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# Decision-making regarding accessing paediatric unscheduled healthcare during the COVID-19 pandemic: a mixed methods systematic review and thematic synthesis



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# Decision-making regarding accessing paediatric unscheduled healthcare during the COVID-19 pandemic: a mixed methods systematic review and thematic synthesis

# ABSTRACT

**Objective**
Reductions in paediatric unscheduled healthcare utilisation were seen during the COVID-19 pandemic, with concerns around their impact on children's health. The reasons for these changes are not well described. This review aims to explore the factors reported by parents that influenced their decision-making around accessing paediatric unscheduled healthcare during the COVID-19 pandemic.

**Design**
Mixed methods systematic review and thematic synthesis, based on the Enhancing Transparency of Reporting the Synthesis of Qualitative research (ENTREQ) framework.

**Data sources**
MEDLINE, Embase, Web of Science, PsycEXTRA, PsycINFO, Global Health, Global Index Medicus, Dissertations and Theses Global, Google Scholar, and OAISter. Studies published from January 2020 to July 2023 were included.

**Eligibility criteria for selecting studies**
Qualitative, quantitative and mixed methods studies that assessed the perspectives of parents on decisions to access or delay or avoid accessing paediatric unscheduled healthcare during the COVID-19 pandemic.

**Data extraction and synthesis**
Nvivo 14.23.0 was used to code results of the primary studies and develop themes, following a thematic synthesis approach.

**Results**
Twelve studies were included, all from high-income settings, mainly in Europe. The studies were conducted across varying times and levels of COVID-19-related restrictions. The principal descriptive themes identified were: (i) concerns about COVID-19 infection, (ii) balancing and navigating risks, (iii) perception of healthcare service status and conditions, and (iv) perception of information and advice. These were developed into analytic themes to further describe the decision-making process.

**Conclusions**
Parents balanced a range of risks, concerns, advice and responsibilities when considering accessing paediatric unscheduled healthcare during the COVID-19 pandemic. External sources of advice and information were important; misconceptions around public health advice may reflect the multitude of information sources and the rapidly changing circumstances of the pandemic. Public health policy and planning should consider parent perspectives when developing measures to ensure equitable access to appropriate paediatric healthcare services.

## STRENGTHS AND LIMITATIONS OF THE STUDY

- This mixed methods review on unscheduled paediatric healthcare utilisation decision-making directly explored parent perspectives, which are an important but sometimes overlooked consideration.
- A comprehensive and systematic search strategy was used, but with limitations due to resource constraints, such as limiting to English language and screening being carried out by a single reviewer.
- Thematic synthesis was applied, including inductive coding and the use of participant quotes to ensure the findings remained grounded in the context of the primary studies.
- An explicit quality appraisal process was applied, which included the use of sensitivity analysis. This method and its rationale are transparently described, although the optimal approach in mixed methods or qualitative synthesis is debated.
- This review considered unscheduled healthcare as a whole undivided system, but there was potential bias in included studies towards the emergency department setting. There was also a bias in included studies towards high-income countries in Europe.

# INTRODUCTION

Unscheduled healthcare is healthcare that is usually provided with less than one day's notice through services such as emergency departments (EDs), general practitioners (GPs), and out-of-hours clinics.(1,2) During the COVID-19 pandemic, significant reductions in paediatric unscheduled healthcare utilisation were recorded.(3) Children as a group were generally less vulnerable to the direct impacts of COVID-19 but were disproportionately affected by the indirect consequences.(4,5) Important routine healthcare services were impacted; for example, disruptions to childhood vaccinations have increased the risk of future vaccine-preventable disease outbreaks.(6) Certain groups, such as children with disabilities and chronic illnesses, faced additional challenges and disruptions to their usual care.(7–10) Regarding children's unscheduled care use, paediatric ED visits dropped significantly across various regions; the average reduction reported in the literature was previously estimated at 64%, with a range of 17-89%.(3) There are concerns that delay or avoidance for acute presentations may have resulted in adverse health impacts for children,(11,12) with paediatricians in multiple countries reporting their experience of delayed presentations contributing to avoidable harm.(13–15) For instance, a survey of 4075 UK and Irish paediatricians in April 2020 estimated that delayed presentation had already contributed to nine deaths.(13) These potentially avoidable harms may relate to issues such as delayed cancer diagnoses,(16) delayed diagnosis of acute conditions such as appendicitis,(17) increased complications for new presentations of chronic diseases such as diabetes,(18) and reduced access to acute mental health services.(19)

The factors influencing paediatric healthcare-seeking are complex, involving interactions between individuals and complicated health systems. In studying the reasons for these changes in healthcare utilisation, it is important to understand the decision-making processes of people accessing services. Parent perspectives are an essential but sometimes overlooked aspect in understanding this process.(1,20) In addition, previous studies have shown that healthcare professionals explain healthcare use in terms of the clinical urgency of the medical issues, whereas patients focus on other practical issues as well, including accessibility, convenience and contextual factors.(20,21) Together, these findings illustrate the importance of including service user perspectives in research on accessing paediatric unscheduled healthcare.

Regarding evidence on parents' decision-making specifically, a systematic review before the pandemic identified several important factors associated with unscheduled care use, such as the perception of the condition's urgency, a need for reassurance, waiting times, and the availability of services.(1) In the context of previous pandemics and epidemics, the 2003 severe acute respiratory syndrome (SARS) pandemic and the 2015 Middle East respiratory syndrome (MERS) outbreak were associated with reduced paediatric ED visits.(3) Suggested reasons for the reduction during the SARS epidemic included fear of infection, media influence, and public health advice that people with symptoms should stay at home.(3,22–24) In contrast, the 2009 Influenza A (H1N1) pandemic was associated with increased paediatric ED use,(3) possibly related to parents' fears and media coverage at the time.(3,25,26)

How parents made these kinds of decisions during the COVID-19 pandemic is not currently clear. Some proposed causes for the reductions include fears around COVID-19 infection when attending hospitals or primary care, changes in infectious disease incidence with reduced social contact, and perceptions around healthcare availability.(14,27–29) Changes in the provision of hospital care may have also contributed; for example, some services required the redeployment of paediatric staff to adult services, restructuring of emergency departments, and cancelling outpatient care.(30)

We aimed to gain a greater understanding of parent decision-making around accessing paediatric unscheduled healthcare during the COVID-19 pandemic, to inform planning for future public health emergencies to ensure safe access to paediatric healthcare

services. Our specific objectives were: (i) to describe which factors were important to parents in decisions to access paediatric unscheduled healthcare during the pandemic; (ii) to describe which factors were important to parents in decisions to delay or avoid accessing paediatric unscheduled healthcare during the pandemic; and (iii) to describe differences in these results across different geographic regions and country economic classifications. Of note, various terms for parents, caregivers, and guardians may be applied in this area. For this review, we use the term 'parent' to include a range of individuals responsible for care and decision-making for children, including biological parents, legal guardians, and other primary caregivers.

# METHODS

This mixed methods review and thematic synthesis was conducted and reported based on best practice guidance, adapted from the Joanna Briggs Institute (JBI) recommendations for mixed methods systematic reviews, the ENTREQ statement, and the updated PRISMA statement.(31–35) The mapping of ENTREQ items to specific sections of the report is provided in Supplemental Table S1.

## Search methods

We applied the SPIDER (Sample, Phenomenon of Interest, Design, Evaluation, Research type) tool to the research aims and objectives to develop the research question, identify search concepts, and define a comprehensive search strategy.(36) The research question was: 'What factors were reported by parents to influence their decision-making regarding accessing paediatric unscheduled healthcare during the COVID-19 pandemic?' Potential search terms were initially identified from a previous systematic review on the topic prior to the COVID-19 pandemic.(1) COVID-19-related terms were identified from the Royal College of Surgeons in Ireland library guide website.(37) Further search terms were identified by examining the title, abstracts, and subject indexing of three studies which were known to be relevant to this review.(21,38,39) Inclusion and exclusion criteria were developed by applying the SPIDER tool to the research question, aim, and objectives. These criteria are outlined in Table 1. The search concepts and the strategy for each source are included in Supplemental Tables S2 and S3.

**Table 1.** Inclusion and exclusion criteria

| SPIDER tool item | Inclusion criteria | Exclusion criteria |
|---|---|---|
| **Sample** | Studies that involved the parents of children aged under 18 years | Studies that did not examine and report child and adult data separately (for those studies that included adult data) |
| **Phenomenon of Interest** | Studies that assessed factors associated with paediatric unscheduled healthcare utilisation decisions | Studies that did not examine and report child unscheduled healthcare data separately from other forms of healthcare (for those studies that included different types of healthcare) |
| | Studies published since 31 January 2020 | |
| **Design** | Primary research, including grey literature | Editorials, reviews, and expert opinions |
| **Evaluation** | Studies that directly examined parent-reported factors | |
| **Research type** | Qualitative, quantitative, or mixed methods studies | |
| **Other** | Available in English | |

The searches were carried out in July 2023, and the sources accessed were MEDLINE, Embase, Web of Science, PsycEXTRA, PsycINFO, Global Health, Global Index Medicus, Dissertations and Theses Global, Google Scholar, and OAISter. Forward and backward citation searching was also carried out on included articles using

citationchaser.(40) We screened the title and abstract of all studies returned against the above inclusion and exclusion criteria and then examined the full text of any potentially relevant articles for inclusion. A single reviewer carried out the screening.

## Data extraction

Initial categories for data extraction were identified based on a previous review and the JBI guidance,(1,34) and incorporated into a standardised data collection tool (Supplemental Table S4). In addition, the results section of all included reports was entered into Nvivo 14.23.0 to facilitate thematic synthesis.

