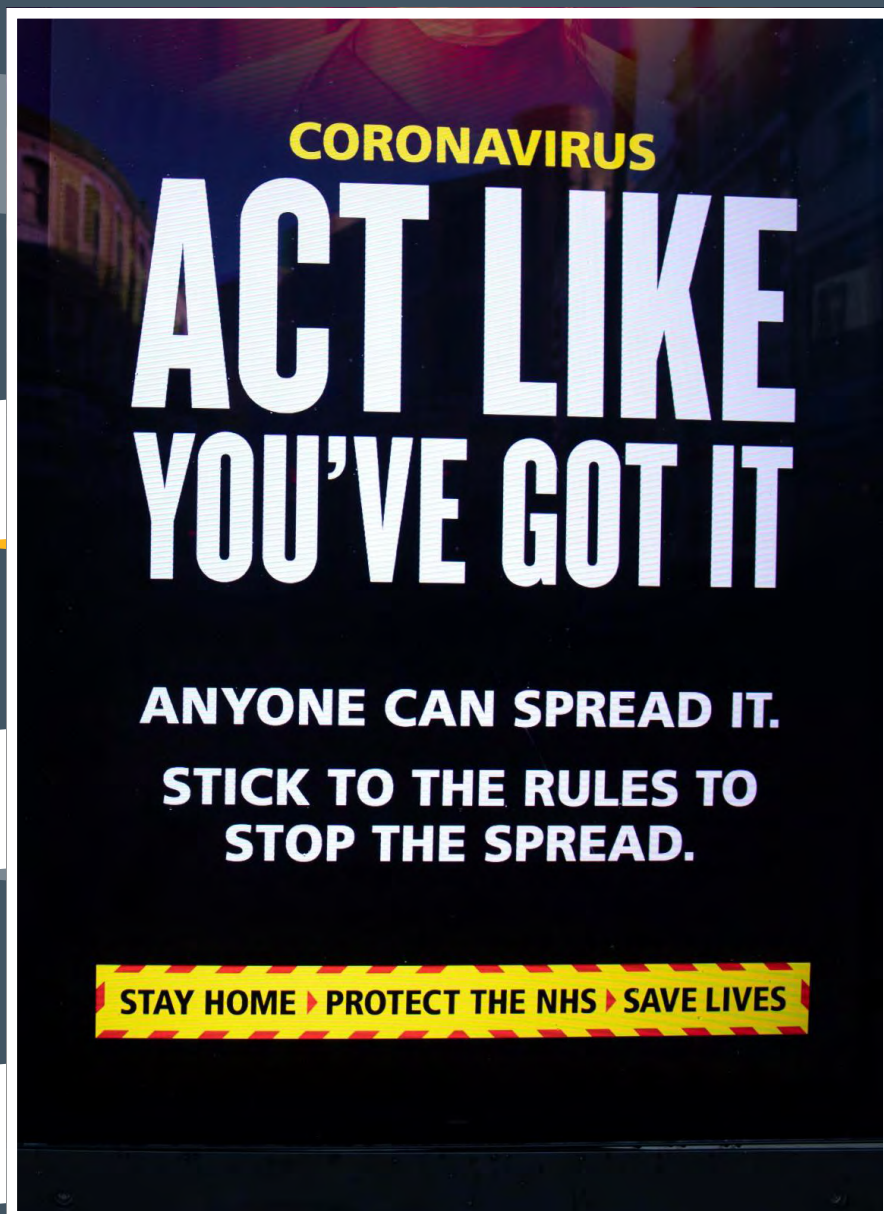


Research lead Dr Tom Lawton MBE, an Intensive Care Consultant at Bradford Royal Infirmary, trials the benefits of CPAP technology first-hand



# THEME 5:

## EPIDEMIOLOGY OF COVID-19 IN BRADFORD DISTRICT



# Spatial analysis of the COVID-19 pandemic in Bradford

## OVERVIEW

In response to maps of infections over time showing **differing patterns between outer, rural parts of the district and more urbanised areas**, a short report was produced to investigate the nature of this time evolution.

As a region with a centralised population, the average distance between infections and the population weighted centroid of the district is indicative of the extent of **urban 'skew'** at any point in time.

