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Mental Health in the Pandemic – A repeated cross-sectional mixed-method study protocol to investigate the mental health impacts of the Coronavirus pandemic in the UK

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Abstract

Introduction: The world is currently firmly in the grip of the new Coronavirus Disease (COVID-19). On 11th March 2020, the World Health Organisation declared it a global pandemic with, to date, more than 45,428,731 million confirmed cases and more than 1,185,721 deaths worldwide [1]. Whilst controlling the virus and a race for a vaccine are the main foci, the population mental health impacts of the pandemic are expected to last much longer than the physical health ones [2]. The effects of physical distancing, social isolation, and lockdown on individual mental health and wellbeing as well as the loss of a loved one, working in a frontline capacity, and loss of economic security increase the mental health challenges in populations around the world [3]. The United Nations, the World Health Organisation, mental health charities and researchers have all called for the urgent need for sustained action on mental health both during and after the pandemic [4,5]. In this respect, there is also a major need for long-term research examining the experiences and needs of people as relatively little is known at this time.

Methods and analysis: This repeated cross-sectional mixed-method study conducts regular self-administered representative surveys and Focus Groups with adults in the UK, as well as validation of evidence through Citizens' Jurys, empirical enquiry through Case Studies, and policy contextualisation (for the UK as a whole and its four devolved nations) to ensure that emerging mental health problems are identified early and are properly understood, and that appropriate policies and interventions are developed and implemented across the UK and within devolved contexts. SPSS and NVIVO will be used to carry out quantitative and qualitative analysis respectively.

Ethics and dissemination: Ethics approval for this study has been granted by the Cambridge Psychology Research Ethics Committee of the University of Cambridge, UK (No. PRE 2020.050). While unlikely, participants completing the self-administered surveys or participating in the virtual Focus Groups, Citizens' Jurys and Case Studies might experience distress triggered by questions or conversations. However, appropriate mitigating measures have been adopted and signposting to services and helplines will be available at all times. Further, a dedicated member of staff will also be at hand to debrief following participation in the research and personalised thank-you notes will be sent to everyone taking part in the qualitative research.
Study findings will be disseminated in scientific journals, at research conferences, local research symposia and seminars. Evidence-based open access briefings, articles and reports will be available on our study website for everyone to access. Rapid policy briefings targeting issues emerging from the data will also be disseminated to inform policy and practice. These briefings will position the findings within UK public policy and devolved nations policy and socio-economic contexts in order to develop specific, timely policy recommendations. Additional dissemination will be done through traditional and social media. Our data will be contextualised in view of existing policies, and changes over time as-and-when policies change.

Article summary:

Strengths and limitations of the study

- **Strength #1** Robust UK-wide repeated cross-sectional mixed-method study design with data spanning pre-lockdown, during lockdown, post-lockdown, and across multiple lockdowns.
- **Strength #2** Repeated surveys with representative samples of the UK-wide adult population at set points in time and over time.
- **Strength #3** Qualitative and participatory components of the study elicit deeper meaning and understanding of and insights into various aspects of the pandemic, as well as

provide additional participatory evidence validation and interpretation on some topics of interest and/or concern.

- **Strength #4** All aspects and outputs of the study are contextualised within the UK-wide as well as UK devolved nations (England, Scotland, Wales, Northern Ireland) Coronavirus pandemic policy response and socio-economic contexts.
- **Limitation #1** It is acknowledged that most of the information for this study is self-reported and that there might be a bias towards those with sufficient time, motivation and internet access to complete online surveys and take part in online qualitative and participatory work.

Keywords: COVID-19, Coronavirus pandemic, mental health, wellbeing, cross-sectional mixed-method study, health policy

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Introduction

The world is currently firmly in the grip of the new Coronavirus Disease (COVID-19). On 11th March 2020, the World Health Organisation declared it a global pandemic with, to date, more than 45,428,731 million confirmed cases and more than 1,185,721 deaths worldwide [1]. Whilst controlling the virus and a race for a vaccine are the main foci, the population mental health impacts of the pandemic are expected to last much longer than the physical health ones [2]. The effects of physical distancing, social isolation, and lockdown on individual mental health and wellbeing as well as the loss of a loved one, working in a frontline capacity, and loss of economic security increase the mental health challenges in populations around the world [3]. The United Nations, the World Health Organisation, mental health charities and researchers have all called for the urgent need for sustained action on mental health both during and after the pandemic [4,5]. In this respect, there is also a major need for long-term research examining the experiences and needs of people as relatively little is known at this time.

Thus far, a lot of that interest has focused on immediate and short-term concerns [2]. For example, while emotional responses of stress and fear in the face of a pandemic caused by a novel virus of which little is known are normal and expected [6,7], excessive and protracted feelings of stress and powerlessness may have significant impact on individuals' mental health through well-known mechanisms [8]. The evidence also suggests that there is likely to be a more lasting impact on people with long-term conditions, both those with pre-existing mental ill-health diagnoses facing disrupted access to primary mental health, and those with other long-term conditions who are experiencing delays in care and operations, as well as fear of attending hospital appointments [9].

Early research has brought attention to the psychological impacts of such viral epidemics and protracted physical distancing measures, including those that are expected (such as loss of identity, disruption to usual activity, increases in feelings of loneliness) and those that may be unintended (including increases in domestic violence, child maltreatment and cyberbullying) [5]. For many, several coping strategies to deal with this psychological impact can be detrimental to mental health, including alcohol and drug misuse, and online gambling [6]. Early studies have also highlighted the impact of stigma and discrimination targeted at certain communities (in the case of COVID-19 this was predominantly Asian minorities as well as those infected with COVID-19) [7], including risks of abuse of power from local police officers or politicians [8].

Lessons from past epidemics or similar healthcare crises are also important in anticipating impacts on mental health [9]. For example, there is a higher concentration of social determinants associated with self-harm and suicidal ideation in this period, including isolation, stress, financial worries, disruption of personal recovery plans, and relationship discord [10]. Many people across the world will also be dealing with the effects of the pandemic's excess bereavement burden [11], and there is a recognised increased risk for post-traumatic stress disorder, both for those surviving hospitalisation in Intensive Care Units and the frontline healthcare workers and people with existing mental health vulnerabilities [12].

Lastly, there are socio-economic and political determinants affecting population mental health, especially in the long term. For example, certain governments have been following a damaging populist approach by taking advantage of the pandemic messaging to prioritise personal responsibility over structural interventions [13]. Further, the deep economic recession that is expected to follow will intensify and resurface the social inequalities that lead to the increased prevalence and unequal distribution of mental ill-health [14,15]. Crucially, there is a need to understand the importance of pandemic responses from the 'bottom up', to acknowledge the

local perspectives, the needs and the responses of individual communities [16]. Furthermore, information related to social issues, (such as the way in which people interact, how social inequalities impact the extent to which we implement, sustain and subsequently lift lockdown measures, and take care and are able to be cared of), can also be vital to support the epidemiological mathematical models currently being employed by the government. Timely and robust evidence-based data is therefore a good way to address these concerns.

Study aims

This mixed-method study aims to gauge the extent of and gain insights into the mental health impacts of the current Coronavirus pandemic on the UK adult population, how this changes over time, what the current and future mental health needs are, and how best to address these within context.

Research questions include:

- What are the key emotional and psychological responses of adults in the UK to the evolving circumstances of the COVID-19 pandemic?
- What are the key risk and protective factors related to mental health for adults in the UK?
- What are the main coping mechanisms that adults in the UK have developed in relation to their mental health in the context of the pandemic?
- What is the impact of the pandemic and associated measures and circumstances on suicidal ideation and self-harm?
- How are all the above impacted by factors such as socio-economic status, age, gender, parenting status, geographical area and how are particular at-risk groups (e.g. ethnic minorities, people with disabilities) affected?
- How do adults in the UK view their future and that of society as a whole in light of the COVID-19 pandemic?
- How should we emerge from the COVID-19 pandemic (what is important to UK adults for their wellbeing and quality of life in emerging from the pandemic, and what do UK adults think governments should do to 'build back better')?

Design, methods, analyses

Study design

This is a repeated cross-sectional mixed-method study incorporating multiple complementary components which will enable us to generate robust evidence and build a comprehensive picture regarding the mental health impacts of the novel Coronavirus pandemic on the UK adult population:

1. Repeated Cross-sectional Surveys
2. Focus Groups
3. Citizens' Jury
4. Case Studies
5. Policy Contextualisation

The study commenced in March 2020 with the first data collection 'wave' on 17th and 18th March prior to UK national 'lock-down'. The study will run for at least 18 months (until September 2021), in first instance.

(1). Repeated Cross-sectional Surveys

Cross-sectional surveys will be carried out repeatedly (circa every month) on a long-term basis in representative samples of the UK adult population through the market research company

YouGov Plc. This aspect of the study will gauge the extent and nature of the mental health impacts of the Coronavirus pandemic and coping strategies as well as changes over time. Repeated cross-sectional surveys are an ideal method to provide good estimates for the current population (at each cross-sectional survey) and the changes over time (across the repeated cross-sectional surveys) at population level. [17]

(2). Focus Groups

Following the repeated cross-sectional surveys, we will conduct regular Focus Groups with a purposefully selected maximum variation samples of people drawn from the UK adult population. Focus Group topics will revolve around key findings from the various 'waves' of survey data. This will enable us to explore in-depth and in an organised manner, the perspectives, experiences and attitudes of the UK adult population regarding various aspects of the mental health impacts of the Coronavirus pandemic, related measures and consequences, which will provide us with crucial and new insights, deeper meaning and better understanding in this respect.

(3). Citizens' Juries

We will also deploy occasional Citizens' Juries around topics of interest and/or concern arising from the various survey and focus group data that would benefit from further interpretation in order to help formulate recommendations for policy and practice. This form of participatory research helps to legitimise non-expert knowledge. As with a legal trial, a Citizens' Jury assumes that if a group of people are presented with evidence, they can evaluate this and draw conclusions that are representative of the wider public. This participatory method can take a variety of forms. However, their essential characteristics are that participants have time to deliberate over the evidence that they are presented with and are able to pose questions. Subsequently, the Jury must also come to a 'verdict', i.e. a joint conclusion about the topic discussed to help formulate recommendations [18,19].

(4). Case Studies

Case studies will enable us to provide additional empirical inquiry into the lived experiences within the real-life context of the Coronavirus pandemic journey for individuals, specific population groups and/or phenomena of interest. As a qualitative methodology, case studies are an exploration of a time- and space-bound phenomenon. This method of empirical inquiry is appropriate to determine the "how and why" of phenomena and contribute to understanding this in a holistic and real-life context. In the qualitative case study methodology, a variety of methodological approaches can be employed to explain the complexity of the problem being studied. We will utilise the learnings gathered through the various aspects of this study combined with documentary investigation and personal in-depth interviews regarding people's journeys through the Coronavirus pandemic, which will further enable us to generate insights and new avenues for investigation.

(5). Policy Contextualisation

All aspects and outputs of this study will be properly contextualised against and within the UK-wide Coronavirus pandemic policy response and that of each of the devolved nations of the UK as well as socio-economic contextualisation. This will allow us to compare and contrast similarities and differences across and within the UK context, and changes over time as-and-when policies and circumstances change. [Note - We will not repeat this point no.5 'Contextualisation' in the below sections on 'Participant recruitment and data collection procedures' and 'Data analyses'].

Study population

For this entire study, the population constitutes adults (18+ with no upper age limit) from across the entire United Kingdom (England, Wales, Scotland and Northern Ireland) and from all walks of

life. People taking part in all aspects of the study must be able to understand, speak and read English as well as have capacity to consent to take part in the study. People must also have access to the internet or a phone.