## Data synthesis and analysis

This review followed a convergent integrated mixed methods design,(34) which has the benefit of producing results that consider the entire range of evidence together and may provide more detailed insights.(41) We applied the thematic synthesis approach outlined by Thomas and Harden.(33,35) Quantitative results were transformed by coding the data into 'textual descriptions', also described as 'qualitizing'.(34,41) This approach has been used in several other reviews that applied thematic synthesis to the combined results.(42–45)

This synthesis process initially involved inductive line-by-line open coding using Nvivo 14.23.0. Relevant text for coding included any text in the 'Results' sections of included studies which described parent-reported factors in decision-making around accessing paediatric unscheduled care during the pandemic. This text could include direct quotes from participants, the authors' interpretations, and the authors' reporting on quantitative results.

The codes emerging from this process were then organised into descriptive themes. This was done by repeatedly reviewing the initial codes and the text of the studies and associating related codes, thinking deductively about the themes occurring in multiple reports.(46) Direct quotes are included where relevant to ensure the original context and meaning are represented.

We then developed analytic themes by examining how the descriptive themes explain the research question. This involved abductive and retroductive reasoning in inferring general conclusions about the results across the included studies.(46) It is important to note the distinction between the descriptive themes and the analytic themes, in that the descriptive themes aim to 'stay close to' the primary studies and use their own terms, whereas the analytic themes seek to 'go beyond' the primary studies in an attempt to answer the research question.(33)

Regarding different regions and economies (Objective (iii)), we categorised studies according to their WHO regional groupings and The World Bank classification.(47,48) We then compared and contrasted the contribution of studies from different regional groupings and income classifications to the different themes and subthemes.

### Analytical model

We followed the approach used by Houghton et al. to create a model to convey the key analytical findings.(49) The purpose of this model is to provide a simple visual representation of the main analytic and descriptive themes, as opposed to a detailed framework of all potential factors identified. Considering the research question, we examined the relationships between the descriptive and analytic themes in an iterative process. Abductive and retroductive reasoning were again used to organise factors into those that encouraged or discouraged attendance. We created multiple mind maps to design an optimal way of displaying the core results and then adapted these into a final overarching analytical model.

## Quality appraisal of included studies and sensitivity analysis

We used the Mixed Methods Appraisal Tool (MMAT) to appraise the quality of individual studies.(50) The MMAT advises against calculating an overall score, instead recommending that the individual scoring is presented. Consequently, we included all studies in the

synthesis and results, presented the full MMAT results for each study, and also conducted a sensitivity analysis after synthesis to examine the contribution of potentially lower-quality studies to the results. This process is similar to the approach described by Carroll and Booth, which has previously been applied to qualitative syntheses of mixed methods research.(51,52) For this sensitivity analysis, we selected three criteria from the MMAT that were identified as being particularly relevant for accurately capturing parent perspectives, and studies that did not meet these three criteria (where applicable) were classified as being potentially of lower quality. These three criteria are outlined in Supplemental Table S5, along with the rationale for their selection. We then examined the contribution of the potentially lower-quality studies to the results by assessing what themes and subthemes would have remained without the evidence from these studies. This overall quality appraisal and sensitivity analysis process (Figure 1) serves to transparently and explicitly examine the impact of potentially lower-quality studies on the results; at the same time, it does not exclude any studies based on criteria that may be considered controversial and unvalidated. Similar approaches have been previously described elsewhere.(51,53,54)

**Figure 1.** Quality appraisal and sensitivity analysis process

## Patient and public involvement

This review was conducted without patient or public involvement.

# RESULTS

A total of 14 reports relating to 12 studies were ultimately included in the review (Figure 2, Table 2 and Supplemental Table S6). (38,39,55–66) The studies were mainly conducted in Europe, and all were in high-income economy countries.(47) The studies were performed over various periods and with various pandemic restrictions, with data collection occurring in 2020 for most.

**Figure 2.** PRISMA flow diagram

**Table 2.** Summary of included studies

| Author and year, country | Dates of data collection | Type of healthcare assessed | Research type | Sampling strategy | Data collection and sample size | Data analysis | Results – factors influencing decision-making |
|---|---|---|---|---|---|---|---|
| **Appleby et al., 2022(39)**<br><br>**England** | November - December 2020 | Paediatric ED | Mixed methods | Convenience sample attending paediatric ED or assessment unit | Semi-structured interview (n = 2)<br>Survey (n = 80)<br>Semi-structured interview and survey (n = 18) | Descriptive statistics<br>Thematic analysis<br>Convergent mixed methods analysis | Parents discussed issues around caregiver roles, perceptions of the healthcare system (NHS), understanding and navigating risk (e.g., child's health and COVID-19 risk), and sources of information |
| **Berry, 2022(57)**<br><br>**England** | Unclear | Paediatric ED | Qualitative | Purposive sample attending paediatric ED | Semi-structured interviews (n = 19) | Thematic analysis | Parental anxiety was unchanged, and parents continued to seek medical attention early in the course of illness |
| **Breckons et al., 2023(58)**<br><br>**England** | May - July 2020 | Children's emergency services | Qualitative | Purposive sample recruited through public involvement groups, online forums, and social media groups | Semi-structured interviews (telephone) (n = 21) | Thematic analysis | The main themes identified involved parents making sense of risks to children and risks posed by children, understanding information, and trying to make the right decisions for their children |
| **Davis et al., 2021(56)**<br><br>**USA, Canada, Israel, Spain, Switzerland** | May - June 2020 | Paediatric ED | Quantitative | Convenience sample attending paediatric ED | Survey (online) (n = 1543) | Descriptive statistics and logistic regression | 18.6% reported delaying attending due to COVID-19 infection concerns |
| **Lim et al., 2020(59)**<br><br>**England** | April – June 2020 | Healthcare services for when your | Quantitative | Convenience sample recruited | Survey (online) (n = 171) | Descriptive statistics<br>Inductive content analysis | 19.2% used the advice leaflet. Of these, just over 40% changed their behaviour as a result, mainly seeking |

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|---|---|---|---|---|---|---|---|
| | | child is seriously ill | | through social media | | | healthcare when they would not have previously. |
| **McCarthy et al., 2021(60)**<br><br>**Australia** | October - November 2020 | Hospital and oncology care | Quantitative | Unclear. 'Eligible children were identified through the RCH electronic medical records database.' | Survey (online) (n = 85) | Descriptive statistics Linear regression Content analysis | 12% were reluctant to attend the ED; reasons included avoiding swabbing and avoiding COVID-19 exposure |
| **Nicholson et al., 2020(55)**<br><br>**Ireland** | June 2020 | Paediatric unscheduled healthcare | Quantitative | Stratified random sample from Qualtrics™ market research panels with representation of all age groups of children | Survey (online) (n = 1044) | Descriptive statistics Multinomial logistic regression | The most commonly reported concern when considering attending healthcare was fear of contracting COVID-19 (n = 706, 67%), followed by concern that the service would be busy (n = 315, 30%) and belief that others needed the services more (n = 263, 25%). Hesitancy was associated with the belief that government messaging meant avoid healthcare. |
| **Poppe et al., 2021(61)**<br><br>**Portugal** | May 2020 | ED and routine healthcare services | Quantitative | Convenience sample recruited through social media | Survey (online) (n = 12390) | Descriptive statistics | Of parents who visited the ED, 33.9% would have gone earlier if not for the pandemic. Of parents whose children were ill and did not attend ED, 22.8% would have gone if there had been no pandemic. |
| **Sanderson et al., 2023(62)**<br><br>**Canada** | May 2020 - May 2021 | Paediatric virtual care emergency clinic | Qualitative | All patients who had a virtual emergency clinic visit were | Survey (n = 773) | Content analysis | Parents were satisfied with the virtual emergency clinic and were motivated to use it to avoid the hospital environment during the pandemic |

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| | | | | invited to participate | | | |
| **Tan et al., 2023(66)**<br><br>**Italy, Spain, Sweden, the Netherlands, the UK** | March 2020 - May 2022 | Healthcare for sick or injured children | Quantitative | Virtual snowball sampling through social media | Survey (online) (n = 598) | Descriptive statistics. Thematic analysis | Parents continued to access healthcare for their children during the pandemic when needed. Fear of COVID-19 infection was noted in all countries, leading some parents to delay attendance. |
| **Wagh et al., 2022(63)**<br><br>**USA** | June - December 2020 | Acute medical care, paediatric ED, routine and chronic non-urgent medical care | Quantitative | Convenience sample attending paediatric ED | Survey (online) (n = 290) | Descriptive statistics | Reasons for not seeking healthcare when a child was ill included concern of COVID-19 infection (43%), media and government advice not to attend (43%), and the illness not being severe enough (29%) |
| **Watson et al., 2021(38)**<br><br>**England** | May - June 2020 | Paediatric acute services via the ED | Qualitative | Convenience sample attending paediatric ED | Semi-structured interviews (n = 15) | Thematic content analysis | Delay in deciding to attend was related to fear of infection, which was caused by the media and personal or community experience |

## Descriptive themes

We described four key descriptive themes: (i) concerns about COVID-19 infection; (ii) balancing and navigating risks; (iii) perception of healthcare status and conditions; and (iv) perception of information and advice. The contribution of each study to the various themes is demonstrated in Table 3.

**Table 3.** Contribution of studies to themes

| Study | WHO region* | World Bank income classification† | Impact of background child and family factors reported | Themes | | | |
|---|---|---|---|---|---|---|---|
| | | | | Concerns about COVID-19 infection | Balancing and navigating risks | Perception of healthcare service status and conditions | Perception of information and advice |
| **Appleby et al., 2022(39)** | EUR | High income | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Berry, 2022(57)** | EUR | High income | | | ✓ | ✓ | ✓ |
| **Breckons et al., 2023(58)** | EUR | High income | | ✓ | ✓ | ✓ | ✓ |
| **Davis et al., 2021(56)** | EUR and AMR | High income | ✓ | ✓ | | | |
| **Lim et al., 2020(59)** | EUR | High income | | | | | ✓ |
| **McCarthy et al., 2021(60)** | WPR | High income | | ✓ | | | |
| **Nicholson et al., 2020(55)** | EUR | High income | ✓ | ✓ | | ✓ | |
| **Poppe et al., 2021(61)** | EUR | High income | | | ✓ | | |
| **Sanderson et al., 2023(62)** | AMR | High income | | | | ✓ | |
| **Tan et al., 2023(64–66)** | EUR | High income | | ✓ | ✓ | ✓ | ✓ |
| **Wagh et al., 2022(63)** | AMR | High income | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Watson et al., 2021(38)** | EUR | High income | ✓ | ✓ | ✓ | ✓ | ✓ |

*Note.* EUR, European Region; AMR, Region of the Americas; WPR, Western Pacific Region. *World Health Organization regions.(48) †World Bank income classifications for the 2024 fiscal year.(47)

## Concerns about COVID-19 infection

Concerns about COVID-19 infection were directly described in eight studies.(38,39,55,56,58,60,63,66) This mainly related to concerns that the child or family would acquire COVID-19 infection while attending healthcare services.