## FINDINGS

- During the 2020 summer, when overall infection numbers were comparatively low, cases in Bradford district were more concentrated around the population weighted centroid of the district.
- Throughout the first wave and (start of the) second wave of the pandemic, cases were more dispersed.
- **This suggested that community transmission was persisting in Bradford city proper even when it was much reduced in outlying regions.**

## IMPACT

- The research provided additional insight into how the **infection pattern** of COVID-19 has been experienced differently within different geographic areas of the District, **supporting and informing strategies and approaches** adopted to reduce COVID-19 infection rates in the District.



# Spatial autocorrelation and clustering of COVID-19 cases in Bradford

## OVERVIEW

**Few studies** have looked at spatial autocorrelation of COVID-19 in Europe.

To study the spatiotemporal dynamics of positive test numbers in the district – **and in particular to observe how these patterns differ between urban and rural areas** – the spatial and temporal autocorrelations of positive tests (per person, in each LSOA) were calculated.

## FINDINGS

- In the early phase of the pandemic, the distribution of positive cases throughout the district was **consistent with a random distribution**.
- From late May onwards this distribution became spatially autocorrelated – **areas with large numbers of positive cases in a week tended to be surrounded by others with large positive cases, and vice versa**.
- These 'high infection' clusters tended to be in densely-populated areas. Infection numbers here were **fairly consistent** over time, whereas in sparse areas numbers **fluctuate more**.

## IMPACT

- The research provided additional insight into how the **infection pattern** of COVID-19 has been experienced differently within different geographic areas of the District, **supporting and informing strategies and approaches** adopted to reduce COVID-19 infection rates in the District.





# Ethnicity, pre-existing comorbidities, and outcomes of hospitalised patients with COVID-19

## OVERVIEW

This project explored whether **COVID-19 positive patients with existing comorbidities**, and **minority ethnic groups**, have been found to be at increased risk of mortality.

## OBJECTIVES

We wished to determine if there were any differences in **intensive care unit (ICU) admission** and **30-day hospital mortality** in the Bradford district.



Click here for full report:  
<http://bit.ly/3eGjrMr>



## FINDINGS

- We gathered detailed information on **622 COVID-19-positive inpatients** in Bradford and Calderdale between February-August 2020, 439 (71%) of whom were White, 149 (24%) South Asian and 34 (5%) other minority ethnic patients.
- Ethnic minority patients were younger, **more likely to live in deprived areas**, and be overweight/obese, have type 2 diabetes, hypertension and asthma compared to white patients, but were less likely to have cancer (South Asian patients only) and COPD.
- Male and obese patients were **more likely** to be admitted to ICU, and patients of South Asian ethnicity, older age, and those with cancer were **less likely**.
- Being **male, older age, deprivation, obesity, and cancer** were associated with 30-day mortality.
- The risk of death in South Asian patients **was the same** as in white patients HR 1.03 (0.58, 1.82).

## IMPACT

- Despite South Asian patients being less likely to be admitted to ICU and having a higher prevalence of diabetes and obesity, there was **no difference in the risk of death** compared to white patients.
- This contrasts with other findings and highlights the value of studies of communities which may have **different ethnic, deprivation and clinical risk profiles**.





# COVID-19 in-patient hospital mortality by ethnicity

## OVERVIEW

In the early weeks of the pandemic concerns and reports began to emerge nationally that suggested people from minority ethnic backgrounds were more likely to be admitted to hospital and die from COVID-19. Locally reports were also being received that people were refusing to be admitted to hospital as a consequence of fake news about doctors and nurses killing patients.

## OBJECTIVES

We analysed the mortality rates by ethnicity of 1,276 patients who were hospitalised between 18th March to 27th April 2020 at Bradford Royal Infirmary. Of these, 812 (63.6%) tested negative for COVID-19 and 464 (36.4%) tested positive.



Click here for full report:  
<http://bit.ly/3cxmNOY>

## FINDINGS

- Of these patients, 812 (63.6%) tested **negative**, and 464 (36.4%) tested **positive**.
- The overall mortality rate in those testing positive for COVID-19 was 23.5%; this was **over twice the mortality rate** of those inpatients with negative results (8.9%), risk ratio (RR) = 2.65 (95% confidence interval (CI): 2.02 to 3.49).
- The mortality rate in those testing positive for COVID-19 was higher in White British patients (25.4%) than those of South Asian origin (18.1%) but this was **not statistically significant**.
- Mortality among non-COVID-19 cases was 10.0% and 8.2% in **White British** and **South Asian** patients, respectively.
- South Asian origin patients were **significantly younger** than White British patients (mean 49 vs 66 years), reflecting the local demographics.
- The age-adjusted RR of dying after a positive versus a negative result was 1.98 for **women**, 2.11 for **men**, 2.10 for **White British** and 1.72 for **South Asian**.
- The **age-adjusted relative increased risk of dying** from COVID-19 compared to test negative was lower, though not statistically significantly so, in South Asian compared to White British (RR = 0.87; 95% CI 0.41 to 1.84).
- Our data shows that COVID-19 **increases risk of death** for infected individuals compared to hospital patients with similar symptoms with no COVID-19 infection. They also suggest that this increased risk is **not greater** in people of South Asian (mainly Pakistani) ethnicity.