Participant recruitment and data collection procedures

(1). Repeated Cross-sectional Surveys

The online survey questionnaire has been developed by this study consortium and will be administered to members of the YouGov market research 'UK Panel' including 1,200,000+ individuals drawn from across the entire UK who have agreed to take part in surveys. Emails are sent to panellists selected at random from the base sample. The email invites them to take part in a survey and provides a generic survey link. Once a panel member clicks on the link they are sent to the survey that they are most required for, according to the sample definition and quotas (the sample definition in this case is "UK adult population"). The responding sample is weighted to the profile of the sample definition to provide a representative reporting sample. The profile is normally derived from census data or, if not available from the census, from industry accepted data. Panellists sign up to take surveys and they agree to the YouGov's terms and conditions and privacy policy beforehand.

(2). Focus Groups

Following the repeated cross-sectional surveys, we will hold regular focus groups on topics of importance and concern arising from the data of the various survey waves. Each focus groups will be carried out virtually and will consist of between 8-12 people drawn from the UK adult population. We will utilise purposefully selected maximum variation sampling in order to capture as wide a variety of views, perceptions and experiences as possible [20,21]. Potential participants will be approached through gatekeeper organisations such as third sector organisations. Potential participants will receive an Invitation Email with further Study Background Information and topic for the Focus Group discussion. If they wish more information and/or to participate in the focus group, they can then contact the designated person. Participants will then receive a further information about the focus group and – upon agreeing to participate – a Consent Form to provide written consent prior to any virtual meetings. Focus group discussions will be carried out entirely virtually via ZOOM or MS Teams, and will last for approximately one hour. The focus groups will be co-facilitated by two Chairs. Meetings will be audio- or video-recorded (only upon consent of all participants) and notes will be taken by hand by silent observers (this will be made clear to the participants). Focus group discussions will follow from the repeated UK national surveys and will discuss the most poignant findings and arising matters. Hence, there is no set topic guide yet as the content can vary from survey to survey. However, each focus group will start with a brief presentation of survey data by one of the chairs, followed by an organised discussion following a focus group topic guide with semi-structured open-ended questions around a particular topic (for instance, topics could potentially be around coping strategies, financial security, inequalities, lockdown experiences, the future post COVID-19, and more). Participants can take part in all, some, one or none of the regular focus group discussions on topics following the repeated survey waves. Participants will receive a reimbursement for their time.

(3). Citizens' Juries

Participants for the occasional Citizens' Jury on specific topics requiring further deliberation, will be recruited using snowballing sampling via third sector organisations' UK-wide networks of mental health experts, advocates, carers, and people with self-reported lived experiences with full capacity to consent. The further mechanisms are similar to those of the focus group recruitment and data collection procedures. Potential participants will receive an Invitation Email

with further Study Background Information. If they wish to participate in the Citizen's Jury, they can contact the designated person. Participants will then receive a further information and – upon agreeing to participate – a Consent Form to provide written consent. Signed written informed consent will be sought from participants to the Citizens' Jury prior to any meetings. It is expected that all potential participants in the Citizens' Jury will be adults with mental health experience, for instance, as a professional, an advocate, a carer, or a person with lived experience. All study leads and researchers are fully trained and experienced in safeguarding. It also will be made explicit that participation in this research is entirely voluntary and they can request more time to decide or change their mind at any point.
Similar to the focus group discussions, Citizens' Jury meetings will be entirely virtually via ZOOM or MS Teams, have around 10-15 people per meeting and are approximately 1.5hour long. The Jury will be co-facilitated by two Chairs. Meetings will be audio- or video-recorded (only upon consent of all participants) and notes will be taken by silent observers. The Citizens' Jury will start with an overview of the study. Subsequently, detailed data ('evidence') will be presented to the Jury members. They will then have time to ask questions and thereafter take time to 'deliberate' and formulate a joint 'verdict' with recommendations for policy and practice. Jury participants too will receive a reimbursement for their time.

(4). Case Studies

In the qualitative case study methodology, a variety of methodological approaches can be employed to explain the complexity of the problem being studied. We will utilise the learnings gathered through the various aspects of this study combined with documentary investigation. In the event that we would gather additional data through in-depth interviews with individuals regarding their experiences of the Coronavirus pandemic, we will purposefully select participants and recruit them through third sector organisations and other organisations. Similar to the Focus Group and Citizens' Jury recruitment and data collection procedures, potential participants will receive an Invitation Email and Information Sheet with study background information. If a participant consents to take part then they will receive a consent form to sign. An experienced qualitative interviewer will carry out the interview. Case study interview will take approximately one hour and will follow a semi-structured topic guide with open-ended questions regarding the topic of interest for the case study.

Data analysis

(1). Repeated Cross-sectional Surveys

Descriptive statistics (frequencies, means, medians and SD) pertaining to the outcome measures and putative explanatory factors will be presented for each cross-sectional cohort at each point in time. Sample weighting will be incorporated in statistical analyses to obtain UK representative estimates. We will consider patterns of change at an aggregate level over time based on percentages of population and time trend analysis where appropriate. We will conduct regression modelling and include dependent variables for data collected in each survey wave to control for period differences between years. All analyses will be performed with Stata version 15·1 [22].

(2). Focus Groups:

Focus group recorded data will be transcribed and anonymised. Subsequently, data will be organised with NVIVO.10 software and analysed for major themes using thematic analysis following the guidelines of Howitt [20] and Braun and Clarke [21]. This method is particularly appropriate for this project as it is a descriptive method which can be used to identify themes and summarise content of rich depth discussions and interviews [20]. The analysis will be data-driven and will go through the step of familiarisation, initial coding generation, searching for themes, themes definition and labelling [21]. The data will be presented in the form of a

summary of key themes evidences with illustrative quotes. Key themes will be crossed-checked and validated between the researchers.

(3). Citizens' Jury:
Thematic analysis of the transcribed and anonymised Citizens' Jury data will follow the same steps as the Focus Group analysis. The accessibility of this approach also makes it appropriate for use in participatory research. The research questions ask for exploration of experience of the Coronavirus pandemic and related measures, ultimately to inform current policy and to build knowledge around the topic. Citizens' Jury meetings reports will be produced following each Jury meeting.

(4). Case Studies:
Individual in-depth interviews for case studies will be transcribed and anonymised. Similar to the focus groups and Citizens' Jury analysis, interviews will also be analysed for major themes using thematic analysis as described above. Findings from the interviews will be incorporated with learnings from the various aspects of this study combined with documentary investigation to compile the case studies.

Methodological considerations

Authors acknowledge that all of the information for this study will be collected through questionnaires and interviews, and therefore is self-reported.

Bias in the study

Given the nature of this pandemic, all work will be carried out remotely. This means that participants require to have access to the internet and/or a telephone. It is fully acknowledged that not everyone has these facilities and therefore recruitment biases might be possible mainly in relation to age, geographical location, and socio-economic circumstances.

Further, in terms of the surveys, YouGov market research services ask their participants to fill in a number of online questionnaires which can take a good proportion of their time. This may influence the recruitment procedure and may reduce completion rates. Recruitment bias may therefore be a possibility.

Ethics and dissemination

Ethics: Ethics approval for this study has been granted by the Cambridge Psychology Research Ethics Committee of the University of Cambridge (No. PRE 2020.050). While unlikely, participants completing the self-administered surveys or participating in the virtual Focus Groups, Citizens' Jurys and Case Studies might experience distress triggered by questions or conversations. However, the study leads all have extensive training and experience in working within mental health and at risk populations. Experienced facilitators, trained in safeguarding, will lead any virtual meetings and workshops, and full Safe Guarding procedures will be followed (as stipulated by all partner organisations involved). In the 'Invitation Email', 'Background to Study' and 'Participants Information Sheet', all participants will be clearly informed about the nature of the study and the conversations that will take place. It will also be made very clear in the 'Participants Information Sheet' and before the start of any conversations that participants do not have to participate or have to answer any questions that they do not wish to and they can withdraw their participation at any point without giving a reason for doing so and have their data deleted from the study. If a participant becomes upset or uncomfortable, we will give them the opportunity to move on to

the next question or take a break or withdraw from the study if they wish to do so. Further appropriate mitigating measures have also been adopted in all aspects of the study such as clear signposting to relevant organisations, services and helplines for help.

Compensation: YouGov Survey participants receive points for every survey they complete. Once they achieve certain amount of points they receive a monetary sum. On average, there are 50 points per survey. Once they reach 5000 points they get £50 from YouGov. Participants taking part in the qualitative aspects of this study will be compensated for their time on the basis of £20/hour equivalent. Time remunerated will include participation in (virtual) meetings, preparation time for meetings and time for providing feedback.

Data protection: All YouGov survey data are only shared in an anonymous format. Personal participant information from the qualitative aspects of this study will be held securely, along with meeting notes. These notes are completely anonymous. All data will be stored in encrypted files on password enabled computers and confirm with the GDPR framework.
All data and information will be securely stored on University and Mental Health Foundation secure servers. All partner organisations fully comply with the law on personal data protection (the Data Protection Act 2018 and the General Data Protection Regulation (GDPR)).
Anonymous (aggregate) survey data or anonymised qualitative data will only be shared with direct researchers of the partner organisations using secure, password-protected electronic transfers. Data will then be stored on secure University servers. Information will be stored for five years after the project's end.

Dissemination: Study findings will be disseminated in scientific journals, at research conferences, local research symposia and seminars. Evidence-based open access briefings, articles and reports will be available on our study website for everyone to access. Rapid policy briefings targeting issues emerging from the data will also be disseminated to inform policy and practice. These briefings will position the findings within UK public policy and devolved nations policy in order to develop specific, timely policy recommendations. Our data will be contextualised in view of existing policies, and changes over time as-and-when policies change as well as socio-economic context. Further dissemination will be carried out through traditional and social media. Additionally, local, national and international stakeholder groups and networks will be informed of the findings of the study to encourage and facilitate knowledge sharing and reciprocal learning.

Significance of this study

It is anticipated that the mixed-method outputs of this study will yield crucial insights for policy, practice and intervention development as well as service configuration to ensure that the short- and long-term psychosocial needs of the UK population are adequately understood and addressed within context both during but especially also when emerging from this pandemic.

Development of new knowledge and psychosocial theories related to the impact of the Coronavirus pandemic (such as the way in which people interact, how social inequalities impact the extent to which we implement and sustain lockdown measures, take care of, and are able to be cared for), can also be vital to support the epidemiological mathematical models currently being employed by the government.

Summary and conclusions

Long-term comprehensive mixed-methods studies on the mental health impacts of the novel Coronavirus pandemic (COVID-19), related measures and consequences are scarce yet much

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needed in order to fully understand and appropriately address both the short- and long-term psychosocial issues arising. It is therefore fully anticipated that the knowledge and insights gained from this repeated cross-sectional mixed-method study will feed into policy, practice and intervention developments, and provide a thorough understanding on how to "build back better" when emerging from this pandemic. We invite colleagues from across the world to join these efforts and collaborate for a better future.

Patient and public involvement

People with lived experiences of mental health as well as mental health carers have helped inform all aspects of this protocol and will be involved in ongoing research through the PPIE networks of the Mental Health Foundation and other mental health thrird sector organisations.

Data statement

Once the study and dissemination has concluded, we intend to make our data available upon request and within open repository through our university. Meantime, we also intend to collaborate and join forces with colleagues nationally and internationally whilst the study is ongoing (upon request).