### *Exposure to COVID-19 in healthcare settings*

The risk of COVID-19 exposure was a key finding in a number of the quantitative surveys and was the most commonly reported concern for parents in some.(55,56,60,66) Similarly, qualitative studies demonstrated related concerns and expanded on parents' reasoning and understanding. The hospital environment, including the physical setting and behaviour of others (staff and patients), appeared to influence parents' perceptions of COVID-19 risk. Some parents reported feeling reassured when they noted 'how well everything was managed,'(58) and specifically due to COVID-19 measures in place including social distancing.(39,58,65) The concept of trust in health professionals and their practices to reduce this risk was apparent; some parents were reassured that they had 'things in place keeping everyone safe'.(39) In contrast, other parents were concerned about being in confined spaces where they witnessed people not following precautions,(39,58) such as in waiting rooms where they noted 'the majority of people not wearing masks and people coughing'.(39) In some studies, this concern of acquiring COVID-19 extended further to exposure while travelling to or from the healthcare setting, particularly with public transport.(39,55,63,65)

Concern about acquiring COVID-19 was noted to change over time in three studies, with a reduction in concern being the main finding.(39,55,58) Some parents were reassured that healthcare settings would be better adapted to reduce the risk of infection as the pandemic progressed: 'I imagine now that the hospital is so slick.'(58) Others were reassured by their previous experience attending during the pandemic.(39,58)

### *Sources of fears and concerns*

Some parents described the media as contributing to their fears,(38,39) such as through 'scaremongering tactics' associated with social or mainstream media and a 'hyperawareness of mortality' due to media reports.(39) Another stated outright that the media 'gives you the impression that the corona is coming from the hospital.'(38) In one study, reports from parents about fears were felt to reflect comments by the UK Health Secretary at the time, of 'don't kill your gran by catching coronavirus and then passing it on.'(38) In addition to the media, some participants in this study described concern and advice not to attend coming from family members,(38) and others noted the fact that the virus was new and not fully understood as being a cause for concern in itself.(39,58)

## Balancing and navigating risks

Balancing and navigating risks relates to other themes but was also reported by parents as a process in its own right.(39,57,58,61,66) This could include weighing up COVID-19 concerns, the severity of the child's illness, and different responsibilities. Some parents explicitly described this process of weighing up risks, depicting going to the ED as a 'judgement call' based on their assessment of how unwell a child was or after seeing a GP.(39) This weighing-up of risks was sometimes described as a challenging process by parents.(58) Some described attending ED when they found it was a difficult decision to make and were uncertain: 'It was a very sort of, 'do I take him, do I not'. . .[but] I would never forgive myself if I didn't take him.'(58)

### *Risk to children versus risk from children*

Some parents also explicitly differentiated the infection risk to children versus from children; the risk to children was mainly felt to be 'minimal', whereas passing on COVID-19 to others was a worry.(58) Parents reported concern that children would acquire COVID-19 in the hospital and pass it on to 'vulnerable' people afterwards,(39,58) and concern that children would pass on COVID-19 to 'vulnerable' people in the hospital while attending.(58,60)

*Severity of the child's illness*

The severity of the child's illness was another factor in decision-making in several studies.(38,39,57,58,63) Parents described seeking care when they judged the illness sufficiently severe,(38,39,58) and avoiding seeking care when they did not feel it was severe enough.(63) Some tried to manage things at home but sought help when the potential severity of the condition meant it was something they were not confident dealing with themselves, such as a head injury.(58) Others referred to the 'parent's instinct' or their 'gut feeling', which allowed them to decide when help was needed and could outweigh other concerns.(39)

There was some divergence of opinion among parents regarding changes in the threshold for seeking care during the pandemic. Some described being more cautious in their decision-making around accessing care during the pandemic and discussed the concept of 'raising the bar' for when to attend in terms of the severity of the illness.(58) Conversely, others described how they only used services when needed, but that this was the same as before the pandemic,(58) or how they continued seeking help early when needed.(57) There was similar divergence in the surveys, with some supporting an unchanged threshold,(66) and others indicating reduced attendance rates for the same level of illness during the pandemic.(61)

*Responsibility*

The concept of responsibility was noted in two studies, which both described two contrasting issues: responsibility to their child to get healthcare and a broader social responsibility to follow the rules or guidance. (39,58) Some parents discussed the responsibility to act in the child's best interests, regardless of other factors, and an obligation to protect or negotiate care for one's children.(39,58) Conversely, several parents in both studies reported concern with 'breaking the rules' and feeling responsible for 'following the rules' and acting in a 'socially responsible' way.(39,58) These feelings of social responsibility supported decisions to delay or avoid seeking healthcare. Some parents reported a reluctance to seek healthcare due to fear of judgement by others, which may have contributed to this concern about social responsibility and following the rules.(39,55) Fear of judgement by professionals was a prominent reason for not attending in one survey.(55) In addition, several parents found the rules and changes to be 'confusing' and 'unfair'.(39) As a result, they did not know what they should be doing and how best to follow the rules and fulfil their social responsibilities. This ultimately 'undermined trust and left participants feeling frustrated'.(39)

## Perception of healthcare service status and conditions

Perception of the status of and conditions in healthcare services was identified as a theme from most studies.(38,39,55,57,58,62,63,66) Parents frequently raised this as a reason for avoiding care, and parents' understanding of whether healthcare services were open influenced their decision-making.

*Perception of burden or capacity issues*

Several studies described the concept of not wanting to attend healthcare to avoid adding to a healthcare system already experiencing a significant 'burden'.(39,55,58,66) Parents discussed in interviews how they 'didn't want to put any extra pressure on the doctors'(58) or 'don't want to put additional pressure' on the National Health Service (NHS).(39) Others were advised by friends or family not to attend ED due to the conditions there, sometimes described as 'horrible'.(38)

Some parents were worried that others believed they 'don't deserve an appointment', leaving them in a situation of 'potentially dying or becoming seriously ill with something that could be treated or prevented entirely.'(39) In parallel, others described how limited services were likely needed by other patients:

> 'that the doctors was probably, massively overly used at that point because of all this Covid so we were like we're not going to get an appointment or, even if we do, there's probably somebody who needs it more than us.'(58)

Survey findings supported both of these concepts; concerns that the service would be busy or that others were in greater need were frequently reported by participants in two studies.(55,65)

*Perception of whether healthcare was open or accessible*

Interpreting government or public health advice as meaning to stay away from all healthcare was described in three studies.(55,58,64) Several parents in an English study described their interpretation of the 'Stay home, Protect the NHS, Save lives' message as meaning people should not use health services: '"protect the NHS" had that impact, if there's any worries apart from Covid then stay away, quite a blunt message.'(58) Despite this, most parents in the same study reported that they understood health services were available throughout the pandemic: 'I think there's been enough encouragement that if you've got an unwell child they should be seen. I certainly haven't seen anything to say otherwise.'(58) In addition to this divergence in understanding of the meaning of public health advice, other parents were concerned by a lack of clarity about how hospitals were operating during the pandemic.(58) Survey results included similar beliefs about advice meaning to stay away,(55,64) with a significant proportion of respondents interpreting government advice as meaning to 'avoid health services'.(55) Some parents in a US-based survey endorsed a more specific interpretation of the advice, with 43% of those who did not seek medical care when their children were sick noting that the government advice was not to go to the doctor for a minor problem.(63)

Some studies described a shift towards increased virtual attendances,(57,63,65) which may be related to the perceived status of face-to-face services and the interpretation of public health advice.(65) Experiences of virtual or remote services were mixed. Many parents reported satisfaction and positive experiences with virtual emergency clinics,(62) virtual GP appointments,(65) and text information from GPs.(39) Conversely, others reported negative experiences with telephone consultations and were concerned that they were insufficient to diagnose and treat their child's illness, resulting in ED attendance: 'I needed someone to look at him properly, to listen to his chest. You can't do that over the telephone.'(57) Some parents were concerned that language barriers would mean they would not be adequately understood over the phone, and so felt an in-person review was essential.(38)

## Perception of information and advice

The impact of information and advice on decision-making was apparent across seven studies.(38,39,57–59,63,66) Parents commonly sought advice before attending unscheduled care, and their perceptions of the quality of information sources factored into the process. When questioned on whether participants sought advice before attending the emergency department, most reported that they had, with complementarity between qualitative and quantitative studies; commonly used sources of advice were GPs and NHS 111.(39,57–59) Parents described seeking advice for 'validation' or 'reassurance' that they were doing the right thing in seeking care.(39,64) In addition to healthcare professionals and official sources, some sought advice from friends or family.(38,39)

Parents described a range of positive perceptions towards certain kinds of information and information sources.(38,39,59,64) Some sources were identified as reliable by parents, including NHS 111,(38) pharmacies, educators, and medical professionals.(39) This 'trustworthiness' of information sources directly influenced perceptions around COVID-19 and the pandemic.(39) One study specifically examined the impact of an information leaflet for identifying when your child is seriously unwell, and found that it increased confidence in recognising severe illness and sometimes caused parents to seek healthcare where they would not have otherwise.(59) Similar to seeking advice for validation or reassurance, some parents described finding information useful because it was reassuring: 'The information was useful since it reassured me, useful tips and information on when to seek medical help (again) were given.'(64)

On the other hand, negative perceptions around information or advice were also reported across several studies.(38,39,58,64,65) These negative perceptions related to misinformation online,(38,58) unclear or confusing information,(65) delays and confusion with NHS 111,(39,57,65) information not being child-specific,(64) and a lack of available information.(65) Parents in these studies reported that this contributed to their confusion, upset, and uncertainty; in some cases, this led to a decision that they would not consult information sources before attending ED in the future.