## IMPACT

- The research provided important **early analysis** of the impacts of COVID-19 locally at a time when **understanding and information was limited**.
- It was produced at time when we had patients with COVID **refusing to be admitted** because they had read **fake news** about doctors and nurses killing patients. This was **really important evidence** to show that there was **no increased risk of dying** in hospital for South Asian patients.
- It allowed us to reassure local people about **safety of hospital**. It supported early understanding of the differential impacts of the COVID-19 pandemics and **informed the development of the local test and trace service**.

# Characteristics of COVID-19 positive inpatients admitted to Bradford Royal Infirmary and Airedale General Hospital

## OVERVIEW

The project sought to assess and describe the characteristics of patients admitted to hospitals in the District with COVID-19 and whether these characteristics changed over the course of the pandemic.

## FINDINGS

- Between 1st March and 27th November 2020, 1,951 inpatients tested positive for COVID-19, 542 of whom (27.8%) have died. **Mortality rates were lower** in second (1st September – 27th November) compared to the first wave (1st March – 30th June), down from 36.1% to 21.6%.
- This fall was greater in White British (41.4% to 25.6%) than in South Asian patients (25.6% to 18.8%). The risk of dying was lower in South Asian patients in the first wave (RR 0.86 [95% CI: 0.68, 1.09]) but increased to 1.15 (0.88, 1.49) during the second wave; **however, neither of these are statistically significantly different.**
- The median age of patients who have died has increased by four years in White British patients (from 80 to 84) but **fallen by the same amount** in South Asian patients (77 to 71.5).
- There has been a reduction in the death rate in South Asian females (23 to 12%), but no change has been observed in South Asian males (28 to 27%); conversely, both sexes in the White British group have **experienced proportionately fewer deaths** (males: 44 to 30%; females 39 to 21%).
- It is not fully understood what factors are behind the **changing characteristics** in those who died from COVID-19 between the first and second waves, and further research is required.

## IMPACT

- Building on the initial analysis of COVID-19 in-patient hospital mortality by ethnicity, **analysis has continued as the pandemic has progressed.**
- It has ensured **up-to-date analysis** of the local impacts on the population of the District have been available to support understanding across different waves of the pandemic.



Click here for full report:  
<https://bit.ly/3cyb6rt>

# Changes in A & E attendances at Bradford Royal Infirmary in April, May and June 2020 compared to the same period in 2019

## OVERVIEW

The pandemic had an immediate and dramatic impact on demand and use of health services. Locally Clinicians reported attendances for non-COVID-19 conditions e.g. heart attacks and stroke were significantly lower than would normally be expected. It was important to understand how demand had changed and how this may affect the future health outcomes of the population and subsequent demands for health services.

## OBJECTIVES

We looked at the impact of the COVID-19 response on attendances at Bradford Royal Infirmary (BRI) A&E department by comparing attendances in April, May and June 2020 to the same months in the previous year.



Click here for full report:  
<https://bit.ly/3cwJHGh>

We have also completed a similar study on A&E attendances involving children and young people. You can access it here: For further information, visit: <https://bit.ly/20z10ys>



54%

In April 2020 there was a 54% decrease in non-COVID-19 related A&E attendances compared to April 2019; by May the decrease had attenuated to 35%, and by June it was 24%.

13%

Despite there being an overall reduction of over 50% in A&E attendances in April 2020, there was only a 13% drop in the number of investigations carried out.

## FINDINGS

- In April 2020 there was a **54% decrease in non-COVID-19 related A&E attendances** compared to April 2019; by May the decrease had attenuated to 35%, and by June it was 24%.
- This trend suggests that although the number of attendances remains below the same time-period in 2019, **patients are starting to access emergency clinics again**. In April 2020, 518 persons attended with suspected COVID-19. This has fallen 330 in May and 129 in June.
- In terms of diagnosis and reasons for attendance, in April the largest percentage reductions were (a) **in patients who**

**received no diagnosis or left before being seen or treated** (because patients were seen more quickly) and (b) in **strokes and TIAs and respiratory conditions**.