Author contributions

TVB wrote the Study Protocol manuscript. TVB, AAK, and AJ are joint study leads. AM and GD are lead collaborators on the study. SS is the study coordinator. All co-authors contributed towards the development of the Study Protocol and have read and approved the final Study Protocol manuscript.

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Competing interests

There are no competing interests.

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Mental Health in the Pandemic – A repeated cross-sectional mixed-method study protocol to investigate the mental health impacts of the Coronavirus pandemic in the UK

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Abstract

Introduction: The World Health Organisation declared a global pandemic on 11th March 2020. Since then, the world has been firmly in the grip of the new Coronavirus Disease (COVID-19). To date, more than 149,910,744 million confirmed cases and more than 3,155,168 million people have died. Whilst controlling the virus and implementing vaccines are the main priorities, the population mental health impacts of the pandemic are expected to be longer term and are less obvious than the physical health ones. Lockdown restrictions, physical distancing, social isolation, as well as the loss of a loved one, working in a frontline capacity and loss of economic security may have negative effects on, and increase the mental health challenges in populations around the world. There is a major demand for long-term research examining the mental health experiences and needs of people in order to design adequate policies and interventions for sustained action to respond to individual and population mental health needs both during and after the pandemic.

Methods and analysis: This repeated cross-sectional mixed-method study conducts regular self-administered representative surveys, and targeted focus groups and semi-structured interviews with adults in the UK, as well as validation of gathered evidence through citizens' juries for contextualisation (for the UK as a whole and for its four devolved nations) to ensure that emerging mental health problems are identified early on and are properly understood, and that appropriate policies and interventions are developed and implemented across the UK and within devolved contexts. STATA and NVIVO will be used to carry out quantitative and qualitative analysis respectively.

Ethics and dissemination: Ethics approval for this study has been granted by the Cambridge Psychology Research Ethics Committee of the University of Cambridge, UK (No. PRE 2020.050). While unlikely, participants completing the self-administered surveys or participating in the virtual focus groups, semi-structured interviews and citizens' juries might experience distress triggered by questions or conversations. However, appropriate mitigating measures have been adopted and signposting to services and helplines will be available at all times. Further, a dedicated member of staff will also be at hand to debrief following participation in the research and personalised thank-you notes will be sent to everyone taking part in the qualitative research.
Study findings will be disseminated in scientific journals, at research conferences, local research symposia and seminars. Evidence-based open access briefings, articles and reports will be available on our study website for everyone to access. Rapid policy briefings targeting issues emerging from the data will also be disseminated to inform policy and practice. These briefings will position the findings within UK public policy and devolved nations policy and socio-economic contexts in order to develop specific, timely policy recommendations. Additional dissemination will be done through traditional and social media. Our data will be contextualised in view of existing policies, and changes over time as-and-when policies change.

Article summary:

Strengths and limitations of the study

- **Strength #1** Robust UK-wide repeated cross-sectional mixed-method study design with data spanning pre-lockdown, during lockdowns, post-lockdowns, and across multiple lockdowns.
- **Strength #2** Repeated surveys with representative samples of the UK-wide adult population at set points in time and over time.
- **Strength #3** Qualitative and participatory components of the study elicit deeper meaning and understanding of and insights into various aspects of the pandemic, as well as provide additional participatory evidence validation and interpretation on some topics of interest and/or concern.

- **Strength #4** All aspects and outputs of the study are contextualised within the UK-wide as well as UK devolved nations (England, Scotland, Wales, Northern Ireland) Coronavirus pandemic policy response and socio-economic contexts.
- **Limitation #1** It is acknowledged that most of the information for this study is self-reported and that there might be a bias towards those with sufficient time, motivation and internet access to complete online surveys and take part in online qualitative and participatory work.
- **Limitation #2** In the survey, the focus on COVID-19 related questions meant that there were limited opportunities to include existing, commonly used measures which would have enabled wider comparison across time, settings and populations.
- **Limitation #3** In the survey, there is the general possibility of sampling and non-response bias but, given the focus of this study, there is a specific concern about the possible under-representation of people with pre-existing mental health problems. This was partly mitigated through the qualitative and participatory study components.

Keywords: Coronavirus pandemic, COVID-19, cross-sectional mixed-method study, health policy, mental health, wellbeing

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Introduction

The world is currently firmly in the grip of the new Coronavirus Disease (COVID-19). On 11th March 2020, the World Health Organisation declared it a global pandemic with, to date, more than 149,910,744 million confirmed cases and more than 3,155,168 million deaths worldwide [1]. Whilst controlling the virus and vaccinating the world are the main foci, the population mental health impacts of the pandemic are expected to last much longer than the physical health ones [2]. The effects of physical distancing, social isolation, and lockdown on individual mental health and wellbeing as well as the loss of a loved one, working in a frontline capacity, and loss of economic security increase the mental health challenges in populations around the world [3]. The United Nations, the World Health Organisation, mental health charities and researchers have all called for the urgent need for sustained action on mental health both during and after the pandemic [4,5]. In this respect, there is also a major need for long-term research examining the experiences and needs of people as still relatively little is known at this time.

Thus far, a lot of that interest has focused on immediate and short-term concerns [2]. For example, while emotional responses of stress and fear in the face of a pandemic caused by a novel virus of which little is known are normal and expected [6,7], excessive and protracted feelings of stress and powerlessness may have significant impact on individuals' mental health through well-known mechanisms [8]. The evidence also suggests that there is likely to be a more lasting impact on people with long-term conditions, both those with pre-existing mental ill-health diagnoses facing disrupted access to primary mental health, and those with other long-term conditions who are experiencing delays in care and operations, as well as fear of attending hospital appointments [9].

Early research has brought attention to the psychological impacts of such viral epidemics and protracted physical distancing measures, including those that are expected (such as loss of identity, disruption to usual activity, increases in feelings of loneliness) and those that may be unintended (including increases in domestic violence, child maltreatment and cyberbullying) [5]. For many, several coping strategies to deal with this psychological impact can be detrimental to mental health, including alcohol and drug misuse, and online gambling [6]. Early studies have also highlighted the impact of stigma and discrimination targeted at certain communities (in the case of COVID-19 this was predominantly Asian minorities as well as those infected with COVID-19 and/or caring for those patients) [7], including risks of abuse of power from local police officers or politicians [8].

Lessons from past epidemics or similar healthcare crises are also important in anticipating impacts on mental health [9]. For example, there is a higher concentration of social determinants associated with self-harm and suicidal ideation in this period, including isolation, stress, financial worries, disruption of personal recovery plans, and relationship discord [10]. Many people across the world will also be dealing with the effects of the pandemic's excess bereavement burden [11], and there is a recognised increased risk for post-traumatic stress disorder, both for those surviving hospitalisation in Intensive Care Units and the frontline healthcare workers and people with existing mental health vulnerabilities [12].

Lastly, there are socio-economic and political determinants affecting population mental health, especially in the long term. The pandemic should not be underestimated as a long-term force for change and it is well recorded that injustice and avoidable health inequalities are claiming more lives than short-term disasters. For example, certain governments have been following a damaging populist approach by taking advantage of the pandemic messaging to prioritise personal responsibility over structural interventions [13]. Further, the deep economic recession that is expected to follow will intensify and resurface the social inequalities that lead to the increased prevalence and unequal distribution of mental ill-health [14,15]. Crucially, there is a need to

understand the importance of pandemic responses from the 'bottom up', to acknowledge the local perspectives, the needs and the responses of individual communities [16]. Furthermore, information related to social issues, (such as the way in which people interact, how social inequalities impact the extent to which we implement, sustain and subsequently lift lockdown measures, and take care and are able to be cared of), can also be vital to support the epidemiological mathematical models currently being employed by the government. Timely and robust evidence-based data is therefore a good way to address these concerns.

Study aims

This mixed-method study aims to gain insights into the mental health experiences and dynamics of the current Coronavirus pandemic on the UK adult population, how this changes over time, what the current and future mental health needs are, and how best to address these within context.

Research questions include:

- A. What are the key emotional and psychological responses of adults in the UK to the evolving circumstances of the COVID-19 pandemic?
- B. What are the key risk and protective factors related to mental health for adults in the UK?
- C. What are the main coping mechanisms that adults in the UK have developed in relation to their mental health in the context of the pandemic?
- D. What is the impact of the pandemic and associated measures and circumstances on suicidal ideation and self-harm?
- E. How are all the above impacted by factors such as socio-economic status, age, gender, parenting status, geographical area and how are particular at-risk groups (e.g. ethnic minorities, people with disabilities) affected?
- F. How do adults in the UK view their future and that of society as a whole in light of the COVID-19 pandemic?
- G. How should we emerge from the COVID-19 pandemic (what is important to UK adults for their wellbeing and quality of life in emerging from the pandemic, and what do UK adults think governments should do to 'build back better')?

Design, methods, analyses

Study design

This is a repeated cross-sectional mixed-method study incorporating multiple complementary components which will enable us to generate robust evidence and build a comprehensive picture regarding the mental health experiences and dynamics of the novel Coronavirus pandemic on the UK adult population. These complementary components are:

1. Quantitative component: Repeated cross-sectional surveys
2. Qualitative component: Focus groups and semi-structured interviews
3. Participatory component: Citizens' juries
4. Contextualisation component

Timeline

The study commenced in March 2020 and will run until December 2021 in first instance. The first 'wave' of data collection took place on 17th and 18th March 2020 prior to the first UK national lock-down. Current data collection is scheduled to run until the autumn of 2021, roughly coinciding with the 'opening up' (lifting of lockdown) and completion of the UK adult vaccination programme. Further study dissemination will take place until 31st December 2021. Depending on how the

Coronavirus pandemic further unfolds in the UK and depending on funding, the study might be extended beyond this current timeframe. [See Figure 1: Study Timeline]

['Figure 1: Study Timeline' inserted here]

(1). Quantitative component: Repeated cross-sectional surveys

Cross-sectional surveys will be carried out repeatedly (circa every 4-6 weeks and/or at crucial points in time) on a long-term basis in representative samples of the UK adult population through the market research company YouGov Plc. The objective of the survey will be to gauge the extent and nature of the mental health experiences and dynamics of the Coronavirus pandemic and coping strategies as well as changes over time through reaching a large number of study participants. Repeated cross-sectional surveys are an ideal method to provide good estimates for the current population (at each cross-sectional survey) and the changes over time (across the repeated cross-sectional surveys) at population level. [17] For this particular long-term study, a repeated cross-sectional survey design is being favoured over a cohort survey design as it provides some clear benefits. These include, for instance:

- Being able to observe the mental health of the wider UK adult population at a single point in time (cross-sectional 'snap-shot') as well as comparing population level data over time (across the repeated cross-sections);
- Allowing for comparison across different variables both at a single point in time and over time;
- A cohort study design might not have been very practical and might have posed several challenges during these pandemic times (such as people falling ill, people passing away, people needing to drop out of the study due to long-covid, caring responsibilities, or for other reasons);
- Cohort studies also take longer to set up and, at the start of the pandemic and looming first UK lockdown, the researchers needed to act fast whilst still providing robustness of study design.

Therefore, the repeated cross-sectional study design was agreed to be the best observational design for our study. [17] This method will be particularly useful to answer research questions A to F.

(2). Qualitative component: Focus groups and semi-structured interviews

Following the repeated cross-sectional surveys, we will conduct regular focus groups and semi-structured interviews with purposefully selected maximum variation samples of people drawn from the UK adult population. We are particularly keen on working with at risk populations such as people with pre-existing mental health conditions, people with long-term complex conditions, unemployed people, single parents, people from ethnic minorities, young people and the elderly.