## Analytic themes and analytical model

The studies had various perspectives and focus, and the findings underscore the complexity of this decision-making process. The following two overarching analytic themes are intended to summarise the main commonalities across the range of findings when considering the specific research question of this review. The proposed analytical model summarising the key factors identified and their impact is presented in Figure 3.

### Parents balance a range of different risks and competing responsibilities

Parents' decision-making depends on their perception of various risks, including COVID-19 acquisition by the child or family, passing on COVID-19 to others, negatively impacting healthcare services or other users by attending, and potential harm to the child from not attending. Parents balance and navigate these risks, and this process may be moderated by their perception of different responsibilities related to the parent role: the responsibility to look after their children and a broader social responsibility to follow the rules and behave conscientiously. This process of weighing up different priorities and concerns can be challenging; sometimes, the decision is made based on parents' instincts or gut feelings.

### Parents are amenable to external information and advice influencing their decisions

The impact of external factors was clear from the studies, particularly concerning parents seeking information and advice from trusted sources, with most seeking advice before attending ED. Parents often found this advice reassuring or validating in that it confirmed that they were doing the right thing by deciding to attend when uncertain. On the other hand, many reported issues with some information sources, such as those found online, and with increased fear or uncertainty being driven by the media. Potential misconceptions around official public health advice were common in some studies. Patients' perspectives on risks, roles, and responsibilities may also be influenced by external agents and sources of information, including the media, healthcare professionals, and the community.

**Figure 3.** Analytical model

## Methodological quality appraisal and sensitivity analysis

The full methodological quality appraisal results for each study are shown in Supplemental Table S7. Considering the pre-selected MMAT criteria for sensitivity analysis, one of the qualitative studies did not meet criterion 1.2.,(62) one of the quantitative studies did not meet criterion 4.3.,(61) and the quantitative part of the mixed methods study did not meet criterion 4.3.(39) Results from the quantitative part of the mixed methods study and all parts of the other two studies did not significantly contribute to the descriptive themes and subthemes, as shown in Table 3 and the results presented above.

# DISCUSSION

## Key findings

The included studies describe how parents balanced a range of risks, concerns, worries, and responsibilities in their decision-making. They also show how external information or advice influenced the decision-making process and outcomes. Parents were concerned about the family acquiring or passing on COVID-19 while attending healthcare, but infection control measures and other experiences reassured some. Some described the contrast between responsibility to their children, related to the severity of illness, and a broader social responsibility to follow COVID-19 rules and guidelines. Concern about adding to an already burdened healthcare service was a common theme. It was noteworthy how minimal reference there was to background child and family factors, such as sociodemographic aspects, influencing this process. In addition, most of the studies were carried out in Europe, and all were carried out in high-income settings, limiting comparisons across different geographical regions or economic contexts.

## Comparison to other literature

Parents' perception of the severity of the child's presenting condition and their need for reassurance is evident from studies before the COVID-19 pandemic,(1) and complementarity is seen with some of the results of this review. The concept of understanding and balancing different risks in order to make the decision has also been described in previous studies(1,58,67); prior to the pandemic, these risks related to the child's health risks from their current illness, whereas this review adds additional risks to children, families, and broader society from COVID-19 transmission within healthcare settings. These additional risks weigh into the mix of factors parents must consider and balance when deciding whether to attend unscheduled care with their children.

Interpreting and understanding information influenced decision-making in some studies before the pandemic but was not a prominent theme in a recent systematic review.(1) In our review, however, this was a key theme; parents frequently reported that information and the quality and reliability of information sources directly influenced decision-making. For example, it is concerning that there was a wide variation in parents' understanding of public health guidance, with many parents understanding official guidance to mean they should stay away from hospitals entirely. This contrast with the systematic review before the pandemic may point to the increasingly important role of trusted information sources today, especially with rapid changes in circumstances, rules and guidance, such as during the COVID-19 pandemic. Parents in included studies raised concerns about the vast amount of information available and about misinformation online, a concept described by others as an 'infodemic' and a significant public health issue to address.(55,68) The critical importance of transparency and trust in risk communication and public health messaging was also apparent during the 2003 SARS.(69) Although not reported in this review, health literacy has previously been shown to impact parental health-seeking behaviour and ED use for children,(1,70) and it is an essential consideration in public health communications.

In this review, parents frequently highlighted hesitancy in attending due to concern about adding to already burdened healthcare services or due to others being in greater need of limited resources. In contrast, parents did not explicitly report this in the systematic review immediately before the pandemic.(1) This may relate to public health and media reports on the disease burden and strains on healthcare services, which added to some parents' worries

Finally, in studies conducted before the pandemic, background child and family factors such as race, ethnicity, and socioeconomic status were found to be important in influencing parents' healthcare-seeking behaviour in accessing unscheduled care(1,71–74); however, this is not evident in the current study. This is likely because the included studies

focused on the impact of COVID-19 and, for the most part, did not directly aim to study differences due to background characteristics.

## Strengths and limitations

### *Review methods*

This review took a transparent approach to describing and justifying methodological decisions. We used a convergent integrated approach to combining the different types of research, which is appropriate to this specific research question, as outlined in the JBI guidance.(34)

Thematic synthesis is appropriate to the review question and inductive approach taken and is a thorough method which develops findings that are clearly connected to the results of the included primary studies.(33) Separating descriptive themes from analytic themes differentiates between the primary studies' data and our more analytical engagement with the evidence to apply it to the research question and develop original conceptualisations of the phenomenon, increasing transparency in the results.

Due to time and resource constraints, we could not consult with experts in the area or pilot the search strategy to ensure its completeness, and screening was carried out by a single reviewer. In addition, only English language studies and the selected data sources were included, and significant studies in other languages or sources may be missed.

We have described the contribution of different studies to themes and outlined the strengths and weaknesses of the included studies and the review methods. However, we did not conduct a formal, comprehensive assessment of confidence in the review findings. It has been noted that there is a need for the development of a GRADE approach to assessing confidence in the findings of mixed methods reviews(75).

Finally, in this study, we conceptualised unscheduled healthcare as one system, as this is thought to reflect how patients view and navigate services more accurately.(1,2,55,76) However, most of the included studies were based on a specific type of service, commonly the ED. Thus, the results may be biased towards ED access decisions instead of unscheduled care in general.

### *Included studies*

The included studies were biased towards high-income, European settings; this limits generalisability to other settings. In addition, two studies carried out in similar settings in England contributed heavily to the descriptive themes.(39,58) Participants were mainly recruited in healthcare settings, which may bias the results by excluding people who could not access mainstream healthcare during the pandemic. Most of the included surveys were carried out online or circulated through social media, which again may risk excluding certain vulnerable groups.(77) Only three studies did not meet the pre-specified quality criteria; when the contribution of the parts of these studies in question was examined in sensitivity analysis, they did not significantly contribute to the review findings.

As discussed above, background child and family factors were previously found to influence parent decision-making. However, they were not consistently reported in this review, likely due to the focus of the included studies.

## Implications and future research

In terms of public health communications, this review has demonstrated that different parents may understand the same public health advice differently. Of particular concern was the potential misconception of the 'stay home' type of advice as meaning not to access healthcare services at all. This finding highlights the importance of research that directly explores parent perceptions, including factors that contribute to the differences in understanding, to inform public health policy.

Furthermore, understanding what parents find reassuring and their perception of risks is important in developing messaging that illustrates how healthcare is safe during

times of uncertainty, such as the COVID-19 pandemic. In addition, ensuring that healthcare systems can meet the needs of the populations they serve, and that the public understands this capacity exists, is necessary to prevent potentially harmful delays or avoidance.

Specific measures that may improve public health communication in this area include involving parents in developing messaging and ensuring a transparent and unified communication approach.(78) Of note, parents identified social responsibility and responsibility to their child as potentially competing aspects in decision-making; this could be an area to further explore in terms of achieving a balance with parents understanding to attend when they are concerned about their child while also taking into account the current public health guidance.

## CONCLUSION

This mixed methods review and thematic synthesis describes the factors influencing parent decision-making when considering accessing paediatric unscheduled healthcare during the COVID-19 pandemic. Parents balance a range of risks, concerns, advice and responsibilities; this can be a complex process with multiple competing priorities. External sources of advice and information are important, and parents are amenable to these influencing their decisions if they are perceived as trustworthy and are correctly understood. Potential misconceptions around public health advice may reflect the multitude of information sources and the rapidly changing circumstances of the pandemic. Public health policy and planning should consider parent perspectives in developing measures to ensure equitable access to safe and appropriate paediatric healthcare services.

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## COMPETING INTERESTS STATEMENT

The authors declare that they have no competing interests related to the content of this manuscript.

## DATA AVAILABILITY STATEMENT

All data relevant to the study are included in the article or uploaded as supplementary information.

# AUTHOR CONTRIBUTIONS AND ACKNOWLEDGEMENTS

## Author contributions

CDC conceived the study idea; CDC designed the search strategy, synthesis method, and quality appraisal plan; CDC and DS reviewed and revised the search strategy, synthesis method, and quality appraisal plan; CDC screened studies for eligibility, extracted data, and initially synthesised the data; CDC and DS reviewed and revised the synthesis results; CDC wrote the first draft of the manuscript; CDC and DS critically reviewed and revised the manuscript. CDC and DS both reviewed the results and approved this final version of the manuscript.

