

Promoting Children's Wellbeing during COVID-19: Protocol for a Multinational Smartphone App Survey of Practitioners' and Policymakers' Successes, Challenges, Innovations and Learning

Jennifer C. Davidson, Dimitar Karadzhov, Graham Wilson

Submitted to: JMIR Research Protocols on: June 07, 2021

Disclaimer: © **The authors. All rights reserved.** This is a privileged document currently under peer-review/community review. Authors have provided JMIR Publications with an exclusive license to publish this preprint on it's website for review purposes only. While the final peer-reviewed paper may be licensed under a CC BY license on publication, at this stage authors and publisher expressively prohibit redistribution of this draft paper other than for review purposes.

Table of Contents

Original Manuscript	5
Supplementary Files	
0	
Figures	
Figure 1	
Figure 2	33
Figure 3	34
TOC/Feature image for homepages	35
TOC/Feature image for homepage 0	36

Promoting Children's Wellbeing during COVID-19: Protocol for a Multinational Smartphone App Survey of Practitioners' and Policymakers' Successes, Challenges, Innovations and Learning

Jennifer C. Davidson¹ BSW, PGCertHRL, MSW; Dimitar Karadzhov¹ BSc, MSc, PGCert, PhD; Graham Wilson² BA, MSc, PhD

Corresponding Author:

Jennifer C. Davidson BSW, PGCertHRL, MSW Institute for Inspiring Children's Futures School of Social Work and Social Policy University of Strathclyde Curran Building, Level 6 94 Cathedral Street Glasgow GB

Abstract

Background: The advent of COVID-19 abruptly thrust the health and safety of children and families into greater risk around the world. As regional and local governments, non-governmental organisations, communities and families and children grapple with the immediate public health impact of COVID-19, the rights and wellbeing of children, especially those who are already marginalised, have been overlooked. Those working with children have likely encountered unprecedented challenges and responded in innovative ways in efforts to address the needs and rights of all children.

Objective: This paper presents the protocol for a large-scale, multinational study using a new smartphone app to capture the real-time experiences and perspectives of practitioners and policymakers supporting children and families during the COVID-19 pandemic around the globe in relation to a children's human rights '4P' framework of protection, provision, prevention and participation. The findings from the pilot testing of the app regarding its feasibility and acceptability are also shared.

Methods: This is a mixed-method survey study utilising a custom-built iOS and Android smartphone app called the 'COVID 4P Log for Children's Wellbeing', developed in close consultation with 17 international Key Partner organisations. Practitioners and policymakers working with and for children's wellbeing across 26 countries and 5 continents were invited to download the app and respond to 8 weeks of questions. The anticipated large amount of qualitative and quantitative response data will be analysed using content analysis, descriptive statistics and word frequencies.

Results: are expected in June 2021.

Conclusions: The findings will directly inform the understanding of the ways COVID-19 has impacted practitioners', managers' and policymakers' efforts to support children's wellbeing, in their practices, services and policies. Innovative and ambitious in its scope and use of smartphone technology, this project also aims to inform and inspire future multinational research using app-based methodologies—the demand for which is likely to continue to dramatically rise in the COVID-19 era. Mitigating the risks of longitudinal remote data collection will help maximise the acceptability of the app, respondents' sustained engagement and data quality.

(JMIR Preprints 07/06/2021:31013)

DOI: https://doi.org/10.2196/preprints.31013

Preprint Settings

1) Would you like to publish your submitted manuscript as preprint?

¹Institute for Inspiring Children's Futures School of Social Work and Social Policy University of Strathclyde Glasgow GB

²Digital Health & Wellness Group Department of Computer & Information Sciences University of Strathclyde Glasgow GB

Please make my preprint PDF available to anyone at any time (recommended).

Please make my preprint PDF available only to logged-in users; I understand that my title and abstract will remain visible to all users. Only make the preprint title and abstract visible.

- ✓ No, I do not wish to publish my submitted manuscript as a preprint.
- 2) If accepted for publication in a JMIR journal, would you like the PDF to be visible to the public?
- ✓ Yes, please make my accepted manuscript PDF available to anyone at any time (Recommended).

Yes, but please make my accepted manuscript PDF available only to logged-in users; I understand that the title and abstract will remain very Yes, but only make the title and abstract visible (see Important note, above). I understand that if I later pay to participate in <a href="https://example.com/above/participate-in-very make-in-very make

Original Manuscript

Promoting Children's Wellbeing during COVID-19: Protocol for a Multinational Smartphone App Survey of Practitioners' and Policymakers' Successes, Challenges, Innovations and Learning

Jennifer C. Davidson^a, Dimitar Karadzhov^b, Graham Wilson^c

^{ab}Institute for Inspiring Children's Futures, School of Social Work and Social Policy, University of Strathclyde, Scotland, UK

^cComputer and Information Sciences, University of Strathclyde, Scotland, UK

Corresponding author: Prof. Jennifer C. Davidson. Institute for Inspiring Children's Futures, University of Strathclyde, Glasgow, Scotland. Email address: jennifer.davidson@strath.ac.uk

Abstract

Background: The advent of COVID-19 abruptly thrust the health and safety of children and families into greater risk around the world. As regional and local governments, nongovernmental organisations, communities and families and children grapple with the immediate public health impact of COVID-19, the rights and wellbeing of children, especially those who are already marginalised, have been overlooked. Those working with children have likely encountered unprecedented challenges and responded in innovative ways in efforts to address the needs and rights of all children.

Objective: This paper presents the protocol for a large-scale, multinational study using a new smartphone app to capture the real-time experiences and perspectives of practitioners and policymakers supporting children and families during the COVID-19 pandemic around the globe in relation to a children's human rights '4P' framework of protection, provision, prevention and participation.

Methods: This is a mixed-method survey study utilising a custom-built iOS and Android smartphone app called the 'COVID 4P Log for Children's Wellbeing', developed in close consultation with 17 international Key Partner organisations. Practitioners and policymakers working with and for children's wellbeing across 26 countries and 5 continents were invited to download the app and respond to 8 weeks of questions. The anticipated large amount of qualitative and quantitative response data will be analysed using content analysis, descriptive statistics and word frequencies.