The objective of this qualitative component is to explore specific issues emerging from the survey data, through in-depth qualitative data gathering. Topics will revolve around key findings from the various 'waves' of survey data as well as standardised questions across these population groups in relation to their mental health experiences during the Coronavirus pandemic, their coping strategies, how their population group can be best helped, and how we should come out of this pandemic (how the post-pandemic world should look like). This will enable us to explore in detail and in an organised manner, the perspectives, experiences and attitudes of the UK adult population regarding various aspects of their mental health experiences of the Coronavirus pandemic, related measures and consequences, which will provide us with new insights, deeper meaning and better understanding in this respect and will be a crucial contribution towards informing policy and intervention development. We expect the focus groups and semi-structured interviews to be able to answer research questions A to G.

(3) Participatory component: Citizens' juries

We will also deploy public participation with the study findings through occasional citizens' juries around topics of interest and/or concern arising from the various quantitative and qualitative data gathering that would benefit from further interpretation and contextualisation in order to help formulate recommendations for policy and practice. The objective of the citizens' juries is to inform policy and practice though exploring different study findings in detail, actively discussing these, and then jointly deliberating to come to a verdict around recommendations for policy and practice. This form of participatory research helps to legitimise non-expert knowledge. As with a jury in a legal trial, a citizens' jury assumes that if a group of people are presented with research evidence, they can evaluate this and draw conclusions that are representative of the wider public. [18,19] This participatory method can take a variety of forms in different steps. However, their essential characteristics are that participants have time to deliberate over the evidence that they are presented with and are able to pose questions. Subsequently, the citizens' jury must also come to a 'verdict', i.e. a joint conclusion about the topic discussed to help formulate recommendations. [18,19] The citizens' juries will be particularly useful to contribute to research question G.

(4). Contextualisation component

All aspects and outputs of this study will be properly contextualised against and within the UK-wide Coronavirus pandemic policy response and that of each of the devolved nations of the UK as well as socio-economic contextualisation. This will allow us to compare and contrast similarities and differences across and within the UK context, and changes over time as-and-when policies and circumstances change. [Note - We will not repeat this point no.4 'Contextualisation' in the below sections on 'Participant recruitment and data collection procedures' and 'Data analyses'].

Table 1 below provides a summary of the different research questions and the methods and strategies we plan to use to answer them.

Research Questions (Short)	**Data Collection Method**	**Objective of data collection method**	**How we will collect data**
A. **What are the key emotional and psychological responses?** B. **What are the key risk and protective factors?** C**. What are the main coping mechanisms**	Quantitative Component: Repeated Cross-sectional Surveys **Answering Questions A to F**	To investigate the nature of the mental health experiences and dynamics of the Coronavirus pandemic and coping strategies as well as changes over time through reaching a large representative sample of the UK adult population (18+).	The surveys will be administered through market research organisation YouGov Plc. These will be carried out regularly (circa every 4-6 weeks) over the phone or self-administered through the internet in representative samples of the UK adult population.

that have been developed? D**. What is the impact of the pandemic and associated measures and circumstances on suicidal ideation and self-harm?** E. **How are all the above impacted by factors such as socio-economic status, age, gender, parenting status, geographical area and how are particular at-risk groups?** F. **How do adults in the UK view their future and that of society?** G**. How should we emerge from the COVID-19 pandemic (e.g. what do UK adults think governments should do to 'build back better')?**	Qualitative Component: Focus Group **Answering Questions A to G**	To explore specific issues that emerge from the survey data, through in-depth qualitative data with a purposefully selected maximum variation sample. A second sample of participants belonging to higher risk and/or inequality groups will be employed to address issues experienced to those particular groups.	The Focus Groups will be delivered around key findings from the surveys, emerging literature and policy context, and will relate to our research questions. These will be conducted every 3-4 months.
	Qualitative Component: Semi-structured Interviews **Answering Questions A to G**	To explore specific issues that emerge from the survey data, through in-depth qualitative data with a sample of participants that belong to higher risk and/or inequality groups.	The semi-structured interviews will be delivered around key findings from the surveys, emerging literature and policy context, and will relate to our research questions. These will be conducted every 3-4 months.
	Participatory Component: Citizens' Jury **Answering Question G**	To inform policy and practice, through exploring, validating and contextualising different study findings with a purposefully selected maximum variation sample of participants.	The Citizen Jury will engage participants in a deliberative stepwise approach, discussing potential solutions and practical implications to key issues emerged from the survey data.

Study population

For this entire study, the population constitutes adults (18+ with no upper age limit) from across the entire United Kingdom (England, Wales, Scotland and Northern Ireland) and from all walks of life. People taking part in all aspects of the study must be able to understand, speak and read English as well as have the capacity to consent to take part in the study. People must also have access to the internet or a phone.

Participant recruitment and data collection procedures

(1). Quantitative component: Repeated cross-sectional surveys

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The online survey questionnaire has been specifically developed by this study consortium to investigate COVID-19 related mental health experiences. These surveys will be administered to members of the YouGov market research 'UK Panel' including 2,400,000+ individuals drawn from across the entire UK who have agreed to take part in research surveys. Panel members are recruited from a host of different sources, including via standard advertising, and strategic partnerships with a broad range of websites. When panellists take surveys they accumulate points which can later be redeemed for a £50 payment upon reaching 5000 points. Points per survey range from 50 to 100.

Emails are sent to panellists selected at random from the base sample. The email invites them to take part in a survey and provides a generic survey link. With Active Sampling only this sub-sample has access to the questionnaire via their username and password, and respondents can only ever answer each survey once. Once a panel member clicks on the link they are sent to the survey that they are most required for, according to the sample definition and quotas (the sample definition in this case is "UK adult population"). The responding sample is weighted to the profile of the sample definition to provide a representative reporting sample; the baseline for which at a 95% confidence interval for a sample of 1,000 people is +/- 3%, dropping to 2% with a 2,000 sample. The profile is normally derived from census data or official population estimates from the Office for National Statistics (ONS). If not available from the census and ONS, the profile is derived from industry accepted data (including large scale random probability surveys, such as the Labour Force Survey, the National Readership Survey and the British Election Study). Panellists sign up to take surveys and they agree to the YouGov's terms and conditions and privacy policy beforehand. All UK adults with a current free account for YouGov are eligible for inclusion in our repeated cross-sectional surveys. No specific exclusion criteria will be used other than age younger than 18.

For nationally representative samples, YouGov draws a sub-sample of the panel that is representative of UK adults in terms of age, gender, social class and education, and invites this sub-sample to complete a survey. To ensure intersectional representativeness across our key lines of inquiry, YouGov estimated that a national 4,000 sample was required. Based on a panellists response rate of 35%, our surveys will go out to circa 12,000 panel members that fall into the national representative sample criteria.

(2). Qualitative component: Focus groups and semi-structured interviews

Following the repeated cross-sectional surveys, we will hold regular qualitative data collection through focus groups and semi-structured interviews on topics of importance and concern arising from the data of the various survey waves.

Each focus group will be carried out virtually and will consist of between 8-12 people drawn from the UK adult population. We will utilise purposefully selected maximum variation sampling in order to capture as wide a variety of views, perceptions and experiences as possible [20,21]. Potential participants will be approached through gatekeeper organisations such as third sector organisations that support people who live with existing mental health conditions or belong to specific population groups, for instance, people affected by self-injury, older people groups, rural mental health awareness campaigners, bipolar organisation, and inequality groups such as LGTB+ and minority backgrounds and through Mental Health Foundation's existing links, to name a few.

During the recruitment phase, researchers will make sure of an equal distribution between representatives of different categories. Potential participants will receive an invitation email or call with further study background information and topic for the focus group discussion or semi-structured interview. If they wish more information and/or to participate, they can contact the designated study person. Participants will then receive further information about the focus group or semi-structured interview and – upon agreeing to participate – a Consent Form to provide written consent (email) or verbal consent (call) prior to the focus group or semi-structured interview. Participants will be given at least 24 hours to decide whether or not they would like to take part.

Focus group discussions will be carried out entirely virtually via ZOOM or MS Teams, and will last for approximately one hour. The focus groups will be co-facilitated by two Chairs. Meetings will be audio- or video-recorded (only upon consent of all participants) and notes will be taken by hand by silent observers (this will be made clear to the participants).
Semi-structured interviews will be led by an experienced qualitative researcher either via Zoom or MS Teams or via phone call (for people without internet provisions). Semi-structured interviews will also last for approximately one hour and will be audio-recorded (upon consent of the participant) and hand-written notes will be taken during the phone call.
Both focus group discussions and semi-structured interviews will follow from the UK-wide repeated cross-sectional surveys and will discuss the most poignant findings and arising matters. Hence, there is no set topic guide yet as the content can vary from survey to survey. However, each focus group and semi-structured interview will have our key research questions embedded in relation to the participant's mental health experiences during the Coronavirus pandemic, their coping mechanisms, what would help them as an individual to improve their mental health and wellbeing, what would be helpful for their population group, how should we emerge from this pandemic.
Both the focus groups and semi-structured interviews will start with a brief presentation of survey data by the qualitative researcher, followed by an organised discussion following a focus group or interview topic guide with semi-structured open-ended questions around a particular topic (for instance, topics could potentially be around coping strategies, financial security, inequalities, lockdown experiences, the future post COVID-19, and more). Participants will receive a reimbursement for their time.

(3). Participatory component: Citizens' juries
Participants for the occasional Citizens' Juries on specific topics requiring further deliberation, will be recruited using snowballing sampling via third sector organisations' UK-wide networks of mental health experts, advocates, carers, and people with self-reported lived experiences with full capacity to consent. The further mechanisms are similar to those of the focus group recruitment and data collection procedures. Potential participants will receive an Invitation Email with further Study Background Information. If they wish to participate in the Citizen's Jury, they can contact the designated person. Participants will then receive further information and – upon agreeing to participate – a Consent Form to provide written consent. Signed written informed consent will be sought from participants to the Citizens' Jury prior to any meetings. It is expected that all potential participants in the Citizens' Jury will be adults with mental health experience, for instance, as a professional, an advocate, a carer, or a person with lived experience. All study leads and researchers are fully trained and experienced in safeguarding. It also will be made explicit that participation in this research is entirely voluntary and they can request more time to decide or change their mind at any point.
Similar to the focus group discussions, Citizens' Jury meetings will be entirely virtually via ZOOM or MS Teams, have around 10-15 people per meeting and are approximately 1.5hour long. The Jury will be co-facilitated by two Chairs. Meetings will be audio- or video-recorded (only upon consent of all participants) and notes will be taken by silent observers. The Citizens' Jury will start with an overview of the study. Subsequently, detailed data ('evidence') will be presented to the Jury members. They will then have time to ask questions and thereafter take time to 'deliberate' and formulate a joint 'verdict' with recommendations for policy and practice. Jury participants too will receive a reimbursement for their time.

Through the Citizens' Jury, we will engage participants in a deliberative and inclusive approach to inform policy and practice and to facilitate policy contextualization.

At the time of finalising this manuscript, researchers had already conducted two online Citizens' Juries. However, limitations such as lengths of time individuals are willing and able to spend on

Zoom video calls, made it difficult to implement the Citizen Jury approach on a regular basis (a typical Citizens' Jury can last between 1-5 days whilst the 'Jury' deliberates). Therefore, researchers decided to carry out Citizens' Juries only sporadically at points when big policy advisories might be needed in light of study findings, whilst more prominence is being given to the qualitative data gathering through focus groups and semi-structured interviews to obtain in-depth qualitative data for the study alongside the repeated cross-sectional survey data.