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75. Noyes J, Booth A, Moore G, Flemming K, Tunçalp Ö, Shakibazadeh E. Synthesising quantitative and qualitative evidence to inform guidelines on complex interventions: clarifying the purposes, designs and outlining some methods. BMJ Glob Health. 2019 Jan 1;4(Suppl 1):e000893.

76. Pope C, McKenna G, Turnbull J, Prichard J, Rogers A. Navigating and making sense of urgent and emergency care processes and provision. Health Expect. 2019;22(3):435–43.

77. Dutwin D, Buskirk TD. A Deeper Dive into the Digital Divide: Reducing Coverage Bias in Internet Surveys. Soc Sci Comput Rev. 2023 Oct 1;41(5):1902–20.

78. Ghio D, Lawes-Wickwar S, Tang MY, Epton T, Howlett N, Jenkinson E, et al. What influences people's responses to public health messages for managing risks and preventing infectious diseases? A rapid systematic review of the evidence and recommendations. BMJ Open. 2021 Nov 11;11(11):e048750.

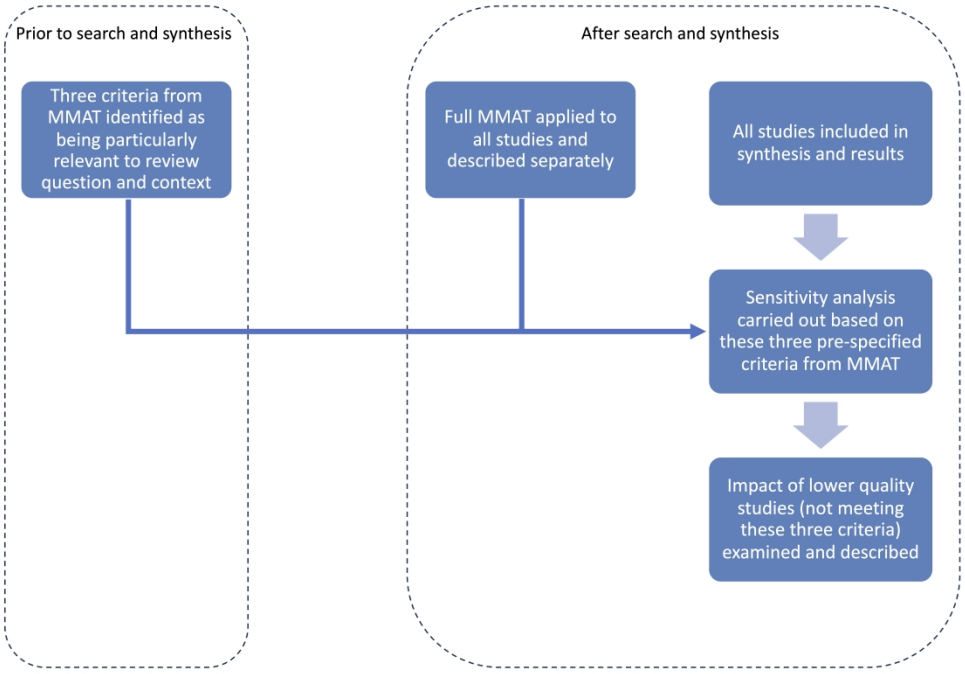


Figure 1. Quality appraisal and sensitivity analysis process

2212x1520mm (72 x 72 DPI)

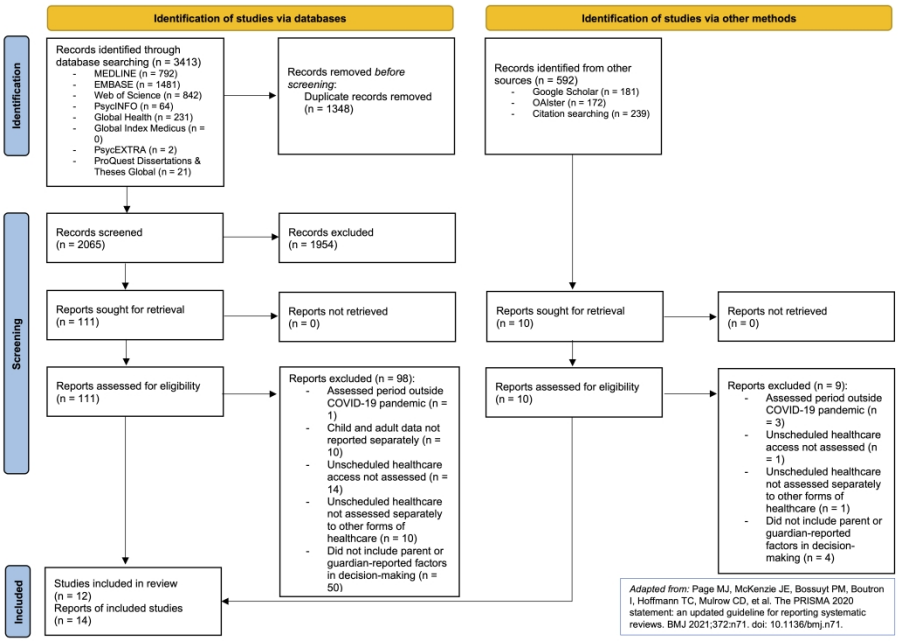


Figure 2. PRISMA flow diagram

2475x1749mm (72 x 72 DPI)

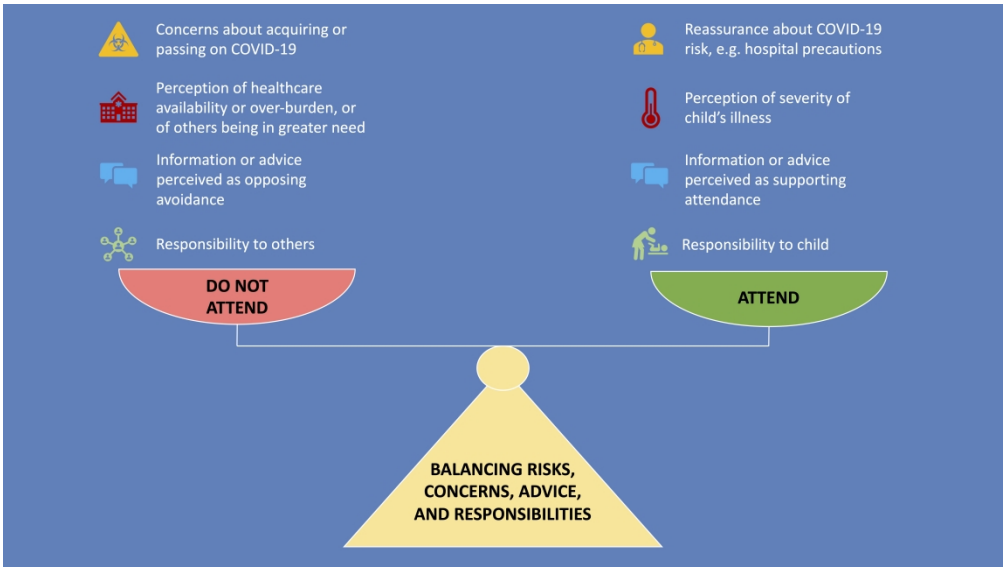


Figure 3. Analytical model

2822x1587mm (72 x 72 DPI)

**Table S1.** ENTREQ items and corresponding sections in the report

| Item | Section in report |
|---|---|
| **Aim** | Introduction |
| **Synthesis methodology** | Methods – Data synthesis and analysis |
| **Approach to searching** | Methods – Search methods |
| **Inclusion criteria** | Methods – Search methods, Table 1 |
| **Data sources** | Methods – Search methods |
| **Electronic Search strategy** | Supplemental Table S3 |
| **Study screening methods** | Methods – Search methods |
| **Study characteristics** | Results – Table 2. Supplemental Table S6 |
| **Study selection results** | Results. Figure 2 |
| **Rationale for appraisal** | Methods – Quality appraisal of included studies and sensitivity analysis |
| **Appraisal items** | Methods – Quality appraisal of included studies and sentivity analysis. Supplemental Table S5 |
| **Appraisal process** | Methods – Quality appraisal of included studies |
| **Appraisal results** | Results – Methodological quality appraisal and sensitivity analysis. Supplemental Table S7 |
| **Data extraction** | Methods – Data extraction |
| **Software** | Methods – Data extraction |
| **Number of reviewers** | Methods – Search methods. Discussion – Strengths and limitations |
| **Coding** | Methods – Data synthesis and analysis |
| **Study comparison** | Methods – Data synthesis and analysis |
| **Derivation of themes** | Methods – Data synthesis and analysis |
| **Quotations** | Results – Descriptive themes |
| **Synthesis output** | Results – Analytic themes and analytical model. Discussion |

*Note.* Items adapted from the ENTREQ statement.[1]

[1] Tong A, Flemming K, McInnes E, Oliver S, Craig J. Enhancing transparency in reporting the synthesis of qualitative research: ENTREQ. BMC Med Res Methodol. 2012 Nov 27;12:181.

**Table S2.** Search concepts, definitions, and terms

| SPIDER tool item | Search concept | Definition | Search terms |
|---|---|---|---|
| **Sample** | Child | Persons under the age of 18[2] | • child*<br>• paediatric<br>• pediatric<br>• infant*<br>• adolescent*<br>• baby<br>• babies<br>• neonate*<br>• newborn* |
| **Phenomenon of Interest** | COVID-19 pandemic | The period from the declaration of COVID-19 as a PHEIC by the WHO[3] | • COVID-19<br>• covid<br>• covid19<br>• coronavirus<br>• corona virus<br>• 2019-nCoV<br>• SARS-CoV-2<br>• SARS2<br>• SARS-CoV-19<br>• novel cov |
| | Unscheduled care | 'When someone seeks treatment or advice for a health problem without arranging to do so more than a day in advance.'[4] | • unscheduled care<br>• primary care<br>• general practice<br>• emergency department*<br>• emergency care<br>• emergent care<br>• after-hours<br>• out-of-hours<br>• out of hours<br>• urgent care |
| **Evaluation** | Decision-making | Any description of parent-reported attitudes, views, experiences, or characteristics in the context of deciding to access or delay or avoid accessing unscheduled care for their children. | • decision*<br>• preference*<br>• reason*<br>• delay*<br>• avoid*<br>• hesita*<br>• miss*<br>• attend*<br>• access* |

*Note.* PHEIC, public health emergency of international concern; WHO, World Health Organization.