Results: The formal data collection for this project took place from October 2020 until March 2021. Results are expected in June 2021.

Conclusion: The findings will directly inform the understanding of the ways COVID-19 has impacted practitioners', managers' and policymakers' efforts to support children's wellbeing, in their practices, services and policies. Innovative and ambitious in its scope and use of smartphone technology, this project also aims to inform and inspire future multinational research using app-based methodologies—the demand for which is likely to continue to dramatically rise in the COVID-19 era. Mitigating the risks of longitudinal remote data collection will help maximise the acceptability of the app, respondents' sustained engagement and data quality.

Keywords: Mobile phones; smartphone app; qualitative; mixed-method; international; survey; service providers; policy; practice; children's rights; wellbeing; COVID-19; pandemic.

Introduction

The advent of COVID-19 abruptly thrust the health and safety of children and families into greater risk around the world [1-3], with far-reaching consequences for public health, child protection, peace and justice globally. While focusing on mitigating the immediate public health and economic impacts of the pandemic, regional and local governments, communities and families may risk overlooking its acute and long-lasting effects on the rights and wellbeing of children, and in particular those who are already marginalised [4]. Agencies worldwide have

recognised that minimising the negative impact of the COVID-19 emergency on children —and in particular, the related public health responses—will be critical to protecting children's wellbeing. This will also be essential to realising the United Nations (UN) Agenda 2030 and the Sustainable Development Goals [5].

The distinctive impact of this pandemic on children is vast, and the risks posed to children's rights to survival and development, as well as to their rights to special protection, education, health and food, have been greatly compounded by COVID-19, and, in many cases, by governmental priorities and responses [6-8]. Children's rights to participate in decisions that impact them have also likely been compromised [9-10]. For those children who are in detention, in alternative care, in migration—especially those who are unaccompanied—and those living in poverty, this pandemic and related measures of confinement have likely had an even greater impact. A distinctive and well-coordinated response is required by governments, non-governmental organisations and local communities to mitigate these [2,11].

Supporting children by implementing policy and practice responses that are focused on distinctly promoting children's wellbeing will form a part of this necessary response, throughout all stages of this pandemic. In some cases, given the changed nature of their work, and the constraints faced by practitioners and policymakers alike, these approaches will need to be innovative, and may be unprecedented. A better understanding of these circumstances across cultures, countries and continents is essential to address the impact on children *now* and in the medium term [2-3].

Utility of Smartphones for Capturing Critical Information from Hard-to-Reach Groups

The COVID-19 pandemic has posed unparalleled challenges to the conduct of traditional, face-to-face research [12]. Harnessing the capabilities of mobile phone devices has become the cornerstone of innovative research methodologies for the remote collection of qualitative and quantitative data, including in low- and middle-income countries (LMICs), during this time [12].

Mobile phone surveys have demonstrated feasibility and effectiveness for gathering large-scale, longitudinal qualitative and quantitative data across remote geographical settings [13-14]. Mobile phones are flexible, affordable and naturalistic devices, which makes them a powerful tool for generating rich, highly contextualised insights, including in hard-to-reach or vulnerable populations [15-18].

Beyond enabling the generation of substantive findings in the health and social sciences, certain mobile methods—such as mobile phone diaries and other free-text response formats—have shown intrinsic benefits for study participants [15, 19]. Examples include increased autonomy, enhanced opportunities for self-expression and reflection, and more acceptable communication of sensitive topics and in high-stress environments [15, 12].

The COVID 4P Log for Children's Wellbeing – A Novel Smartphone Application for Conducting Global Research

In response to the need to capture vital, time-critical cross-country data in the midst of this global emergency, the research team designed a smartphone app-based survey to explore how children's rights and wellbeing are being supported in this pandemic. To generate insights that would inform policies and practices during the ongoing and future stages of COVID-19, and in preparation for future public health emergencies, the study set out to understand effective practices and policies, challenges, innovations and lessons learned and recommendations for improving practice and policy in relation to the protection, prevention, participation, promotion and service provision for children's rights and wellbeing around the globe.

Practitioners and policymakers working with and for children's wellbeing across 26 countries and 5 continents were invited to download the app and respond to questions over 8 weeks. To do so effectively, we established a broad partnership of 17 international Key Partners, whose roles span inter-governmental policymaking; child rights advocacy; workforce capacity-building; service delivery; and monitoring roles at UN level (see 'Acknowledgements' for the full list). With their active involvement, the team designed a novel fast-capture smartphone app, the 'COVID 4P Log for Children's Wellbeing' [20] (hereafter 'the COVID 4P Log').

As well as gathering practice- and policy-related data on key aspects of children's lives and rights affected during this pandemic, the daily questions schedule and the longitudinal nature of the survey were intended to provide a reflection space for respondents to share their achievements, challenges and concerns. In addition to the core questions, a series of questions also enquires about respondents' own coping and wellbeing during the pandemic. This component of the survey was influenced by diary-based research in that it attempted to capture data in the form of intimate reflections or confessionals on topics that might be sensitive or difficult to discuss, such as one's own wellbeing [21].

Engaging in such written reflections may also have intrinsic personal benefits to the respondents as a result of having the opportunity to share and be heard [21]. In light of the public health containment measures and other mobility restrictions which have been forcing many professionals into remote, lone working, as well as the undue increases in the safety risks and workloads for many frontline workers worldwide, offering professionals a space to share their concerns, successes and reflections is likely to increase the acceptability and ethical sensitivity of the research [19, 22-23].

Aims of the Paper

The aim of this protocol paper is to provide researchers with insights into the design decisions and approaches undertaken within this project, and to contribute to the growing evidence base on the use of fast-capture digital technologies for mixed-method research with hard-to-reach groups.

Methods

Research Design

This project is a mixed-method study utilising a smartphone app-based survey enabling a fast-capture, contextually-aware and unobtrusive approach to remote data collection.

Research Team

The diverse and complementary expertise of the research team, together with the relationships with partner organisations and other stakeholders, are critical to the project's success. The research team comprises an international expert in children's rights and wellbeing, with a wide range of international policy and practice stakeholder collaborations; an expert in human-computer interface with experience of user-led app development; a data manager with experience of working with Microsoft Azure databases and app-based research projects; an experienced contracted app developer; a researcher with experience of app-based data collection with hard-to-reach groups; and 2 knowledge exchange administrators and research assistants with experience of communication, visual design and stakeholder liaison.