Data analysis

(1). Quantitative component: Repeated cross-sectional surveys
Descriptive statistics (frequencies, means, medians and SD) pertaining to the outcome measures and putative explanatory factors will be presented for each cross-sectional cohort at each point in time. Sample weighting will be incorporated in statistical analyses to obtain UK representative estimates. We will consider patterns of change at an aggregate level over time based on percentages of population and time trend analysis where appropriate. We will conduct regression modelling and include dependent variables for data collected in each survey wave to control for period differences between years. All analyses will be performed with Stata version 15·1 [22].

(2). Qualitative component: Focus groups and semi-structured interviews
Focus group and semi-structured interview recorded data will be transcribed and anonymised. Subsequently, data will be organised with NVIVO.10 software and analysed for major themes using thematic analysis following the guidelines of Howitt [20] and Braun and Clarke [21]. This type of analysis is particularly appropriate for this study as it is a descriptive method which can be used to identify themes and summarise content of rich depth discussions and interviews [20]. The analysis will be data-driven and will go through the step of familiarisation, initial coding generation, searching for themes, themes definition and labelling [21]. Furthermore, an *a priori* overall framework based on the current scientific evidence on the mental health experiences of the pandemic will be used to develop the higher-order themes for the analysis.
The data will be presented in the form of a summary of key themes evidence with illustrative quotes. Key themes will be crossed-checked and validated between the researchers.

(3). Participatory component: Citizens' juries
Thematic analysis of the transcribed and anonymised Citizens' Jury data will follow the same steps as the focus group analysis. The accessibility of this approach also makes it appropriate for use in participatory research. The research questions ask for exploration of experience of the Coronavirus pandemic and related measures, ultimately to inform current policy and to build knowledge around the topic. Citizens' jury meetings reports will be produced following each Jury meeting.

Methodological considerations

Authors acknowledge that all of the information for this study will be collected through questionnaires and interviews, and therefore is self-reported.

Bias in the study

Given the nature of this pandemic, all work will be carried out remotely. This means that participants require to have access to the internet and/or a telephone. It is fully acknowledged that not everyone has these facilities and therefore recruitment biases might be possible mainly in relation to age,

geographical location, and socio-economic circumstances. We will contact participants beforehand to work out whether they need any technical support or equipment, or specific adjustment. For example if a participant is unfamiliar with online technology, we will offer dedicated help and specific instructions before the meeting. Two researchers will also manage the Zoom chat function during the focus groups and will be able to assist participants with any specific needs.

Further, in terms of the surveys, YouGov market research services ask their participants to fill in a number of different online questionnaires from various studies (not just from one study) which can take a good proportion of their time. This may influence the recruitment procedure and may reduce completion rates. Recruitment bias may therefore be a possibility. Our tailor-made public mental health cross-sectional survey takes approximately 30 minutes to complete.

Ethical considerations and dissemination

Ethics: Ethics approval for this study has been granted by the Cambridge Psychology Research Ethics Committee of the University of Cambridge (No. PRE 2020.050). While unlikely, participants completing the self-administered surveys or participating in the virtual focus groups, semi-structured interviews or citizens' juries might experience distress triggered by questions or conversations. However, the study leads all have extensive training and experience in working within mental health and at risk populations. Experienced facilitators, trained in safeguarding, will lead any virtual meetings and workshops, and full Safe-Guarding procedures will be followed (as stipulated by all partner organisations involved). In the 'Invitation Email', 'Background to Study' and 'Participants Information Sheet', all participants will be clearly informed about the nature of the study and the conversations that will take place. It will also be made very clear in the 'Participants Information Sheet' and before the start of any conversations that participants do not have to participate or have to answer any questions that they do not wish to and they can withdraw their participation at any point without giving a reason for doing so and have their data deleted from the study. If a participant becomes upset or uncomfortable, we will give them the opportunity to move on to the next question or take a break or withdraw from the study if they wish to do so. Further appropriate mitigating measures have also been adopted in all aspects of the study such as clear signposting to relevant organisations, services and helplines for help.

Compensation: YouGov Survey participants receive points for every survey they complete. Once they achieve certain amount of points they receive a monetary sum. On average, there are 50 points per survey. Once they reach 5000 points they get £50 from YouGov. Participants taking part in the qualitative aspects of this study will be compensated for their time on the basis of £20/hour equivalent. Time remunerated will include participation in (virtual) meetings, preparation time for meetings and time for providing feedback.

Data protection: All YouGov survey data are only shared in an anonymous format. Personal participant information from the qualitative aspects of this study will be held securely, along with meeting notes. These notes are completely anonymous. All data will be stored in encrypted files on password enabled computers and confirm with the GDPR framework.
All data and information will be securely stored on University and Mental Health Foundation secure servers. All partner organisations fully comply with the law on personal data protection (the Data Protection Act 2018 and the General Data Protection Regulation (GDPR)).
Anonymous (aggregate) survey data or anonymised qualitative data will only be shared with direct researchers of the partner organisations using secure, password-protected electronic transfers. Data will then be stored on secure University servers. Information will be stored for five years after the project's end.

Dissemination: Study findings will be disseminated in scientific journals, at research conferences, local research symposia and seminars. Evidence-based open access briefings, articles and reports will be available on our study website for everyone to access. Rapid policy briefings targeting issues emerging from the data will also be disseminated, including directly to key politicians and policy makers, to inform policy and practice. These briefings will position the findings within UK public policy and devolved nations policy in order to develop specific, timely policy recommendations. Our data will be contextualised in view of existing policies, and changes over time as-and-when policies change as well as socio-economic context. Further dissemination will be carried out through traditional and social media. Additionally, local, national and international stakeholder groups and networks will be informed of the findings of the study to encourage and facilitate knowledge sharing and reciprocal learning.

Significance of this study

Long-term comprehensive mixed-methods studies on the mental health impacts of the novel Coronavirus pandemic (COVID-19), related measures and consequences are scarce yet much needed in order to fully understand and appropriately address both the short- and long-term psychosocial issues arising. It is therefore fully anticipated that the knowledge and insights gained from this repeated cross-sectional mixed-method study will yield crucial insights for policy, practice and intervention development as well as service configuration to ensure that the short- and long-term psychosocial needs of the UK population are adequately understood and addressed within context both during but especially also when emerging from this pandemic.

Development of new knowledge and testable psychosocial theories related to the impact of the Coronavirus pandemic (such as the way in which people interact, how social inequalities impact the extent to which we implement and sustain lockdown measures, take care of, and are able to be cared for), can also be vital to support the epidemiological mathematical models currently being employed by the government.

We invite colleagues from across the world to join these efforts and collaborate for a better future when emerging from this pandemic.

Patient and public involvement

People with lived experiences of mental health as well as mental health carers have helped inform all aspects of this protocol and will be involved in ongoing research through the PPIE networks of the Mental Health Foundation and other mental health third sector organisations.

Data statement

Once the study and dissemination has concluded, we intend to make our data available upon request and within open repository through our university. Meantime, we also intend to collaborate and join forces with colleagues nationally and internationally whilst the study is ongoing (upon request).

Author contributions

TVB wrote the Study Protocol manuscript. TVB, AAK, and AJ are joint Study Leads. AM and GD are Lead Collaborators on the study. SS is the Study Coordinator. CL, DCK, SMD, JY, LW, SM, LG, CS, and LT are researchers on the study. All co-authors contributed towards the development of the Study Protocol and have read and approved the final Study Protocol manuscript.

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Competing interests

There are no competing interests.

Ethics Approval

Ethics approval for this study has been granted by the Cambridge Psychology Research Ethics Committee of the University of Cambridge (No. PRE 2020.050).

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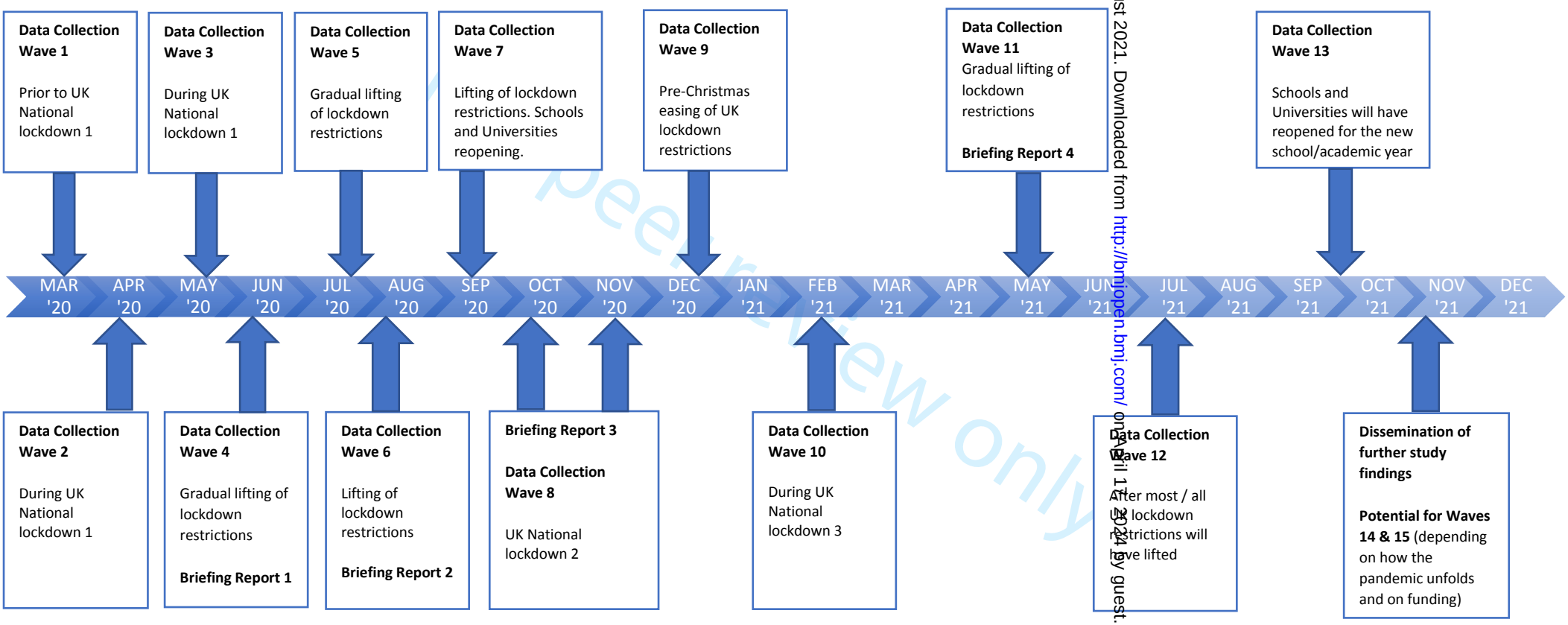
CORONAVIRUS: MENTAL HEALTH IN THE PANDEMIC – STUDY TIMELINE



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Mental Health in the Pandemic – A repeated cross-sectional mixed-method study protocol to investigate the mental health impacts of the Coronavirus pandemic in the UK

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Abstract

Introduction: The World Health Organisation declared a global pandemic on 11th March 2020. Since then, the world has been firmly in the grip of the new Coronavirus Disease (COVID-19). To date, more than 181,521,067 million confirmed cases and more than 3,937,437 million people have died. Whilst controlling the virus and implementing vaccines are the main priorities, the population mental health impacts of the pandemic are expected to be longer term and are less obvious than the physical health ones. Lockdown restrictions, physical distancing, social isolation, as well as the loss of a loved one, working in a frontline capacity and loss of economic security may have negative effects on, and increase the mental health challenges in populations around the world. There is a major demand for long-term research examining the mental health experiences and needs of people in order to design adequate policies and interventions for sustained action to respond to individual and population mental health needs both during and after the pandemic.