- In May and June, patients attending with respiratory conditions **remained lower** than the previous year, but the number of patients attending with stroke, TIA and related syndromes in June **increased**.
- June also saw the number of patients attending with **IHD, chest pain and heart failure** return to the previous year's levels. The reduction was smaller for patients attending with mental/behavioural disorders in April 2020, and by June the numbers were comparable to the previous year.
- Despite there being an overall reduction of over 50% in A&E attendances in April 2020, there was only a **13% drop in the number of investigations** carried out. This was mainly due to a huge increase in the number of blood tests, with over half of non-COVID-19 related attendances and 62% of those with suspected coronavirus receiving one. By May, the number of blood tests being performed had increased by 280%, and June saw a 404% increase. This indicates possible over-testing of people with a cough, fatigue, or fever.
- Most people are discharged from A&E with no follow-up, and there was **no change** in the number of non-COVID-19 patients

admitted in the two time-periods. However, between April and June 2020, there was almost a 100% decrease in the number of patients transferred (referred) to another health care provider compared to 2019.

- Reductions in attendances for **cerebrovascular and cardiovascular conditions** are concerning as patients who experienced symptoms (and not assessed and treated) will be at **raised risk of a further event and poor outcomes**.
- The smaller reduction in attendances seen for mental and behavioural

disorders likely reflects the overall increase in prevalence and severity of these conditions in the population, reported in several studies of the impact of the pandemic and social isolation on mental health. The reduction in the proportion of patients referred to other services may indicate unmet need and requires further investigation. If it results from **more "see and treat" activity** in A&E (reducing the numbers needing admission or referral), the Trust should explore how this can be sustained when A&E numbers increase.



## IMPACT

- Findings enabled partners to understand impacts of the COVID-19 pandemic on **different health conditions and situations**.
- Specifically regarding mental health, it supported the development of a clearer picture of early pandemic impacts and enabled a **focus on prevention and other supporting activities** to better reflect population needs.



# COVID-19 research-related outputs – at a glance

## Peer-reviewed Papers

Power M, Doherty B, Pybus K, Pickett K. How COVID-19 has exposed inequalities in the UK food system: The case of UK food and poverty. Emerald Open Research. 2020 May 13;2. 11. (<http://bit.ly/3ujn6ox>)

Lockyer B, Islam S, Rahman A, Dickerson J, Pickett K, Sheldon T, Wright J, McEachan R, Sheard L. Understanding COVID-19 misinformation and vaccine hesitancy in context: Findings from a qualitative study involving citizens in Bradford, UK medRxiv 2020.12.22.20248259; (<http://bit.ly/3um8SDq>)

Palahí, M., et al., Investing in Nature to Transform the Post COVID-19 Economy: A 10-point Action Plan to create a circular bioeconomy devoted to sustainable wellbeing. SOLUTIONS Journal, Vol. 11. 2020.

Dickerson J, Kelly B, Lockyer B et al. Experiences of lockdown during the COVID-19 pandemic: descriptive findings from a survey of families in the Born in Bradford study [version 1; peer review: 1 approved]. Wellcome Open Res 2020, 5:228 (<http://bit.ly/3uknHGI>)

McEachan RRC, Dickerson J, Bridges S et al. The



Born in Bradford COVID-19 Research Study: Protocol for an adaptive mixed methods research study to gather actionable intelligence on the impact of COVID-19 on health inequalities amongst families living in Bradford [version 1; peer review: 3 approved]. Wellcome Open Res 2020, 5:191 (<http://bit.ly/3qFsQqw>)

Pickett KE, Ajebon M, Hou B, Kelly B, Bird PK, Dickerson J, et al. Vulnerabilities in child wellbeing among primary school children: a cross-sectional study in Bradford, UK. medRxiv. 2021:2021.01.10.21249538

Matthew Thomas Johnson, Elliott Aidan Johnson, Daniel Nettle, Kate E Pickett, Designing trials of Universal Basic Income for health impact: identifying interdisciplinary questions to address, *Journal of Public Health*, 2021,; fdaa255, (<https://bit.ly/3smlGZi>)

Dickerson J, Lockyer B, Moss RH et al. COVID-19 vaccine hesitancy in an ethnically diverse community: descriptive findings from the Born in Bradford study [version 1; peer review: awaiting peer review]. Wellcome Open Res 2021, 6:23 (<http://bit.ly/3dyPqh1>)

Gillian Santorelli; Michael McCooe; Trevor Sheldon; John Wright; Tom Lawton. Ethnicity, pre-existing comorbidities, and outcomes of hospitalised patients with COVID-19. Wellcome Open Research 2021, 6:32. <https://bit.ly/3d7Yl7j>

Gillian Santorelli; Trevor Sheldon; Jane West; Chris Cartwright; John Wright. COVID-19 in-patient hospital mortality by ethnicity. Wellcome Open Research 2020, 5:86.