Sampling and Recruitment

Eligible participants were adults (aged 18 years of age or above) working in a role supporting children's wellbeing such as a policymaker, a practitioner, a supervisor or a manager, in a paid or voluntary capacity, with sufficient English language fluency to engage with the app.

Remote participant recruitment and data collection pose distinct challenges to achieving diverse, representative samples [12]. The pragmatic combination of purposive (maximum variation), convenience and snowball sampling strategies in the present study aimed to ensure the efficient collection of rapid, time-sensitive insights from a diverse cohort of professionals amidst a global emergency [24, 12, 25]. Purposive sampling ensured that respondents from a wide range of countries, regions, roles and areas of work were encouraged to participate. The snowball and convenience sampling approaches relied on the Key Partners, who assisted with recruitment and follow-up. Snowball sampling was relied upon as study participants—such as supervisors and service managers—were encouraged to disseminate information about the study across their teams, organisations and sectors.

Each Key Partner assisted with recruitment by proposing the countries in which their organisational networks had the greatest reach and influence and in which they believed they might be able to recruit at least 50 respondents. In determining the target sample size, we anticipated that achieving this level of representation from all 26 target countries would be challenging, and that there would be a reduction in the numbers of participants sustained throughout the 8-week logging period, given retention experiences of other surveys [12].

The research team and the Key Partners promoted the study via social media, the project website, e-newsletters and videos. Interested participants had the option of visiting the project website and/or downloading the app directly into their Smartphone via Google Play and Apple Store. Monetary incentives for participation were not offered in order to minimise the risk of coercion and due to the purposive sampling strategy, which mainly relied on existing networks and relationships.

In the first phase, the app was available free to download to Android and iOs users, via the Google Play and App Stores, in the following countries: Australia; Belgium; Canada; Finland; Greece; India; Iraq; Israel; Italy; Jordan; Kenya; Lebanon; Malawi; Netherlands; New Zealand; Norway; Palestine; Philippines; Romania; Sierra Leone; South Africa; Sweden; UK; and USA. It was also made available in the Google Play Store's 'rest of the world' category in order to recruit app users in: eSwatini, Ethiopia, Tanzania, Uganda and Zambia. The app is only available

in English. After consulting with the Key Partners, it was decided that it would not be made available in Latin America nor in conflict-affected countries. Furthermore, users with a smartphone that runs on Android versions that are older than 8.0 (Oreo) or iOS versions that are older than 12.5, and those whose smartphones run on operating systems other than Android and iOS, were not able to take part.

The app was available to download for 3 months in its first phase, from 7 October 2020 to 5 Jan 2021, in order to capture data during the pandemic's second wave in many countries [26]. The app was removed from the Google Play and App Stores and thus no longer downloadable on 5 January 2021. As some participants had just begun their 8 weeks of questions at that time, the data collection thus concluded 8 weeks later, on 9 March 2021.

Data Collection

Smartphone App Design

The application was built for both Google's Android (version 8 [Oreo] and above) and Apple's iOS (version 12.5) using React Native [27]. The smartphone app was developed in partnership with an independent app developer contracted by the university, which enabled a flexible, tailored approach and delivered a quality product [28]. It is free to download, small in size, and takes little processing and battery power.

To ensure the acceptability and accessibility of the app, an App Development Steering Group was formed, comprising representatives from the Key Partner organisations. The Steering Group advised on the app logo and other design features, the survey questions, and took part in the test flight phase.

Several changes were made as a result of the test flight feedback, including fixing technical issues and adjusting minor aspects of the wording, layout and flow (sequence of task steps). To increase motivation as well as flow through the app, after submitting a response, a screen was added thanking the participant for completing that day, and a certificate of contribution was offered to those who completed the 8 weeks of questions. Consultations with Key Partners also led to the use of a more vibrant colour scheme for the project's visual identity.

There are six main components to the app: Onboarding, Daily Log, a Calendar, an FAQ, Information about the project, and Settings. The Calendar, FAQ, Information and Settings are all accessible via a navigation bar at the bottom of the app.



Figure 1. Loading screen with app logo

Onboarding

Onboarding is typically the process of welcoming a new user and introducing them to how the app works. For our app, following a branded loading screen ('Figure 1'), the onboarding–shown in 'Figure 2'–first thanks the person for downloading the app and briefly explains what it is for: a daily response log to record policymakers' and practitioners' insights and experiences. The next screen tells the user that they will only be asked one question per day, taking no more than 2 minutes. The user is then provided with an information and consent screen (terms and conditions), which fully explains the design and purpose of the research study, data governance, anonymity and project partners. To indicate that they consent to take part, the user is asked to agree to three statements, by tapping on the button next to each: they are over

the age of 18, are working in an appropriate role related to children's wellbeing, and that they agree to the above terms and conditions. The following screen is used to record information about the participant's professional role and experience. To end the onboarding, the participants are taken to their first Daily Log screen.

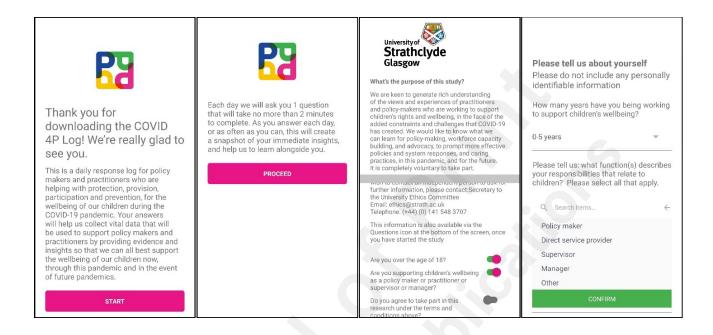


Figure 2. The app onboarding process (from left): Initial welcome screen; informing that one main question will be asked each day; consent form and agreement indicators; demographic questionnaire

Daily Log

Each day the app displays a single Daily Log screen when the participant first opens the app. It shows the question that has been assigned to that particular day and provides a free text box for the participant to write as much or as little as they want. The screen also has an optional question where they can provide any general or separate insights or comments. The answers are recorded when the 'Submit' button is pressed.