Methods and analysis: This repeated cross-sectional mixed-method study conducts regular self-administered representative surveys, and targeted focus groups and semi-structured interviews with adults in the UK, as well as validation of gathered evidence through citizens' juries for contextualisation (for the UK as a whole and for its four devolved nations) to ensure that emerging mental health problems are identified early on and are properly understood, and that appropriate policies and interventions are developed and implemented across the UK and within devolved contexts. STATA and NVIVO will be used to carry out quantitative and qualitative analysis respectively.

Ethics and dissemination: Ethics approval for this study has been granted by the Cambridge Psychology Research Ethics Committee of the University of Cambridge, UK (PRE 2020.050) and by the Health & Life Sciences Research Ethics Committee of De Montfort University, UK (REF 422991). While unlikely, participants completing the self-administered surveys or participating in the virtual focus groups, semi-structured interviews and citizens' juries might experience distress triggered by questions or conversations. However, appropriate mitigating measures have been adopted and signposting to services and helplines will be available at all times. Further, a dedicated member of staff will also be at hand to debrief following participation in the research and personalised thank-you notes will be sent to everyone taking part in the qualitative research.
Study findings will be disseminated in scientific journals, at research conferences, local research symposia and seminars. Evidence-based open access briefings, articles and reports will be available on our study website for everyone to access. Rapid policy briefings targeting issues emerging from the data will also be disseminated to inform policy and practice. These briefings will position the findings within UK public policy and devolved nations policy and socio-economic contexts in order to develop specific, timely policy recommendations. Additional dissemination will be done through traditional and social media. Our data will be contextualised in view of existing policies, and changes over time as-and-when policies change.

Article summary:

Strengths and limitations of the study

- **Strength #1** Robust UK-wide repeated cross-sectional mixed-method study design with data spanning pre-lockdown, during lockdowns, post-lockdowns, and across multiple lockdowns.
- **Strength #2** Repeated surveys with representative samples of the UK-wide adult population at set points in time and over time.
- **Strength #3** Qualitative and participatory components of the study elicit deeper meaning and understanding of and insights into various aspects of the pandemic, as well as provide additional participatory evidence validation and interpretation on some topics of interest and/or concern.

- **Strength #4** All aspects and outputs of the study are contextualised within the UK-wide as well as UK devolved nations (England, Scotland, Wales, Northern Ireland) Coronavirus pandemic policy response and socio-economic contexts.
- **Limitation #1** It is acknowledged that most of the information for this study is self-reported and that there might be a bias towards those with sufficient time, motivation and internet access to complete online surveys and take part in online qualitative and participatory work.
- **Limitation #2** In the survey, the focus on COVID-19 related questions meant that there were limited opportunities to include existing, commonly used measures which would have enabled wider comparison across time, settings and populations.
- **Limitation #3** In the survey, there is the general possibility of sampling and non-response bias but, given the focus of this study, there is a specific concern about the possible under-representation of people with pre-existing mental health problems. This was partly mitigated through the qualitative and participatory study components.

Keywords: Coronavirus pandemic, COVID-19, cross-sectional mixed-method study, health policy, mental health, wellbeing

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Introduction

The world is currently still firmly in the grip of the new Coronavirus Disease (COVID-19). On 11th March 2020, the World Health Organisation declared it a global pandemic with, to date, more than 181,521,067 million confirmed cases and more than 3,937,437 million deaths worldwide [1]. Whilst controlling the virus and vaccinating the world are the main foci, the population mental health impacts of the pandemic are expected to last much longer than the physical health ones [2]. The effects of physical distancing, social isolation, and lockdown on individual mental health and wellbeing as well as the loss of a loved one, working in a frontline capacity, and loss of economic security increase the mental health challenges in populations around the world [3]. The United Nations, the World Health Organisation, mental health charities and researchers have all called for the urgent need for sustained action on mental health both during and after the pandemic [4,5]. In this respect, there is also a major need for long-term research examining the experiences and needs of people as still relatively little is known at this time.

Thus far, a lot of that interest has focused on immediate and short-term concerns [2]. For example, while emotional responses of stress and fear in the face of a pandemic caused by a novel virus of which little is known are normal and expected [6,7], excessive and protracted feelings of stress and powerlessness may have significant impact on individuals' mental health through well-known mechanisms [8]. The evidence also suggests that there is likely to be a more lasting impact on people with long-term conditions, both those with pre-existing mental ill-health diagnoses facing disrupted access to primary mental health, and those with other long-term conditions who are experiencing delays in care and operations, as well as fear of attending hospital appointments [9].

Early research has brought attention to the psychological impacts of such viral epidemics and protracted physical distancing measures, including those that are expected (such as loss of identity, disruption to usual activity, increases in feelings of loneliness) and those that may be unintended (including increases in domestic violence, child maltreatment and cyberbullying) [5]. For many, several coping strategies to deal with this psychological impact can be detrimental to mental health, including alcohol and drug misuse, and online gambling [6]. Early studies have also highlighted the impact of stigma and discrimination targeted at certain communities (in the case of COVID-19 this was predominantly Asian minorities as well as those infected with COVID-19 and/or caring for those patients) [7], including risks of abuse of power from local police officers or politicians [8].

Lessons from past epidemics or similar healthcare crises are also important in anticipating impacts on mental health [9]. For example, there is a higher concentration of social determinants associated with self-harm and suicidal ideation in this period, including isolation, stress, financial worries, disruption of personal recovery plans, and relationship discord [10]. Many people across the world will also be dealing with the effects of the pandemic's excess bereavement burden [11], and there is a recognised increased risk for post-traumatic stress disorder, both for those surviving hospitalisation in Intensive Care Units and the frontline healthcare workers and people with existing mental health vulnerabilities [12].

Lastly, there are socio-economic and political determinants affecting population mental health, especially in the long term. The pandemic should not be underestimated as a long-term force for change and it is well recorded that injustice and avoidable health inequalities are claiming more lives than short-term disasters. For example, certain governments have been following a damaging populist approach by taking advantage of the pandemic messaging to prioritise personal responsibility over structural interventions [13]. Further, the deep economic recession that is expected to follow will intensify and resurface the social inequalities that lead to the increased prevalence and unequal distribution of mental ill-health [14,15]. Crucially, there is a need to

understand the importance of pandemic responses from the 'bottom up', to acknowledge the local perspectives, the needs and the responses of individual communities [16]. Furthermore, information related to social issues, (such as the way in which people interact, how social inequalities impact the extent to which we implement, sustain and subsequently lift lockdown measures, and take care and are able to be cared of), can also be vital to support the epidemiological mathematical models currently being employed by the government. Timely and robust evidence-based data is therefore a good way to address these concerns.

Study aims

This mixed-method study aims to gain insights into the mental health experiences and dynamics of the current Coronavirus pandemic on the UK adult population, how this changes over time, what the current and future mental health needs are, and how best to address these within context.

Research questions include:

- A. What are the key emotional and psychological responses of adults in the UK to the evolving circumstances of the COVID-19 pandemic?
- B. What are the key risk and protective factors related to mental health for adults in the UK?
- C. What are the main coping mechanisms that adults in the UK have developed in relation to their mental health in the context of the pandemic?
- D. What is the impact of the pandemic and associated measures and circumstances on suicidal ideation and self-harm?
- E. How are all the above impacted by factors such as socio-economic status, age, gender, parenting status, geographical area and how are particular at-risk groups (e.g. ethnic minorities, people with disabilities) affected?
- F. How do adults in the UK view their future and that of society as a whole in light of the COVID-19 pandemic?
- G. How should we emerge from the COVID-19 pandemic (what is important to UK adults for their wellbeing and quality of life in emerging from the pandemic, and what do UK adults think governments should do to 'build back better')?

Design, methods, analyses

Study design

This is a repeated cross-sectional mixed-method study incorporating multiple complementary components which will enable us to generate robust evidence and build a comprehensive picture regarding the mental health experiences and dynamics of the novel Coronavirus pandemic on the UK adult population. These complementary components are:

1. Quantitative component: Repeated cross-sectional surveys
2. Qualitative component: Focus groups and semi-structured interviews
3. Participatory component: Citizens' juries
4. Contextualisation component

Timeline

The study commenced in March 2020 and will run until December 2021 in first instance. The first 'wave' of data collection took place on 17th and 18th March 2020 prior to the first UK national lock-down. Current data collection is scheduled to run until the autumn of 2021, roughly coinciding with the 'opening up' (lifting of lockdown) and completion of the UK adult vaccination programme. Further study dissemination will take place until 31st December 2021. Depending on how the

Coronavirus pandemic further unfolds in the UK and depending on funding, the study might be extended beyond this current timeframe. [See Figure 1: Study Timeline]

['Figure 1: Study Timeline' inserted here]

(1). Quantitative component: Repeated cross-sectional surveys

Cross-sectional surveys will be carried out repeatedly (circa every 4-6 weeks and/or at crucial points in time) on a long-term basis in representative samples of the UK adult population through the market research company YouGov Plc. The objective of the survey will be to gauge the extent and nature of the mental health experiences and dynamics of the Coronavirus pandemic and coping strategies as well as changes over time through reaching a large number of study participants. Repeated cross-sectional surveys are an ideal method to provide good estimates for the current population (at each cross-sectional survey) and the changes over time (across the repeated cross-sectional surveys) at population level. [17] For this particular long-term study, a repeated cross-sectional survey design is being favoured over a cohort survey design as it provides some clear benefits. These include, for instance:

- Being able to observe the mental health of the wider UK adult population at a single point in time (cross-sectional 'snap-shot') as well as comparing population level data over time (across the repeated cross-sections);
- Allowing for comparison across different variables both at a single point in time and over time;
- A cohort study design might not have been very practical and might have posed several challenges during these pandemic times (such as people falling ill, people passing away, people needing to drop out of the study due to long-COVID, caring responsibilities, or for other reasons);
- Cohort studies also take longer to set up and, at the start of the pandemic and looming first UK lockdown, the researchers needed to act fast whilst still providing robustness of study design.

Therefore, the repeated cross-sectional study design was agreed to be the best observational design for our study. [17] This method will be particularly useful to answer research questions A to F.

Furthermore, the online survey questionnaire for the repeated cross-sectional surveys has been specifically developed by this study consortium to investigate COVID-19 related mental health experiences. When assessing the public's emotional responses to the pandemic, whilst not using a validated scale, the research questions and survey were informed by a confidential policy systematic review entitled *'Public responses to infectious diseases outbreaks: the role of emotions'* led by one of our co-principal investigators (AAK). This was a review reporting from 75 studies of over 80,000 subjects across a period of 30 years which defined and identified the most common emotions that the public experience during epidemics and how these related to behaviours. [18] To enable an observation of trends of these emotional responses over the course of the COVID-19 pandemic, the research questions were phrased as in Table 1. The findings of this confidential review have already been used to inform policy planning in several settings nationally and internationally and its eventual publication will enable the replicability of our study's findings as well.

(2). Qualitative component: Focus groups and semi-structured interviews

Following the repeated cross-sectional surveys, we will conduct regular focus groups and semi-structured interviews with purposefully selected maximum variation samples of people drawn from the UK adult population. We are particularly keen on working with at risk populations such as people with pre-existing mental health conditions, people with long-term complex conditions, unemployed people, single parents, people from ethnic minorities, young people and the elderly.