[2] United Nations Office of the High Commissioner for Human Rights. Convention on the Rights of the Child [Internet]. United Nations. [cited 2023 Sep 16]. Available from: https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-child

[3] World Health Organization. Statement on the second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV) [Internet]. World Health Organization. 2020 [cited 2022 Oct 18].

[4] O'Cathain A, Knowles E, Munro J, Nicholl J. Exploring the effect of changes to service provision on the use of unscheduled care in England: population surveys. BMC Health Serv Res. 2007 Apr 27;7:61.

**Table S3.** Search Strategies

Ovid MEDLINE search strategy (14 July 2023)

| # | Query | Results |
|---|---|---|
| 1 | (child* or p?ediatric or infant* or adolescent* or baby or babies or neonate* or newborn*).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word] | 4,735,220 |
| 2 | Child/ | 1,913,964 |
| 3 | 1 or 2 | 4,735,220 |
| 4 | (COVID-19 or covid19 or coronavirus or corona virus or 2019-nCoV or SARS-CoV-2 or SARS2 or SARS-CoV-19 or novel cov).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word] | 385,793 |
| 5 | COVID-19/ | 231,417 |
| 6 | 4 or 5 | 385,793 |
| 7 | (unscheduled care or primary care or general practice or emergency care or emergent care or emergency department* or after-hours or urgent care or out-of-hours or out of hours).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word] | 322,722 |
| 8 | (decision* or preference* or reason* or delay* or avoid* or hesita* or miss* or attend* or access*).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word] | 3,371,892 |
| 9 | Decision Making/ | 104,647 |
| 10 | 8 or 9 | 3,371,892 |
| 11 | 3 and 6 and 7 and 10 | 821 |
| 12 | limit 11 to (english language and yr="2020 -Current") | 792 |

Embase search strategy (14 July 2023)

| # | Query | Results |
|---|---|---|
| 1 | (child* or p?ediatric or infant* or adolescent* or baby or babies or neonate* or newborn*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword heading word, floating subheading word, candidate term word] | 5,404,375 |
| 2 | child/ | 2,386,519 |
| 3 | 1 or 2 | 5,404,375 |
| 4 | (COVID-19 or covid19 or coronavirus or corona virus or 2019-nCoV or SARS-CoV-2 or SARS2 or SARS-CoV-19 or novel cov).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug | 496,220 |

| | | |
|---|---|---|
| | manufacturer, device trade name, keyword heading word, floating subheading word, candidate term word] | |
| **5** | coronavirus disease 2019/ | 369,445 |
| **6** | 4 or 5 | 496,220 |
| **7** | (unscheduled care or primary care or general practice or emergency care or emergent care or emergency department* or after-hours or urgent care or out-of-hours or out of hours).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword heading word, floating subheading word, candidate term word] | 543,608 |
| **8** | (decision* or preference* or reason* or delay* or avoid* or hesita* or miss* or attend* or access*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword heading word, floating subheading word, candidate term word] | 4,805,997 |
| **9** | patient decision making/ | 11,834 |
| **10** | 8 or 9 | 4,805,997 |
| **11** | 3 and 6 and 7 and 10 | 1,511 |
| **12** | limit 11 to (english language and yr="2020 -Current") | 1,481 |

Web of Science search strategy (14 July 2023)

| # | Query | Results |
|---|---|---|
| **1** | ALL=(child* OR p$ediatric OR infant* OR adolescent* OR baby OR babies OR neonate* OR newborn*) | 2,672,501 |
| **2** | ALL=("COVID-19" OR covid19 OR coronavirus OR "corona virus" OR "2019-nCoV" OR "SARS-CoV-2" OR SARS2 OR "SARS-CoV-19" OR "novel cov") | 477,270 |
| **3** | ALL=("unscheduled care" OR "primary care" OR "general practice" OR "emergency care" OR "emergent care" OR "emergency department*" OR "after-hours" OR "urgent care" OR "out-of-hours" OR "out of hours") | 429,387 |
| **4** | ALL=(decision* OR preference* OR reason* OR delay* OR avoid* OR hesita* OR miss* OR attend* OR access* ) | 8,285,340 |
| **5** | 1 and 2 and 3 and 4 | 1,008 |
| **6** | 1 and 2 and 3 and 4 Timespan: 2021-01-31 to 2023-07-14 | 857 |
| **7** | 1 and 2 and 3 and 4 and English (Languages) Timespan: 2021-01-31 to 2023-07-14 | 842 |

PsycINFO search strategy (14 July 2023)

| # | Query | Results |
|---|---|---|
| **1** | (child* or p?ediatric or infant* or adolescent* or baby or babies or neonate* or newborn*).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word] | 1,247,087 |
| **2** | exp Child Health/ | 1,127 |
| **3** | 1 or 2 | 1,247,087 |
| **4** | (COVID-19 or covid19 or coronavirus or corona virus or 2019-nCoV or SARS-CoV-2 or SARS2 or SARS-CoV-19 or novel cov).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word] | 34,642 |
| **5** | exp COVID-19/ | 23,338 |
| **6** | 4 or 5 | 34,642 |
| **7** | (unscheduled care or primary care or general practice or emergency care or emergent care or emergency department* or after-hours or urgent care or out- | 52,677 |

| | | |
|---|---|---|
| | of-hours or out of hours).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word] | |
| **8** | (decision* or preference* or reason* or delay* or avoid* or hesita* or miss* or attend* or access*).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word] | 1,064,663 |
| **9** | exp Health Care Seeking Behavior/ | 9,998 |
| **10** | 8 or 9 | 1,070,447 |
| **11** | 3 and 6 and 7 and 10 | 77 |
| **12** | limit 11 to (english language and yr="2020 - 2023") | 64 |

Global Health search strategy (14 July 2023)

| # | Query | Results |
|---|---|---|
| **1** | (child* or p?ediatric or infant* or adolescent* or baby or babies or neonate* or newborn*).mp. [mp=abstract, title, original title, heading words, cabicodes words] | 679,988 |
| **2** | exp children/ | 441,537 |
| **3** | 1 or 2 | 679,988 |
| **4** | (COVID-19 or covid19 or coronavirus or corona virus or 2019-nCoV or SARS-CoV-2 or SARS2 or SARS-CoV-19 or novel cov).mp. [mp=abstract, title, original title, heading words, cabicodes words] | 127,919 |
| **5** | coronavirus disease 2019.sh. | 109,069 |
| **6** | 4 or 5 | 127,919 |
| **7** | (unscheduled care or primary care or general practice or emergency care or emergent care or emergency department* or after-hours or urgent care or out-of-hours or out of hours).mp. [mp=abstract, title, original title, heading words, cabicodes words] | 46,519 |
| **8** | (decision* or preference* or reason* or delay* or avoid* or hesita* or miss* or attend* or access*).mp. [mp=abstract, title, original title, heading words, cabicodes words] | 559,144 |
| **9** | exp decision making/ | 13,805 |
| **10** | 8 or 9 | 559,144 |
| **11** | 3 and 6 and 7 and 10 | 243 |
| **12** | limit 11 to (english language and yr="2020 - 2023") | 231 |

Global Index Medicus search strategy (14 July 2023)

| # | Query | Results |
|---|---|---|
| **1** | (tw:(child* OR paediatric OR pediatric OR infant* OR adolescent* OR baby OR babies OR neonate* OR newborn* )) | 432,600 |
| **2** | (tw:("COVID-19" OR "covid 19" OR covid19 OR coronavirus OR "corona virus" OR "2019 nCoV" OR "SARS-CoV-2" OR SARS2 OR "SARS-CoV-19" OR "novel cov")) | 14,731 |
| **3** | (tw:("unscheduled care" OR "primary care" OR "general practice" OR "emergency care" OR "emergent care" OR "emergency department" OR "emergency departments" OR "after-hours" OR "urgent care" OR "out-of-hours" OR "out of hours")) | 16 |
| **4** | (tw:(decision* OR preference* OR reason* OR delay* OR avoid* OR hesita* OR miss* OR attend* OR access* )) | 233,493 |
| **5** | (tw:(child* OR paediatric OR pediatric OR infant* OR adolescent* OR baby OR babies OR neonate* OR newborn* )) AND (tw:("COVID-19" OR "covid 19" OR covid19 OR coronavirus OR "corona virus" OR "2019 nCoV" OR "SARS-CoV-2" OR SARS2 OR "SARS-CoV-19" OR "novel cov")) AND (tw:(unscheduled | 0 |

| |
|---|
| care" OR "primary care" OR "general practice" OR "emergency care" OR "emergent care" OR "emergency department*" OR "after-hours" OR "urgent care" OR "out-of-hours" OR "out of hours")) AND (tw:(decision* OR preference* OR reason* OR delay* OR avoid* OR hesita* OR miss* OR attend* OR access* )) |

PsycEXTRA search strategy (23 July 2023)

| # | Query | Results |
|---|---|---|
| 1 | (child* or p?ediatric or infant* or adolescent* or baby or babies or neonate* or newborn*).mp. [mp=title, abstract, heading word, keywords] | 53,657 |
| 2 | (COVID-19 or covid19 or coronavirus or corona virus or 2019-nCoV or SARS-CoV-2 or SARS2 or SARS-CoV-19 or novel cov).mp. [mp=title, abstract, heading word, keywords] | 684 |
| 3 | (unscheduled care or primary care or general practice or emergency care or emergent care or emergency department* or after-hours or urgent care or out-of-hours or out of hours).mp. [mp=title, abstract, heading word, keywords] | 2,388 |
| 4 | (decision* or preference* or reason* or delay* or avoid* or hesita* or miss* or attend* or access*).mp. [mp=title, abstract, heading word, keywords] | 49,624 |
| 5 | 1 and 2 and 3 and 4 | 2 |
| 6 | limit 5 to (english language and yr="2020 -Current") | 2 |