Calendar

Participants are given the ability to revisit answers that they have provided over the previous week, in case they want to amend what they have said. They are also able to answer the given week's seven questions at any time, if they do not want to answer daily. The calendar ('Figure 3', left) shows the days of the week at the top of the screen, and each day that has an associated question has a pink dot. By pressing on the day, the question (and any previous answer) is

displayed in the lower part of the screen. These text boxes can be edited to change the answer. Tapping on the pink bar under the days of the week displays a larger month-long calendar.

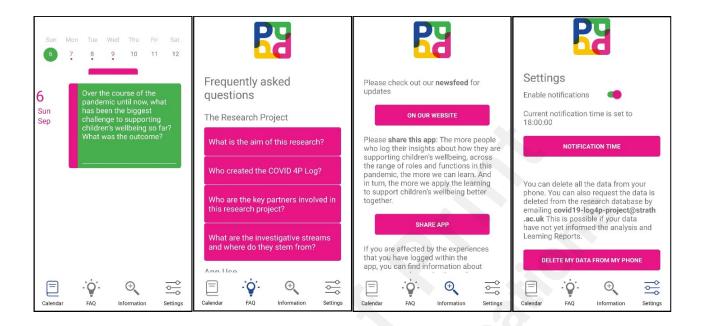


Figure 3. The main app screens (from left to right): Calendar; FAQ (Frequently Asked Questions); Information; Settings.

FAQ

The Frequently Asked Questions (FAQ, 'Figure 3') screen gives information about the research project, how to use the app, data protection, investigator contact details and the terms and conditions.

Project Information

This screen provides a link to the main project website, a button to share a link to the app and/or project information videos via social media platforms, and links to country-specific resources and organisations should they wish to seek help for a child, and/or if they are emotionally affected as part of their involvement in the project.

Settings

The Settings screen allows participants to enable or disable notifications, and set the time at which the Daily Log reminder notification is sent to them. For privacy and data governance reasons, it also contains a button that will delete all the data they have provided that is stored

locally on the device. If they wish to have their data removed from the main research database, they can request this via a project email address.

Survey Development

The survey was informed by 8 investigative streams, with a new set of questions corresponding to each investigative stream being introduced each week (See 'Table 1'). These streams were shaped by a 4P (protection, provision, prevention and participation) children's human rights framework designed to better understand the ways practitioners and policymakers were able to *protect* children, *provide* for their unique needs, enable their *participation* in decisions that affect them, and *prevent* harm in this pandemic context. While limited in their specificity, the 4Ps nevertheless offer an accessible framing of the rights most closely corresponding to aspects of children's wellbeing that were the focus of the research. The benefits and drawbacks of both the human rights and wellbeing approaches [29] were considered by the Key Partners. Both rights and wellbeing were chosen in order to most effectively address the wide range of interests that shape the Key Partners' varied work.

The survey questions were drawn from a wide range of mainly COVID-related multi-disciplinary international policy and practice English-language publications, particularly those issued by established international institutions concerned with children, including for example UNICEF [30], the UN Committee for the Convention on the Rights of the Child [31] and the Pathfinders for Peace, Just and Inclusive Societies [32]. These publications were mainly international policy and practice 'grey' literature, where published concerns about children during COVID-19 emerged earlier in the pandemic than in the academic literature.

In focus groups, Key Partners contributed their feedback on selected questions across the investigative streams, reflecting on the clarity, situational and cultural relevance and sensitivity and overall acceptability of the questions. In addition, individual Key Partners identified specific aspects of children's lives for inquiry relevant to their organisational focus. In some cases, particular questions were drafted, shared, and further adapted in partnership. Additionally, an international group of child researchers involved in advising the 'Life under Coronavirus' international peer research project [33], met as a focus group to directly advise the research team on a specific set of questions to inform to the investigative stream on children's participation.

Survey Structure

App respondents were asked a total of 177 questions across 8 weeks (See 'Table 1'). On average, 1 main open-ended question per day and 3 follow-up open and/or closed-ended questions were asked. Week 1 began with a series of onboarding questions about respondents' demographic and work-related information such as gender, country and region of work, years of experience, professional role, sector and several others. In addition to questions related to the investigative streams, a series of questions were also asked about respondents' own coping and wellbeing, as well as about their experience with the app.

As soon as questions were completed, they were automatically uploaded to the cloud server when WiFi or mobile data were available. At the conclusion of participants' input, the app provided them with a project email address, and offered the opportunity to give theirs, if they wished to stay in touch with the project and receive updates.

Table 1. Survey schedule, with investigative streams, number of survey items and exemplary questions.

Week	Topic (Investigative Stream)	Total Number
		of Survey
		Items
1	Onboarding (demographic and work-related) questions	11
	Exemplary survey question: What best describes what you do in relation to children?	
	Learning from the pandemic so far	14
	Exemplary survey question: What has gone well in your sector's support of children's wellbeing during COVID19?	
2	Protection: Ending violence against children	21
	Exemplary survey question: Has your sector experienced	
	challenges in protecting children from violence during	
	COVID19?	
	Respondents' coping and wellbeing	5
	Exemplary survey question: On a scale of 1-5, how stressed and	
	anxious have you been feeling in the past week?	
	App evaluation	5
	Exemplary survey question: How would you describe your	
	overall experience of taking part in this study so far?	
3	Provision: Access to food, health, education	21
	Exemplary survey question: How have you changed what you do	
	in your work because children have had more restricted access	
	to basic needs e.g. food, education and healthcare during COVID19?	
4	Collaborations, flexibility, transparency and trust: Applying	17

	evidence from past emergencies to COVID-19 Exemplary survey question: In past emergencies around the world, government actions that facilitate trust, connections and collaborative working between government, across sectors and within communities, have been found to be important for recovery from the emergency. Have you seen these actions by your government(s) in this pandemic?	
	App evaluation Exemplary survey question: Has taking part in this study had an impact on your work?	4
5	Prevention: Children's social and emotional wellbeing Exemplary survey question: Have you found that children have experienced mental health issues during COVID19?	17
6	Special considerations - Access to justice, alternative care, disabilities Exemplary survey question: Children in detention are likely to be in poorer health than those who are not. The COVID19 outbreak exacerbates the challenges these children face. Have children been released from detention so that they can return to their families and self-isolate?	15
	App evaluation Exemplary survey question: What has been motivating you to continue taking part in this project?	4
7	Children's participation Exemplary survey question: During COVID19, have children's views been sought about policy or practice decisions that affect their lives?	21
8	Preparing to rebuild post-COVID-19 Exemplary survey question: What are the priorities for children that should be emphasised following the first phases of COVID19? Please tell us more.	15
	App evaluation Exemplary survey question: If you could, would you want to keep using an app of this sort as an ongoing part of your day-to-day work?	7