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The objective of this qualitative component is to explore specific issues emerging from the survey data, through in-depth qualitative data gathering. Topics will revolve around key findings from the various 'waves' of survey data as well as standardised questions across these population groups in relation to their mental health experiences during the Coronavirus pandemic, their coping strategies, how their population group can be best helped, and how we should come out of this pandemic (how the post-pandemic world should look like). This will enable us to explore in detail and in an organised manner, the perspectives, experiences and attitudes of the UK adult population regarding various aspects of their mental health experiences of the Coronavirus pandemic, related measures and consequences, which will provide us with new insights, deeper meaning and better understanding in this respect and will be a crucial contribution towards informing policy and intervention development. We expect the focus groups and semi-structured interviews to be able to answer research questions A to G.

(3) Participatory component: Citizens' juries

We will also deploy public participation with the study findings through occasional citizens' juries around topics of interest and/or concern arising from the various quantitative and qualitative data gathering that would benefit from further interpretation and contextualisation in order to help formulate recommendations for policy and practice. The objective of the citizens' juries is to inform policy and practice though exploring different study findings in detail, actively discussing these, and then jointly deliberating to come to a verdict around recommendations for policy and practice. This form of participatory research helps to legitimise non-expert knowledge. As with a jury in a legal trial, a citizens' jury assumes that if a group of people are presented with research evidence, they can evaluate this and draw conclusions that are representative of the wider public. [19,20] This participatory method can take a variety of forms in different steps. However, their essential characteristics are that participants have time to deliberate over the evidence that they are presented with and are able to pose questions. Subsequently, the citizens' jury must also come to a 'verdict', i.e. a joint conclusion about the topic discussed to help formulate recommendations. [19,20] The citizens' juries will be particularly useful to contribute to research question G.

(4). Contextualisation component

All aspects and outputs of this study will be properly contextualised against and within the UK-wide Coronavirus pandemic policy response and that of each of the devolved nations of the UK as well as socio-economic contextualisation. This will allow us to compare and contrast similarities and differences across and within the UK context, and changes over time as-and-when policies and circumstances change. [Note - We will not repeat this point no.4 'Contextualisation' in the below sections on 'Participant recruitment and data collection procedures' and 'Data analyses'].

Table 1 below provides a summary of the different research questions and the methods and strategies we plan to use to answer them.

Research Questions (Short)	Data Collection Method	Objective of data collection method	How we will collect data

A. **What are the key emotional and psychological responses?** B. **What are the key risk and protective factors?** C**. What are the main coping mechanisms that have been developed?** D**. What is the impact of the pandemic and associated measures and circumstances on suicidal ideation and self-harm?** E. **How are all the above impacted by factors such as socio-economic status, age, gender, parenting status, geographical area and how are particular at-risk groups?** F. **How do adults in the UK view their future and that of society?** G**. How should we emerge from the COVID-19 pandemic (e.g. what do UK adults think governments should do to 'build back better')?**	Quantitative Component: Repeated Cross-sectional Surveys **Answering Questions A to F**	To investigate the nature of the mental health experiences and dynamics of the Coronavirus pandemic and coping strategies as well as changes over time through reaching a large representative sample of the UK adult population (18+).	The surveys will be administered through market research organisation YouGov Plc. These will be carried out regularly (circa every 4-6 weeks) over the phone or self-administered through the internet in representative samples of the UK adult population.
	Qualitative Component: Focus Group **Answering Questions A to G**	To explore specific issues that emerge from the survey data, through in-depth qualitative data with a purposefully selected maximum variation sample. A second sample of participants belonging to higher risk and/or inequality groups will be employed to address issues experienced to those particular groups.	The Focus Groups will be delivered around key findings from the surveys, emerging literature and policy context, and will relate to our research questions. These will be conducted every 3-4 months.
	Qualitative Component: Semi-structured Interviews **Answering Questions A to G**	To explore specific issues that emerge from the survey data, through in-depth qualitative data with a sample of participants that belong to higher risk and/or inequality groups.	The semi-structured interviews will be delivered around key findings from the surveys, emerging literature and policy context, and will relate to our research questions. These will be conducted every 3-4 months.
	Participatory Component: Citizens' Jury **Answering Question G**	To inform policy and practice, through exploring, validating and contextualising different study findings with a purposefully selected maximum variation sample of participants.	The Citizen Jury will engage participants in a deliberative stepwise approach, discussing potential solutions and practical implications to key issues emerged from the survey data.

Study population

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For this entire study, the population constitutes adults (18+ with no upper age limit) from across the entire United Kingdom (England, Wales, Scotland and Northern Ireland) and from all walks of life. People taking part in all aspects of the study must be able to understand, speak and read English as well as have the capacity to consent to take part in the study. People must also have access to the internet or a phone.

Participant recruitment and data collection procedures

(1). Quantitative component: Repeated cross-sectional surveys
The tailored online survey questionnaire will be administered to members of the YouGov market research 'UK Panel' including 2,400,000+ individuals drawn from across the entire UK who have agreed to take part in research surveys. Panel members are recruited from a host of different sources, including via standard advertising, and strategic partnerships with a broad range of websites. When panellists take surveys they accumulate points which can later be redeemed for a £50 payment upon reaching 5000 points. Points per survey range from 50 to 100.

Emails are sent to panellists selected at random from the base sample. The email invites them to take part in a survey and provides a generic survey link. With Active Sampling only this sub-sample has access to the questionnaire via their username and password, and respondents can only ever answer each survey once. Once a panel member clicks on the link they are sent to the survey that they are most required for, according to the sample definition and quotas (the sample definition in this case is "UK adult population"). The responding sample is weighted to the profile of the sample definition to provide a representative reporting sample; the baseline for which at a 95% confidence interval for a sample of 1,000 people is +/- 3%, dropping to 2% with a 2,000 sample. The profile is normally derived from census data or official population estimates from the Office for National Statistics (ONS). If not available from the census and ONS, the profile is derived from industry accepted data (including large scale random probability surveys, such as the Labour Force Survey, the National Readership Survey and the British Election Study). Panellists sign up to take surveys and they agree to the YouGov's terms and conditions and privacy policy beforehand. All UK adults with a current free account for YouGov are eligible for inclusion in our repeated cross-sectional surveys. No specific exclusion criteria will be used other than age younger than 18.

For nationally representative samples, YouGov draws a sub-sample of the panel that is representative of UK adults in terms of age, gender, social class and education, and invites this sub-sample to complete a survey. To ensure intersectional representativeness across our key lines of inquiry, YouGov estimated that a national 4,000 sample was required. Based on a panellists response rate of 35%, our surveys will go out to circa 12,000 panel members that fall into the national representative sample criteria.

(2). Qualitative component: Focus groups and semi-structured interviews
Following the repeated cross-sectional surveys, we will hold regular qualitative data collection through focus groups and semi-structured interviews on topics of importance and concern arising from the data of the various survey waves.
Each focus group will be carried out virtually and will consist of between 8-12 people drawn from the UK adult population. We will utilise purposefully selected maximum variation sampling in order to capture as wide a variety of views, perceptions and experiences as possible [21,22]. Potential participants will be approached through gatekeeper organisations such as third sector organisations that support people who live with existing mental health conditions or belong to specific population groups, for instance, people affected by self-injury, older people groups, rural mental health

awareness campaigners, bipolar organisation, and inequality groups such as LGTB+ and minority backgrounds and through Mental Health Foundation's existing links, to name a few.
During the recruitment phase, researchers will make sure of an equal distribution between representatives of different categories. Potential participants will receive an invitation email or call with further study background information and topic for the focus group discussion or semi-structured interview. If they wish more information and/or to participate, they can contact the designated study person. Participants will then receive further information about the focus group or semi-structured interview and – upon agreeing to participate – a Consent Form to provide written consent (email) or verbal consent (call) prior to the focus group or semi-structured interview. Participants will be given at least 24 hours to decide whether or not they would like to take part.
Focus group discussions will be carried out entirely virtually via ZOOM or MS Teams, and will last for approximately one hour. The focus groups will be co-facilitated by two Chairs. Meetings will be audio- or video-recorded (only upon consent of all participants) and notes will be taken by hand by silent observers (this will be made clear to the participants).
Semi-structured interviews will be led by an experienced qualitative researcher either via Zoom or MS Teams or via phone call (for people without internet provisions). Semi-structured interviews will also last for approximately one hour and will be audio-recorded (upon consent of the participant) and hand-written notes will be taken during the phone call.
Both focus group discussions and semi-structured interviews will follow from the UK-wide repeated cross-sectional surveys and will discuss the most poignant findings and arising matters. Hence, there is no set topic guide yet as the content can vary from survey to survey. However, each focus group and semi-structured interview will have our key research questions embedded in relation to the participant's mental health experiences during the Coronavirus pandemic, their coping mechanisms, what would help them as an individual to improve their mental health and wellbeing, what would be helpful for their population group, how should we emerge from this pandemic.
Both the focus groups and semi-structured interviews will start with a brief presentation of survey data by the qualitative researcher, followed by an organised discussion following a focus group or interview topic guide with semi-structured open-ended questions around a particular topic (for instance, topics could potentially be around coping strategies, financial security, inequalities, lockdown experiences, the future post COVID-19, and more). Participants will receive a reimbursement for their time.

(3). Participatory component: Citizens' juries
Participants for the occasional Citizens' Juries on specific topics requiring further deliberation, will be recruited using snowballing sampling via third sector organisations' UK-wide networks of mental health experts, advocates, carers, and people with self-reported lived experiences with full capacity to consent. The further mechanisms are similar to those of the focus group recruitment and data collection procedures. Potential participants will receive an Invitation Email with further Study Background Information. If they wish to participate in the Citizen's Jury, they can contact the designated person. Participants will then receive further information and – upon agreeing to participate – a Consent Form to provide written consent. Signed written informed consent will be sought from participants to the Citizens' Jury prior to any meetings. It is expected that all potential participants in the Citizens' Jury will be adults with mental health experience, for instance, as a professional, an advocate, a carer, or a person with lived experience. All study leads and researchers are fully trained and experienced in safeguarding. It also will be made explicit that participation in this research is entirely voluntary and they can request more time to decide or change their mind at any point.
Similar to the focus group discussions, Citizens' Jury meetings will be entirely virtually via ZOOM or MS Teams, have around 10-15 people per meeting and are approximately 1.5hour long. The Jury will be co-facilitated by two Chairs. Meetings will be audio- or video-recorded (only upon consent of all participants) and notes will be taken by silent observers. The Citizens' Jury will start with an

overview of the study. Subsequently, detailed data ('evidence') will be presented to the Jury members. They will then have time to ask questions and thereafter take time to 'deliberate' and formulate a joint 'verdict' with recommendations for policy and practice. Jury participants too will receive a reimbursement for their time.

Through the Citizens' Jury, we will engage participants in a deliberative and inclusive approach to inform policy and practice and to facilitate policy contextualization.

At the time of finalising this manuscript, researchers had already conducted two online Citizens' Juries. However, limitations such as lengths of time individuals are willing and able to spend on Zoom video calls, made it difficult to implement the Citizen Jury approach on a regular basis (a typical Citizens' Jury can last between 1-5 days whilst the 'Jury' deliberates). Therefore, researchers decided to carry out Citizens' Juries only sporadically at points when big policy advisories might be needed in light of study findings, whilst more prominence is being given to the qualitative data gathering through focus groups and semi-structured interviews to obtain in-depth qualitative data for the study alongside the repeated cross-sectional survey data.