(<https://bit.ly/2P2oJHz>)

## Contributions to Consultations, Committees, Evidence hearings etc

Written evidence submitted by iKnowFood to House of Commons EFRA Committee on COVID-19 and Food Supply

Submission by BIHR C-SAG to Parliamentary Office of Science and Technology (POST) Survey of Experts to feed into the House of Lords COVID-19 Committee on medium- to long-term impact on inequalities

Submission by Covid Realities to House of Commons Select Committee on Women and Equalities on gendered impact of the crisis on families on low incomes



## Reports

The Northern Health Science Alliance, NIHR Applied Research Collaborations (North East and North Cumbria <https://arc-nenc.nihr.ac.uk>, Greater Manchester <https://www.arc-gm.nihr.ac.uk>, North West Coast <https://arc-nwc.nihr.ac.uk>, Yorkshire and Humber <https://arc-yh.nihr.ac.uk>), and the NIHR School of Public Health Research (<https://sphr.nihr.ac.uk>) report *COVID-19 and the Northern Powerhouse: Tackling Health Inequalities for UK Health and Productivity* looks at the impact of COVID-19 on the health and economic inequalities between the Northern Powerhouse and the rest of England.

Kate Pickett co-wrote the report section on children, incorporating BiB data. <https://bit.ly/2ZzIXtZ>

The BiB Survey papers published on Wellcome were also cited in the Government's recently-updated **COVID-19: mental health and wellbeing surveillance** report <https://bit.ly/3civcH2>

## Bradford Institute for Health Research COVID-19 Scientific Advisory Group briefings

all at: <https://bit.ly/3si6yvT>

- Overview of BIHR C-SAG
- Initial principles to reduce the impact of lockdown exit on vulnerable groups
- “When will it end? Will it end?” Findings of the First 1000 Participants in the Born in Bradford COVID-19 Parents Survey
- “Her whole little life has changed dramatically”: Findings of a qualitative study into children’s mental wellbeing in Bradford during COVID-19
- “I think I am falling behind”: Findings of the Born in Bradford COVID-19 Children Survey
- Groups who are vulnerable to the wider health, social and economic impacts of COVID-19 in Bradford
- Born in Bradford pre-COVID-19 Child Wellbeing Survey
- An overview of models for predicting demand for COVID-19 hospital inpatient care in local areas of the UK
- Attitudes to COVID-19 vaccination in Born in Bradford





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This work was supported by the **UK Prevention Research Partnership**, an initiative funded by UK Research and Innovation Councils, the Department of Health and Social Care (England) and the UK devolved administrations, and leading health research charities.



# BRADFORD CSAG IS IMMENSELY GRATEFUL TO EVERYONE WHO CONTRIBUTED TO ITS WORK THROUGHOUT THE MOST CHALLENGING OF YEARS

## BIHR

Sally Bridges, Chris Cartwright, Josie Dickerson, Bo Hou, Shahid Islam, Brian Kelly, Tom Lawton, Rebecca Lawton, Bridget Lockyer, Dan Mason, Michael McCooe, Rosie McEachan, Claire McIvor, Aamnah Rahman, Gill Santorielli, Kuldeep Sohal, Harry Tata (intern), Jane West, Kathryn Willan, John Wright

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## Airedale

Neil Scott, Chris Walton

## Bradford Council

Pippa Bird, Duncan Cooper, Kathryn Ingold, Rob Shore, Jon Stansbie, Paul Swallow, Phil Witcherly

## Bradford District and Craven CCG

Steve Gascoyne, Damien Kay, Darren Rushton, Catherine Thompson, Kerry Weir







“Strategically, the whole body of research has provided a robust research arm to our response. It has been responsive to questions, drawn upon the local databases of Connected Bradford and the Born in Bradford cohort, and delivered reports in genuinely quick time – in fact, at lightning speed by academic standards. CSAG has been the go-to resource on our doorstep”

**Duncan Cooper,**  
Consultant in Public Health, Bradford Council.



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