Data Management

A data management plan was completed in line with university standards, and the data manager ensured compliance with the plan. The project data (survey responses) were transmitted to a dedicated, EU-based cloud-hosted database at OVHCloud [34]; this occurred when the research participant submitted their responses as soon as WiFi or mobile data access were available. The data were then accessed with DBeaver [35] database management software and extracted as a .csv file. Data were stored on the university's internal systems, and clearly

versioned. The data were secured both by passkey and by only being accessible from specified IP addresses.

After the data were extracted from the database in .csv format, they were stored in the university's internal networked storage in a location only accessible to the research team. The data manager produced a script in Microsoft Excel using VB script to transform the data into a useable format. This was necessary to overcome the challenges of working with large amounts of data. The data were also stored in the university's internal networked storage.

All participant data are strictly anonymous. There were no personally identifiable data collected within the app by default, and users were given instructions not to provide any personally identifiable information within the open-text responses. Prior to the data analysis, the data manager screened the data to ensure that no personally identifiable information has inadvertently been provided. All such data were anonymised, and access to the raw data is restricted to the research team. All data are being held on Microsoft Azure cloud storage in full compliance with GDPR legislation.

Data Analysis Plan

The open-ended survey response data will be analysed using qualitative content analysis, which involves open coding, grouping, categorisation, abstraction and conceptual mapping [36]. The coding strategy will involve both structural and data-driven (inductive) approaches [37-38]. The structural coding will be based upon the investigative streams underpinning this study, as well as upon the survey questions. The responses to the closed-ended survey questions will be analysed using descriptive statistics. Cross-tabulations will be performed to compare participants' responses according to sociodemographic characteristics such as country, professional role, gender, experience level and others.

The qualitative data analysis software, NVivo 12 [39], will be used to assist with the data analysis. NVivo enables the efficient and systematic storage, management, analysis and sharing of large amounts of qualitative and quantitative data [40-42]. Various data visualisation, coding and text mining features of NVivo will be used - such as word clouds, word frequency queries, text search queries, word trees, coding context and matrices - to facilitate the efficient generation of rich insights from the data [41].

Throughout this process, the researchers will keep a research diary containing both methodological and analytic memos [36]. Regular team meetings will be conducted to conduct formal and informal coding comparisons, discuss emerging codes and themes, clarify ambiguous or unclear datapoints (such as professional jargon, abbreviations and vernacular), and help minimise personal and professional biases that may be inadvertently 'tainting' the analysis [43].

Research Advisory Group

Following data collection, the Key Partners will be invited to contribute to a Research Advisory Group, which will intend to comprise a representative sample of stakeholders including policymakers, child rights advocates and service-providers, who will be asked to comment on an accessible summary of the anonymised findings. Their input will help articulate the implications of the findings for policy and practice. Additionally, the 'Life under Coronavirus' child researchers (see above) will be invited to reflect with the research team on the study's conclusions. This approach to 'member checking' will enhance the credibility and trustworthiness of the findings [44].

Ethical Considerations

Conducting research targeting at-risk and/or hard-to-reach groups, including those working in precarious, high-stress environments, during a global pandemic raises acute ethical concerns [12]. In the current project, the potential risks of participation—such as the undue time and emotional commitment required and the loss of privacy—were evaluated in light of the considerable expected benefits in terms of promoting child welfare and informing policy and practice worldwide. Several procedures, outlined below, were undertaken to minimise the risks for, and burden on, study participants, and to promote their engagement.

Information on how data are gathered and used during the project was provided to participants in the Participant Information sheet and Consent Form, to which respondents were required to agree, prior to accessing the app questions. This was also available within the FAQ in the app itself and the project website, a link to which was provided in the app Information section. Participants were able to withdraw from the study by stopping their participation and removing the app from their mobile phone; or by contacting the study

administrator by email (as explained in the Information section of the app). They could remove any data stored on the phone via a button within the Settings, or by deleting the app from their phone.

There was a concern about the risk of financial costs incurred as a result of using a smartphone app, especially given that participants from lower-income countries were involved in this study. The app would have been fully free for the participant to use if they used a WiFi connection for which they were not financially liable (e.g., public or workplace) or that had an unlimited data allowance. Users who relied on mobile data connections or personal/home WiFi with a data usage cap, however, may have incurred a personal cost for taking part. All efforts were made to minimise the size of the app download; it requires 37.6 Mb (Android) or 21.1 Mb (iOS) of data for initial download. When 'bugs' needed to be fixed, however, some participants would be required to download updates of similar size.

The risk of placing undue demands on participants was addressed in the design of the app and the survey. The app promoted autonomy by allowing participants to initiate the activity themselves, to determine when and if they wished to be notified by the app to complete the daily question, and to decide if they preferred to complete more than 1 daily question by using the Calendar setting. Participants could also choose to not answer questions. There was a voice-to-text option for those who preferred to speak (and amend) rather than type their responses. Participants could begin and end their participation at a time that suited them.

It is important that the study upheld a duty of care to participants, within the bounds of an anonymous study, as the questions explored how policies, services, and professional practice might or might not be meeting children's needs. It was anticipated that some participants might experience, or would express concerns about, increased risks of harm to children and so the app directed participants to information on the project website about where—in their country—they could seek support for their concerns about a child, and for their own mental health.