Data analysis

(1). Quantitative component: Repeated cross-sectional surveys
Descriptive statistics (frequencies, means, medians and SD) pertaining to the outcome measures and putative explanatory factors will be presented for each cross-sectional cohort at each point in time. Sample weighting will be incorporated in statistical analyses to obtain UK representative estimates. We will consider patterns of change at an aggregate level over time based on percentages of population and time trend analysis where appropriate. We will conduct regression modelling and include dependent variables for data collected in each survey wave to control for period differences between years. All analyses will be performed with Stata version 15·1 [23].

(2). Qualitative component: Focus groups and semi-structured interviews
Focus group and semi-structured interview recorded data will be transcribed and anonymised. Subsequently, data will be organised with NVIVO.10 software and analysed for major themes using thematic analysis following the guidelines of Howitt [21] and Braun and Clarke [22]. This type of analysis is particularly appropriate for this study as it is a descriptive method which can be used to identify themes and summarise content of rich depth discussions and interviews [21]. The analysis will be data-driven and will go through the step of familiarisation, initial coding generation, searching for themes, themes definition and labelling [22]. Furthermore, an *a priori* overall framework based on the current scientific evidence on the mental health experiences of the pandemic will be used to develop the higher-order themes for the analysis.
The data will be presented in the form of a summary of key themes evidence with illustrative quotes. Key themes will be crossed-checked and validated between the researchers.

(3). Participatory component: Citizens' juries
Thematic analysis of the transcribed and anonymised Citizens' Jury data will follow the same steps as the focus group analysis. The accessibility of this approach also makes it appropriate for use in participatory research. The research questions ask for exploration of experience of the Coronavirus pandemic and related measures, ultimately to inform current policy and to build knowledge around the topic. Citizens' jury meetings reports will be produced following each Jury meeting.

Methodological considerations

Authors acknowledge that all of the information for this study will be collected through questionnaires and interviews, and therefore is self-reported. The authors also acknowledge that they are not using pre-defined validated scales but rather are using a tailor-made survey that has been specifically developed by this study consortium to investigate COVID-19 related mental health experiences and emotional responses (as described in the methods section). This was informed by a confidential policy systematic review entitled *'Public responses to infectious diseases outbreaks: the role of emotions'* [18]. The findings of this confidential review have already been used to inform policy planning in several settings nationally and internationally and its eventual publication will enable the replicability of our study's findings.

Bias in the study

Given the nature of this pandemic, all work will be carried out remotely. This means that participants require to have access to the internet and/or a telephone. It is fully acknowledged that not everyone has these facilities and therefore recruitment biases might be possible mainly in relation to age, geographical location, and socio-economic circumstances. We will contact participants beforehand to work out whether they need any technical support or equipment, or specific adjustment. For example if a participant is unfamiliar with online technology, we will offer dedicated help and specific instructions before the meeting. Two researchers will also manage the Zoom chat function during the focus groups and will be able to assist participants with any specific needs.

Further, in terms of the surveys, YouGov market research services ask their participants to fill in a number of different online questionnaires from various studies (not just from one study) which can take a good proportion of their time. This may influence the recruitment procedure and may reduce completion rates. Recruitment bias may therefore be a possibility. Our tailor-made public mental health cross-sectional survey takes approximately 30 minutes to complete.

Ethics and dissemination

Ethics: Ethics approval for this study has been granted by the Cambridge Psychology Research Ethics Committee of the University of Cambridge, UK (PRE 2020.050) and the Health & Life Sciences Research Ethics Committee of De Montfort University, UK (REF 422991). While unlikely, participants completing the self-administered surveys or participating in the virtual focus groups, semi-structured interviews or citizens' juries might experience distress triggered by questions or conversations. However, the study leads all have extensive training and experience in working within mental health and at risk populations. Experienced facilitators, trained in safeguarding, will lead any virtual meetings and workshops, and full Safe-Guarding procedures will be followed (as stipulated by all partner organisations involved). In the 'Invitation Email', 'Background to Study' and 'Participants Information Sheet', all participants will be clearly informed about the nature of the study and the conversations that will take place. It will also be made very clear in the 'Participants Information Sheet' and before the start of any conversations that participants do not have to participate or have to answer any questions that they do not wish to and they can withdraw their participation at any point without giving a reason for doing so and have their data deleted from the study. If a participant becomes upset or uncomfortable, we will give them the opportunity to move on to the next question or take a break or withdraw from the study if they wish to do so. Further appropriate mitigating measures have also been adopted in all aspects of the study such as clear signposting to relevant organisations, services and helplines for help.

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Compensation: YouGov Survey participants receive points for every survey they complete. Once they achieve certain amount of points they receive a monetary sum. On average, there are 50 points per survey. Once they reach 5000 points they get £50 from YouGov. Participants taking part in the qualitative aspects of this study will be compensated for their time on the basis of £20/hour equivalent. Time remunerated will include participation in (virtual) meetings, preparation time for meetings and time for providing feedback.

Data protection: All YouGov survey data are only shared in an anonymous format. Personal participant information from the qualitative aspects of this study will be held securely, along with meeting notes. These notes are completely anonymous. All data will be stored in encrypted files on password enabled computers and confirm with the GDPR framework.
All data and information will be securely stored on University and Mental Health Foundation secure servers. All partner organisations fully comply with the law on personal data protection (the Data Protection Act 2018 and the General Data Protection Regulation (GDPR)).
Anonymous (aggregate) survey data or anonymised qualitative data will only be shared with direct researchers of the partner organisations using secure, password-protected electronic transfers. Data will then be stored on secure University servers. Information will be stored for five years after the project's end.

Dissemination: Study findings will be disseminated in scientific journals, at research conferences, local research symposia and seminars. Evidence-based open access briefings, articles and reports will be available on our study website for everyone to access. Rapid policy briefings targeting issues emerging from the data will also be disseminated, including directly to key politicians and policy makers, to inform policy and practice. These briefings will position the findings within UK public policy and devolved nations policy in order to develop specific, timely policy recommendations. Our data will be contextualised in view of existing policies, and changes over time as-and-when policies change as well as socio-economic context. Further dissemination will be carried out through traditional and social media. Additionally, local, national and international stakeholder groups and networks will be informed of the findings of the study to encourage and facilitate knowledge sharing and reciprocal learning.

Significance of this study

Long-term comprehensive mixed-methods studies on the mental health impacts of the novel Coronavirus pandemic (COVID-19), related measures and consequences are scarce yet much needed in order to fully understand and appropriately address both the short- and long-term psychosocial issues arising. It is therefore fully anticipated that the knowledge and insights gained from this repeated cross-sectional mixed-method study will yield crucial insights for policy, practice and intervention development as well as service configuration to ensure that the short- and long-term psychosocial needs of the UK population are adequately understood and addressed within context both during but especially also when emerging from this pandemic.

Development of new knowledge and testable psychosocial theories related to the impact of the Coronavirus pandemic (such as the way in which people interact, how social inequalities impact the extent to which we implement and sustain lockdown measures, take care of, and are able to be cared for), can also be vital to support the epidemiological mathematical models currently being employed by the government.

We invite colleagues from across the world to join these efforts and collaborate for a better future when emerging from this pandemic.

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Patient and public involvement

People with lived experiences of mental health as well as mental health carers have helped inform all aspects of this protocol and will be involved in ongoing research through the PPIE networks of the Mental Health Foundation and other mental health third sector organisations.

Data statement

Once the study and dissemination has concluded, we intend to make our data available upon request and within open repository through our university. Meantime, we also intend to collaborate and join forces with colleagues nationally and internationally whilst the study is ongoing (upon request).

Author contributions

TVB wrote the Study Protocol manuscript. TVB, AAK, and AJ are joint Study Leads. AM and GD are Lead Collaborators on the study. SS is the Study Coordinator. CL, DCK, SMD, JY, LW, SM, LG, CS, and LT are researchers on the study. All co-authors contributed towards the development of the Study Protocol and have read and approved the final Study Protocol manuscript.

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Competing interests

There are no competing interests.

Ethics Approval

Ethics approval for this study has been granted by the Cambridge Psychology Research Ethics Committee of the University of Cambridge, UK (PRE 2020.050) and the Health & Life Sciences Research Ethics Committee of De Montfort University, UK (REF 422991).

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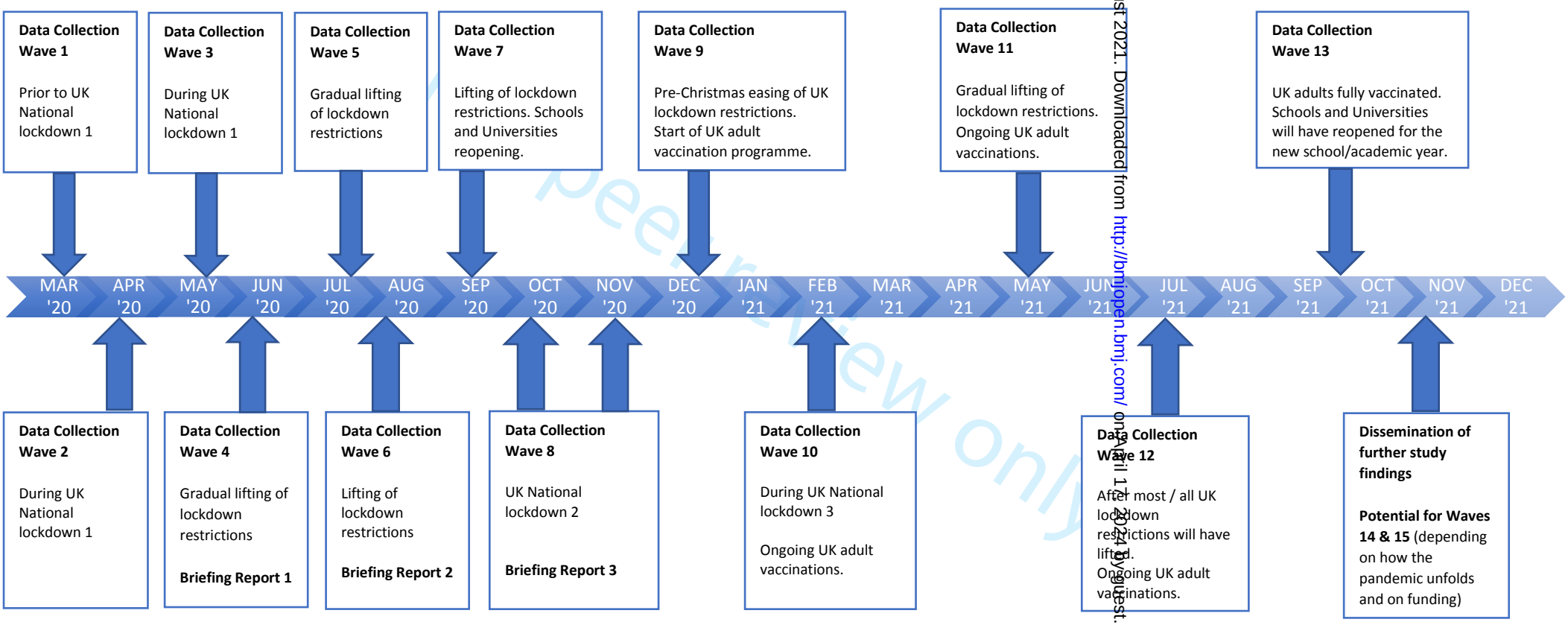

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