Proquest Dissertations & Theses Global (23 July 2023)

Search limited to publication date 2020-2023 and English language.

| # | Query | Results |
|---|---|---|
| 1 | noft(child* OR paediatric OR pediatric OR infant* OR adolescent* OR baby OR babies OR neonate* OR newborn*) AND noft("COVID-19" OR "covid 19" OR covid19 OR coronavirus OR "corona virus" OR "2019-nCoV" OR "SARS-CoV-2" OR SARS2 OR "SARS-CoV-19" OR "novel cov") AND noft("unscheduled care" OR "primary care" OR "general practice" OR "emergency care" OR "emergent care" OR "emergency department*" OR "after-hours" OR "urgent care" OR "out-of-hours" OR "out of hours") AND noft(decision* OR preference* OR reason* OR delay* OR avoid* OR hesita* OR miss* OR attend* OR access*) AND la.exact("English") | 22 |

Google Scholar search strategy

Advanced search conducted on 23/07/2023

Find articles
with all of the words:
child attend "unscheduled care"
with the exact phrase:
"COVID-19"

Return articles dated between 2020 – 2023

Results for screening: 181 total

OAIster search strategy

All searches limited to publication year 2020-2023, English language. Search carried out on 23/07/2023

1. kw:(child*) 66,700
2. kw:(paediatric*) 3,100
3. kw:(pediatric) 11,000
4. kw:(covid) 58,800
5. kw:(covid) OR kw:(covid-19) 58,800
6. kw:(unscheduled) 145
7. kw:(urgen*) 11,500
8. kw:(emergen*) 11,000
9. kw:("primary care") 5,700
10. kw:(child*) AND kw:(covid) AND kw:(unscheduled) 0
11. kw:(paediatric*) AND kw:(covid) AND kw:(unscheduled) 0
12. kw:(pediatric*) AND kw:(covid) AND kw:(unscheduled) 0
13. kw:(child*) AND kw:(covid) AND kw:(urgen*) 74
14. kw:(paediatric*) AND kw:(covid) AND kw:(urgen*) 2
15. kw:(pediatric*) AND kw:(covid) AND kw:(urgen*) 12
16. kw:(child*) and kw:(covid) AND kw:(emergen*) 12
17. kw:(paediatric*) AND kw:(covid) AND kw:(emergen*) 0
18. kw:(pediatric*) AND kw:(covid) AND kw:(emergen*) 2
19. kw:(child*) AND kw:(covid) AND kw:("primary care") 54
20. kw:(paediatric*) AND kw:(covid) AND kw:("primary care") 6
21. kw:(pediatric*) AND kw:(covid) AND kw:("primary care") 10

Results from lines 13-21 were included for screening: 172 total

Citation search

I used citationchaser[5] with 12 of the included articles (all included articles except for Berry, 2022 and Lim et al., 2020). This was performed on 25/07/2023, and identified:

- 212 references (backward citation searching)
- 79 citations (forward citation searching)

Of these, 199 were published between 2020-2023.

In addition, manual backward citation searching was carried out on the 165 references from one study (Berry, 2022) as this was not recognised by citationchaser. 40 of these were published between 2020-2023.

Results for screening: 239 total

[5] Haddaway NR, Grainger MJ, Gray CT. Citationchaser: A tool for transparent and efficient forward and backward citation chasing in systematic searching. Res Synth Methods. 2022 Jul;13(4):533–45.

**Table S4.** Data extraction tool (adapted from a previous review and the JBI guidance)[6]

| Aspect | Data to be extracted | Notes |
|---|---|---|
| **Background and context** | Author and year | |
| | Dates of data collection | |
| | COVID-19 restrictions in place at the time | As described by the authors |
| | Sample size | |
| | Caregiver gender, relationship to child, and age | |
| | Other caregiver features | Include ethnicity, socioeconomic status, education, insurance status, and other factors of note reported by authors |
| | Age of paediatric population | |
| | Other contextual factors | Include specific child or family factors of note that the authors commented |
| | Specific disease group or condition | |
| | Type of healthcare accessed | For example, emergency department, GP, urgent care centre |
| | | |
| **Study design and methods** | Study type | Qualitative, quantitative, or mixed methods |
| | Research question or aim | |
| | Data collection methods | |
| | Data analysis methods | |
| | Sampling strategy | |
| | Inclusion criteria | |
| | Exclusion criteria | |
| | | |
| **Results** | Factors influencing decision-making | As described by the authors in the discussion or conclusion section |

[6] Nicholson E, McDonnell T, De Brún A, Barrett M, Bury G, Collins C, et al. Factors that influence family and parental preferences and decision making for unscheduled paediatric healthcare-systematic review. BMC Health Serv Res. 2020 Jul 17;20(1):1–23.
Stern C, Lizarondo L, Carrier J, Godfrey C, Rieger K, Salmond S, et al. Methodological guidance for the conduct of mixed methods systematic reviews. JBI Evid Synth. 2020 Oct;18(10):2108.

**Table S5.** Quality criteria from Mixed Methods Appraisal Tool[7] selected for sensitivity analysis

| Item | Rationale for using this criterion for sensitivity analysis |
|---|---|
| **1.2. Are the qualitative data collection methods adequate to address the research question?** | For qualitative studies aiming to assess parent-reported factors, it is important that they use the appropriate data collection methods (e.g., interviews, focus groups) to allow participants to describe and explain their perspectives |
| **1.3. Are the findings adequately derived from the data?** | It is important to ensure appropriate techniques are used, such as coding and analysis, so that the results are adequately derived from parent reporting of their perspectives and opinions |
| **4.3. Are the measurements appropriate?** | Important considerations include whether surveys and other measurement tools are appropriately piloted or tested for validity and reliability to ensure they are accurately measuring parent perspectives and are acceptable to participants |

[7] Hong QN, Pluye P, Fàbregues S, Bartlett G, Boardman F, Cargo M, et al. Mixed Methods Appraisal Tool (MMAT) Version 2018 User Guide. Regist Copyr 1148552 Can Intellect Prop Off Ind Can [Internet]. [cited 2022 Oct 24]; Available from: http://mixedmethodsappraisaltoolpublic.pbworks.com/w/file/fetch/127916259/MMAT_2018_criteria-manual_2018-08-01_ENG.pdf