Results

Initiated in April 2020, the research team began liaising with Key Partners in May 2020. App development and initial testing were undertaken between June and August 2020. The test flight process began in August 2020, and the app and the vast majority of questions were finalised in

September 2020. Data collection was undertaken between October 2020 and March 2021. Data analysis began thereafter; results are expected in June 2021. Dissemination efforts with policy and practice audiences will be planned as a first priority with Key Partners and others, given what is anticipated to be the time-sensitive nature of the findings and the urgency of the issue of children's wellbeing. Learning Reports will be published from June 2021. Key Partners will play a further and pivotal role throughout the dissemination stages.

Discussion

This paper presents the protocol for a smartphone app-based survey study with a distinctive global scope, a participatory approach to survey development involving a diverse group of partner organisations, and a time-sensitive focus on practitioners and policymakers working across a range of settings, countries, continents and cultures during the COVID-19 pandemic. Ultimately, this study aimed to explore a range of concerns at the practice, services and policy levels, reflecting the complexity of children's lives and the profound implications of this global emergency.

The role and commitment of the Key Partners to this project have made a central contribution to its reach, inclusivity and rigour. Their involvement has been underpinned by goodwill, the positive relationships with the research team, and by a collective sense of urgency about the issues facing children at this time.

Study Limitations and Risks

There are a number of project risks [12, 19] and limitations recognised in this study.

Linguistic and Cultural Accessibility

The app was only available in English. This likely posed challenges to the engagement of persons with low literacy levels or lack of fluency in English. Crucially, study participation was contingent upon smartphone ownership and the availability of WiFi smartphone devices, and data packages were not provided due to feasibility issues.

Data Integrity and Quality Risks

We anticipate typing errors and single-word responses; ambiguous vernacular; unwillingness to enter long responses; and difficulties using the voice-to-text feature. Some responses will thus lack sufficient context or elaboration. Additionally, due to the inherent limitations of anonymous survey designs, we were unable to probe participants into elaborating or clarifying responses. Conversely, participants were not able to clarify any questions via the app.

Ensuring data integrity is a further challenge of using an anonymous survey format. As we were not able to ascertain how many users were actively using the app, it was difficult to ensure that all data were being accurately received. To address this, during the beta testing phase and periodically during the early live run of the app, specifically identified researchers and partners filled in the responses using only their initials, allowing the data manager to cross check these to ensure data were being received as expected.

Participant Attrition, Engagement and Motivation

Some general challenges related to the use of a longitudinal smartphone app survey warrant discussion. Participants may forget to answer the daily questions or lose motivation over the 8-week period. The high burden of participation (177 questions to be asked over 8 weeks) is likely to increase attrition. In addition, the relevance of the questions to participants may fluctuate between investigative streams, given the range of participants' roles, experience and knowledge, which may also contribute to attrition. And, due to the nature of their work, participants may lack the time or the privacy to sustain detailed daily responses. The resultant attrition may lead to the survey questions in the latter weeks remaining insufficiently addressed. Furthermore, despite the anonymous data collection, some prospective participants may have concerns regarding data privacy and anonymity. The remote and anonymous recruitment and data collection will make it more challenging to establish rapport; this may contribute further to attrition and to a respondent's reduced motivation.

Technological Risks

Creating an entirely new app, over an established app/service, introduces potential risks such as technical malfunctions ('bugs') and compatibility issues across devices. Bugs can hinder a user from being able to use the features of the app as intended, which could lead to (among

other issues): loss of data, if data entry or upload malfunctions; inaccessible information or confusion on how to use the app if the FAQ or Information sections malfunction; reduced trust and/or increased frustration in the app and project, leading to reduced use of the app or even removal of the app from the user's phone.

Risks to the Transferability of the Study Findings

The snowballing and convenience sampling strategies in this project have likely resulted in non-representative samples [12]. The sample was purposefully restricted to a set of target countries, which did not include humanitarian or conflict settings, nor countries in fragile states. Furthermore, there may be vast differences among the response rates by individual participants. This may also negatively impact data transferability.

Conclusion

The findings of this global smartphone app-based survey study will directly inform the understanding of the ways COVID-19 has impacted practitioners', managers' and policymakers' efforts to support children's wellbeing, in their practices, services and policies. This knowledge will be critical to leveraging learning and innovations to better protect children, provide for their unique needs, prevent the negative long-term impact of the pandemic on their wellbeing, and enable their participation in decisions that affect them. The project also aims to inform the development of a range of outputs and resources focused on improving pandemic-related professional practices and child rights-oriented policies; and future applications of a smartphone app methodology for real-time responses. Mitigating the risks of longitudinal remote data collection will help maximise the acceptability of the app, respondents' sustained engagement, and data quality.

List of Abbreviations

FAQ: Frequently asked questions; GDPR: General Data Protection Regulation; EU: European Union; LMICs: Low- and middle-income countries; UN: United Nations.

Acknowledgements

While their mention does not imply their endorsement, the authors are deeply grateful to our

international Key Partners, who actively shaped the overall project and without whom this project could not have been undertaken: the African Child Policy Forum, African Partnership to End Violence Against Children, Barnafrid National Centre on Violence Against Children, Child Rights Coalition Asia, Child Rights Connect, Defence for Children International, European Social Network, FICE (Fédération Internationale des Communautés Éducatives), Global Social Services Workforce Alliance, International Child and Youth Care Network, National Child Welfare Workforce Institute, OECD (Organisation for Economic Cooperation and Development), the Observatory of Children's Human Rights Scotland, Pathfinders for Peaceful, Just and Inclusive Societies, REPSSI (Pan African Regional Psychosocial Support Initiatives), the UN Special Representative of the Secretary-General on Violence Against Children, and Terre des hommes. These Key Partners were not involved in the development of this paper.

Finally, our thanks to the app designer, Krzysztof Sobota; to Erin Lux for database expertise and research assistance; to Helen Schwittay and Sophie Shields for research and knowledge exchange assistance; and to Mark Hutton for the app visual design.

Funding Statement

This project has been funded by the Scottish Funding Council Global Challenges Research Fund.

Authors' Contributions

All authors contributed extensively to the work presented in this paper. JCD, DK, and GW designed the study and wrote up the protocol paper. JCD is the Principal Investigator on this grant.

Conflict of Interest Statement

The authors declare that they have no conflicts of interest pertinent to this study.

References

Davidson, J; Dirwan, G; Goudie, A.;. and Thévenon, O. (2020). Securing the Recovery,
 Ambition, and Resilience for the Well-being of Children in the post-COVID Decade:
 Webinar Paper. OECD Centre on Well-being, Inclusion, Sustainability & Equal
 Opportunity (WISE). Accessed 3 Jun 2021: https://www.oecd.org/social/family/child-well-being/OECD-WISE-Webinar-Children-Post-Covid19-Decade-Oct2020.pdf

- 2. Fouche, A., Fouché, F. D., & Theron, L. C. (2020). Child protection and resilience in the face of COVID-19 in South Africa: a rapid review of C-19 legislation. *Child Abuse & Neglect*, 104710. https://doi.org/10.1016/j.chiabu.2020.104710
- 3. Priolo Filho, S. R., Goldfarb, D., Zibetti, M. R., & Aznar-Blefari, C. (2020). Brazilian child protection professionals' resilient behavior during the COVID-19 Pandemic. *Child abuse & neglect*, 104701. https://doi.org/10.1016/j.chiabu.2020.104701
- 4. Ferstman C, Fagan A (2020) Covid-19, Law and Human Rights: Essex Dialogues. A Project of the School of Law and Human Rights Centre. University of Essex. ISBN 978-1-5272-6632-2. Accessed 3 Jun 2021: http://repository.essex.ac.uk/28002/
- 5. UN Stats. *The Sustainable Development Goals Report 2020.*; 2020.Campbell S, Cicero Oneto C, Saini MPS, et al. Impacts of the COVID-19 pandemic on children: An ethical analysis with a global-child lens. *Glob Stud Child*. 2020;11(1):105-114. doi:10.1177/2043610620976142
- Campbell S, Cicero Oneto C, Saini MPS, et al. Impacts of the COVID-19 pandemic on children: An ethical analysis with a global-child lens. Glob Stud Child. 2020;11(1):105-114. doi:10.1177/2043610620976142
- 7. Clark H, Coll-Seck AM, Banerjee A, et al. After COVID-19, a future for the world's children? *Lancet*. 2020;396(10247):298-300. doi:10.1016/S0140-6736(20)31481-1
- 8. Fegert JM, Vitiello B, Plener PL, Clemens V. Challenges and burden of the Coronavirus 2019 (COVID-19) pandemic for child and adolescent mental health: a narrative review to highlight clinical and research needs in the acute phase and the long return to normality. *Child Adolesc Psychiatry Ment Heal*. 2020;14:20. doi:10.1186/s13034-020-00329-3
- 9. Tisdall K, Powell M, Reid K, Kong G. Independent Children's Rights Impact Assessment on the Response to Covid-19 in Scotland. Office for the Children and Young People's

Commissioner Scotland: UK. Published 2020. Accessed June 3, 2021. https://cypcs.org.uk/coronavirus/independent-impact-assessment/

- 10. Cuevas-Parra P. Co-Researching With Children in the Time of COVID-19: Shifting the Narrative on Methodologies to Generate Knowledge. *Int J Qual Methods*. 2020;19. doi:10.1177/1609406920982135
- 11. Raman S, Harries M, Nathawad R, et al. Where do we go from here? A child rights-based response to COVID-19. *BMJ Paediatr Open*. 2020;4(1):714. doi:10.1136/bmjpo-2020-000714
- 12. Hensen B, Mackworth-Young CRS, Simwinga M, et al. Remote data collection for public health research in a COVID-19 era: ethical implications, challenges and opportunities. *Health Policy Plan.* 2021;36(3). doi:10.1093/heapol/czaa158
- 13. Dawson C. AZ of Digital Research Methods. Routledge. 2019. ISBN 978135104467
- 14. DeJonckheere M, Zhao A, Lane J, et al. Results of a National Text Message Poll of Youth: Perspectives on Primary Care. J Adolesc Heal. 2020;67(6). doi:10.1016/j.jadohealth.2020.04.017
- 15. Karadzhov D. Expanding the methodological repertoire of participatory research into homelessness: The utility of the mobile phone diary. Qual Soc Work. Published online March 26, 2020. doi:10.1177/1473325020913904
- 16. Nash M, Moore R. Exploring Methodological Challenges of Using Participant-Produced Digital Video Diaries in Antarctica. Sociol Res Online. 2018;23(3). doi:10.1177/1360780418769677
- 17. Sugie NF. Utilizing Smartphones to Study Disadvantaged and Hard-to-Reach Groups. Sociol Methods Res. 2018;47(3). doi:10.1177/0049124115626176
- 18. United Nations Development Programme. Below the Surface: Results of a WhatsApp Survey of Syrian Refugees and Host Communities in Lebanon. Published 2018. Accessed May 20, 2021. https://data2.unhcr.org/en/documents/details/67579
- 19. Bartlett R, Milligan, C (2015) What is Diary Method? London and New York: Bloomsbury Publishing. Doi: 10.5040/9781472572578
- 20. Inspiring Children's Futures. (2020). COVID 4P Log for Children's Wellbeing. https://inspiringchildrensfutures.org/log4p
- 21. Harvey, L. (2011). Intimate reflections: Private diaries in qualitative research. *Qualitative Research*, 11(6), 664-682. DOI: 10.1177/1468794111415959

22. Global Social Service Workforce Alliance - Supervision Interest Group. (2020). Guidance manual on strengthening supervision for the social service workforce. Accessed 2 June, 2021: http://www.socialserviceworkforce.org/resources/guidance-manual-strengthening-supervision-social-service-workforce

- 23. Gupta, S., & Sahoo, S. (2020). Pandemic and mental health of the front-line healthcare workers: a review and implications in the Indian context amidst COVID-19. *General Psychiatry*, 33(5). doi: 10.1136/gpsych-2020-100284
- 24. Patton, M. Q. (1990). *Qualitative Evaluation and Research Methods.* (2nd Edition). Newbury Park, CA: Sage Publications.
- 25. Shaghaghi, A., Bhopal, R. S., & Sheikh, A. (2011). Approaches to recruiting 'hard-to-reach' populations into research: a review of the literature. *Health promotion* perspectives, 1(2), 86. PMID: <u>24688904</u>
- 26. Dong E, Du H, Gardner L. An interactive web-based dashboard to track COVID-19 in real time. Lancet Infect Dis. 2020;20(5). doi:10.1016/S1473-3099(20)30120-1
- 27. React Native. https://www.reactnative.dev
- 28. Zhang J, Calabrese C, Ding J, Liu M, Zhang B. Advantages and challenges in using mobile apps for field experiments: A systematic review and a case study. Mob Media Commun. 2018;6(2). doi:10.1177/2050157917725550
- 29. Tisdall, E Kay (2015). Children's Wellbeing and Children's Rights in Tension? *The International Journal of Children's Rights*, 23(4):769-789.

 https://doi.org/10.1163/15718182-02304003
- 30. UNICEF (2020). Social service workforce safety and wellbeing during the COVID-19 response. Accessed 3 June, 2021: https://www.unicef.org/media/68501/file/Social-Service-Workforce-Safety-and-Wellbeing-during-COVID19-Response.pdf
- 31. OHCHR (2020). Compilation of statements by human rights treaty bodies in the context of COVID-19. Accessed 3 June, 2021:

 https://www.ohchr.org/_layouts/15/WopiFrame.aspx?sourcedoc=/Documents/
 HRBodies/TB/COVID19/

 External_TB_statements_COVID19.docx&action=default&DefaultItemOpen=1
- 32. Davidson, J.; Elsley, S.; Giraldi, M.; Goudie, A.; Hope, K.; Lyth, A.; Van Keirsbilck, B. (June 2019): Justice for Children, Justice for All: The Challenge to Achieve SDG16+ A Challenge

- Paper. Scotland: CELCIS-Inspiring Children's Futures, University of Strathclyde. Available: https://www.justice.sdg16.plus/justiceforchildren
- 33. Terre des hommes. (2020). #COVIDUnder19. https://www.tdh.ch/en/projects/covidunder19
- 34. OVHCloud. http://www.ovhcloud.com
- 35. DBeaver. https://www.dbeaver.io
- 36. Elo S, Kyngäs H. The qualitative content analysis process. J Adv Nurs. 2008;62(1). doi:10.1111/j.1365-2648.2007.04569.x
- 37. Ryan GW, Bernard HR. Techniques to Identify Themes. Field methods. 2003;15(1). doi:10.1177/1525822X02239569
- 38. Vaismoradi M, Turunen H, Bondas T. Content analysis and thematic analysis:
 Implications for conducting a qualitative descriptive study. Nurs Health Sci. 2013;15(3).
 doi:10.1111/nhs.12048
- 39. QSR International. Qualitative Data Analysis Software: NVivo. Accessed June 3, 2021. https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home
- 40. Jackson, K., & Bazeley, P. (2019). Qualitative Data Analysis with NVivo. Sage (3rd Ed).
- 41. Feng X, Behar-Horenstein L. Maximizing NVivo Utilities to Analyze Open-Ended Responses. Qual Rep. Published online March 17, 2019. doi:10.46743/2160-3715/2019.3692
- 42. Fielding J, Fielding N, Hughes G. Opening up open-ended survey data using qualitative software. Qual Quant. 2013;47(6). doi:10.1007/s11135-012-9716-1
- 43. Padgett DK (2016). Qualitative Methods in Social Work Research (Vol. 36). Sage.
- 44. Birt L, Scott S, Cavers D, Campbell C, Walter F. Member Checking: A Tool to Enhance Trustworthiness or Merely a Nod to Validation? Qual Health Res. 2016;26(13):1802-1811. doi:10.1177/1049732316654870
- 45. Brooke, J. (1996). SUS: A "quick and dirty" usability scale. In P. W. Jordan, B. Thomas, B. A. Weerdmeester, & I. L. McClelland (Eds.), Usability evaluation in industry (pp. 189–194). London: Taylor & Francis.

Supplementary Files

Untitled.

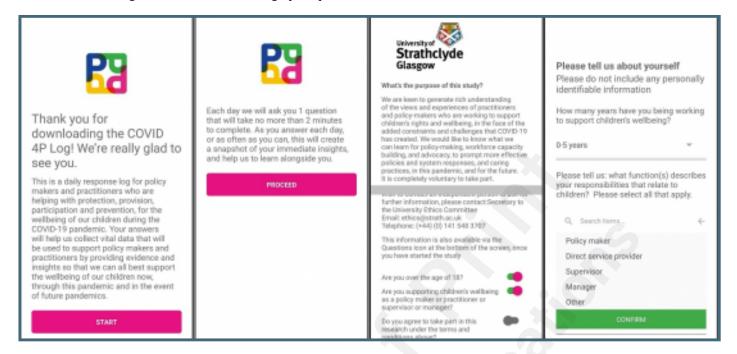
URL: http://asset.jmir.pub/assets/500405427c04b2cf48130cf69a55721c.docx

Figures

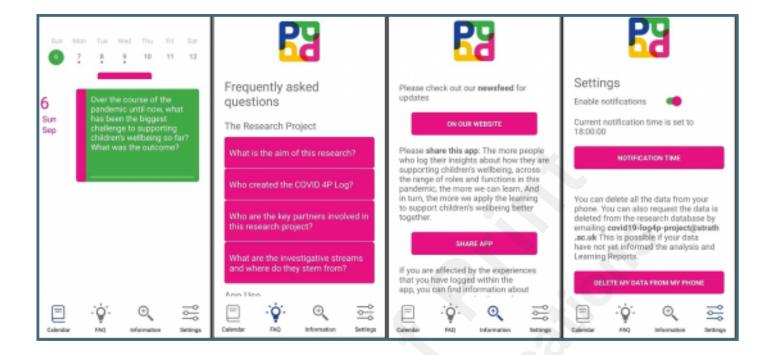
Loading screen with app logo.



The app onboarding process (from left): Initial welcome screen; informing that one main question will be asked each day; consent form and agreement indicators; demographic questionnaire.



The main app screens (from left to right): Calendar; FAQ (Frequently Asked Questions); Information; Settings.



TOC/Feature image for homepages

Project name and image.



For the wellbeing of our children