**Table S6.** Individual study aims, background and context

| Study | Research question or primary aim | COVID-19-related restrictions | Caregiver gender, relationship to child, and age | Other caregiver features | Child age | Other context-related information | Specific disease group or condition |
|---|---|---|---|---|---|---|---|
| **Appleby et al., 2022** | 'to investigate the impact of COVID-19 on health-seeking behaviour and decision-making processes of caregivers presenting to paediatric emergency services at a National Health Service (NHS) Trust in London.' | Interviews were conducted during a second lockdown | 80% female, 16% male.<br><18 years: 1%<br>18-24 years: 2%<br>25-34 years: 26%<br>35-44 years: 48%<br>45-54 years: 15%<br>55-64 years: 2% | 62% White British or White Other, 21% Black, 4% Asian | 0-5 years: 53%<br>6-10 years: 21%<br>11-15 years: 24% | The local area was a large, diverse population with high levels of deprivation | N/A |
| **Berry, 2022** | 'What are the expectations and experiences of parents who bring their child to the accident and emergency department with non-urgent medical illness?' | Not described | 18 mothers, 1 father.<br>Age not reported. | Unclear (not reported separately for interviews prior to versus after onset of COVID-19 restrictions) | Unclear (not reported separately for interviews prior to versus after onset of COVID-19 restrictions) | | N/A |
| **Breckons et al., 2023** | 'to understand parents' views on the use of children's urgent healthcare services during the first wave of the COVID-19 pandemic and in particular factors which may | Not described | 19 female, 2 male.<br>All parents.<br>25-29 years: 14%<br>30-34 years: 10%<br>35-39 years: 48%<br>40-44 years: 19%<br>45-49 years: 10% | IMD decile:<br>9-10: 33%<br>7-8: 14%<br>5-6: 24%<br>3-4: 10%<br>1-2: 5%<br>Missing: 14% | Age of youngest child:<br><12 months: 14%<br>1-3 years: 57%<br>4-6 years: 5%<br>7-9 years: 24%<br>IMD deciles:<br>9-10: 33%<br>7-8: 14% | | N/A |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | affect seeking care during “lockdown”.’ | | | | 5-6: 24%<br>3-4: 10%<br>1-2: 5% | | |
| **Davis et al., 2021** | ‘to determine if caregivers of children 0–19 years old presenting to the pediatric ED during the COVID-19 pandemic with non-COVID-19-related concerns are delaying presentation for fear of contracting COVID-19 in the hospital.’ | Not described | 73% mother, 24% father<br>Mean age 39 years | 75% of parents had a greater than high school education | Mean age 7.8 years | | N/A |
| **Lim et al., 2020** | ‘to evaluate the experiences of parents using this decision-making and risk assessment leaflet for a potentially seriously ill child during COVID-19 lockdown. More specifically, we explored the confidence of parents, their health-seeking behaviours, and usefulness of the leaflet.’ | Recruitment was carried out during the first lockdown up until it was eased | Not reported | 93% White British, 2% White Other | Not reported | | N/A |
| **McCarthy et al., 2021** | ‘to understand the impact of the COVID-19 pandemic and any associated | During a lockdown period with | 95% mother, 5% father | 51% of parents had a degree or | Mean age 8.13 years | Australia had low COVID-19 infection rates compared to | Oncology – children receiving hospital-based |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | changes on the health and well-being of children and families receiving hospital-based oncology care at RCH.' | strict restrictions | | postgraduate education | | other countries. The hospital had had few COVID-19 positive inpatients. | cancer treatment only |
| **Nicholson et al., 2020** | 'to examine avoidance behaviour and the level of hesitancy in parents towards accessing healthcare for their child during the COVID-19 pandemic and to determine the factors associated with healthcare avoidance and hesitancy.' | During the first phase of easing of COVID-19 restrictions | 62% female.<br>All parents.<br><29 years: 12%<br>30-39 years: 41%<br>40-49 years: 37%<br>>50 years: 10% | 53% of parents had a degree or postgraduate education. 38% had a medical card, 8% a GP visit card, 26% private insurance only, and 10% insurance and a medical card. | <2 years: 23%<br>2-4 years: 30%<br>5-9 years: 46%<br>10-16 years: 52% | included participants from counties in and | N/A |
| **Poppe et al., 2021** | 'to describe the impact of the pandemic on the use of healthcare services by the pediatric population and to assess the perspective of parents regarding the consequences for their children's health and wellbeing.' | Parents were asked to consider the period between school closure and the day of completion, which remained open until just prior to kindergarten opening after the first lockdown | <20 years: <1%<br>20-29 years: 7%<br>30-39 years: 48%<br>40-49 years: 38%<br>>50 years: 6% | 75% of mothers and 59% of fathers had a Bachelor's degree or higher education | 0-2 years: 27%<br>3-6 years: 30%<br>7-11 years: 25%<br>12-17 years: 18% | | N/A |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Sanderson et al., 2023** | 'to identify the motivations for use and value of the paediatric emergency virtual clinic by analysing common themes identified within the responses of patients and families who have used the service.' | Not described | Not reported | Not reported | 'the full range of paediatric ages with a skew toward younger patients.' | Based in areas around South-western Ontario. Included urban and rural locations | N/A |
| **Tan et al., 2023** | 'To provide insight into the help-seeking behaviour and care for a sick or injured child from the parental perspective during the COVID-19 pandemic in five European countries with different healthcare systems and changes in healthcare services due to the COVID-19 pandemic.' | Restrictions varied by country and during data collection periods within countries. | Not reported | Not reported | <1 year: 11%<br>1-2 years: 14%<br>2-5 years: 23%<br>5-12 years: 38%<br>12-16 years: 10%<br>16-18 years: 4% | | N/A |
| **Wagh et al., 2022** | 'to assess . . . during the height of the COVID-19 pandemic: Patterns of pediatric health care use by an urban PED patient population; factors that influenced caregivers' decision- | Just following the easing of the 'stay-at-home' lockdown period | <20 years: 6%<br>21-40 years: 70%<br>41-60 years: 24% | 76% Hispanic or Latino.<br>62% above a high school education.<br>61% government insurance/Medicaid, 32% private insurance. | Not reported | | N/A |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | making to access health care for their children; caregivers' perceptions on ease of accessing medical care, and their inputs to overcome barriers and prepare for future health care emergencies.' | | | | | | |
| **Watson et al., 2021** | 'To establish care-seeking behaviours for children during the pandemic and any perceived or felt barriers to care for children.' | Not described | 14 mothers, 1 father.<br>25-29 years: 27%<br>30-34 years: 27%<br>35-40 years: 33%<br>40-45 years: 0%<br>≥45 years: 13% | 7 Asian, 1 Afro-Caribbean, 1 White British, 6 White other | 0-1 month: 20%<br>1-3 months: 20%<br>3-12 months: 20%<br>1-5 years: 7%<br>5-10 years: 13%<br>10-16 years: 20% | e hospital had ached capacity for ult intensive re unit beds; was reported in the media. | N/A |

*Note.* IMD, indices of multiple deprivation; deciles 9-10 are least deprived, and 1-2 are most deprived. N/A, not applicable

**Table S7.** Methodological quality appraisal of individual studies

| Study | S1 | S2 | 1.1. | 1.2. | 1.3. | 1.4. | 1.5. | 4.1. | 4.2. | 4.3. | 4.4. | 4.5. | 5.1. | 5.2. | 5.3. | 5.4. | 5.5. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Appleby et al., 2022** | Y | Y | Y | Y | Y | Y | Y | N | C | N | C | Y | Y | Y | Y | Y | N |
| **Berry, 2022** | Y | Y | Y | Y | Y | Y | Y | | | | | | | | | | |
| **Breckons et al., 2023** | Y | Y | Y | Y | Y | Y | Y | | | | | | | | | | |
| **Davis et al., 2021** | Y | Y | | | | | | N | C | Y | N | | | | | | |
| **Lim et al., 2020** | Y | Y | | | | | | N | C | Y | N | | | | | | |
| **McCarthy et al., 2021** | Y | Y | | | | | | N | N | Y | N | | | | | | |
| **Nicholson et al., 2020** | Y | Y | | | | | | N | Y | Y | Y | | | | | | |
| **Poppe et al., 2021** | Y | Y | | | | | | N | C | N | N | | | | | | |
| **Sanderson et al., 2023** | Y | Y | Y | N | Y | Y | Y | | | | | | | | | | |
| **Tan et al., 2023*** | Y | Y | | | | | | N | C | Y | N | | | | | | |
| **Wagh et al., 2022** | Y | Y | | | | | | N | C | Y | N | | | | | | |
| **Watson et al., 2021** | Y | Y | Y | Y | Y | Y | Y | | | | | | | | | | |

*Note.* Red numbers represent the pre-specified quality criteria for sensitivity analysis. Y, Yes; N, No; C, Can't tell.
* The results of Tan et al., 2021 and Neill et al., 2021 are also reported in this paper. The three papers were considered in relation to the MMAT criteria, and the results for the study overall are reported here and the MMAT under Tan et al., 2023 only.

ENTREQ items and corresponding sections in the report

| Item | Section in report |
|---|---|
| **Aim** | Introduction |
| **Synthesis methodology** | Methods – Data synthesis and analysis |
| **Approach to searching** | Methods – Search methods |
| **Inclusion criteria** | Methods – Search methods, Table 1 |
| **Data sources** | Methods – Search methods |
| **Electronic Search strategy** | Supplemental Table S3 |
| **Study screening methods** | Methods – Search methods |
| **Study characteristics** | Results – Table 2. Supplemental Table S6 |
| **Study selection results** | Results. Figure 2 |
| **Rationale for appraisal** | Methods – Quality appraisal of included studies and sensitivity analysis |
| **Appraisal items** | Methods – Quality appraisal of included studies and sentivity analysis. Supplemental Table S5 |
| **Appraisal process** | Methods – Quality appraisal of included studies |
| **Appraisal results** | Results – Methodological quality appraisal and sensitivity analysis. Supplemental Table S7 |
| **Data extraction** | Methods – Data extraction |
| **Software** | Methods – Data extraction |
| **Number of reviewers** | Methods – Search methods. Discussion – Strengths and limitations |
| **Coding** | Methods – Data synthesis and analysis |
| **Study comparison** | Methods – Data synthesis and analysis |
| **Derivation of themes** | Methods – Data synthesis and analysis |
| **Quotations** | Results – Descriptive themes |
| **Synthesis output** | Results – Analytic themes and analytical model. Discussion |

*Note.* Items adapted from the ENTREQ statement.[1]

[1] Tong A, Flemming K, McInnes E, Oliver S, Craig J. Enhancing transparency in reporting the synthesis of qualitative research: ENTREQ. BMC Med Res Methodol. 2012 Nov 27;12:181.

BMJ Open

# Decision-making regarding accessing paediatric unscheduled healthcare during the COVID-19 pandemic: a mixed methods rapid review and thematic synthesis

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# Decision-making regarding accessing paediatric unscheduled healthcare during the COVID-19 pandemic: a mixed methods rapid review and thematic synthesis

# ABSTRACT

**Objective**
Reductions in paediatric unscheduled healthcare utilisation were seen during the COVID-19 pandemic, with concerns around their impact on children's health. The reasons for these changes are not well described. This review aims to explore the factors reported by parents that influenced their decision-making around accessing paediatric unscheduled healthcare during the COVID-19 pandemic.

**Design**
Mixed methods rapid review and thematic synthesis, based on the Enhancing Transparency of Reporting the Synthesis of Qualitative research (ENTREQ) framework.

**Data sources**
MEDLINE, Embase, Web of Science, PsycEXTRA, PsycINFO, Global Health, Global Index Medicus, Dissertations and Theses Global, Google Scholar, and OAISter. Studies published from January 2020 to July 2023 were included.

**Eligibility criteria for selecting studies**
Qualitative, quantitative and mixed methods studies that assessed the perspectives of parents on decisions to access or delay or avoid accessing paediatric unscheduled healthcare during the COVID-19 pandemic.

**Data extraction and synthesis**
Nvivo 14.23.0 was used to code results of the primary studies and develop themes, following a thematic synthesis approach.

**Results**
Twelve studies were included, all from high-income settings, mainly in Europe. The studies were conducted across varying times and levels of COVID-19-related restrictions. The principal descriptive themes identified were: (i) concerns about COVID-19 infection, (ii) balancing and navigating risks, (iii) perception of healthcare service status and conditions, and (iv) perception of information and advice. These were developed into analytic themes to further describe the decision-making process.

**Conclusions**
Parents balanced a range of risks, concerns, advice and responsibilities when considering accessing paediatric unscheduled healthcare during the COVID-19 pandemic. External sources of advice and information were important; misconceptions around public health advice may reflect the multitude of information sources and the rapidly changing circumstances of the pandemic. Public health policy and planning should consider parent perspectives when developing measures to ensure equitable access to appropriate paediatric healthcare services.

## STRENGTHS AND LIMITATIONS OF THE STUDY

- This mixed methods review on unscheduled paediatric healthcare utilisation decision-making directly explored parent perspectives, which are an important but sometimes overlooked consideration.
- A comprehensive and systematic search strategy was used, but with limitations due to resource constraints, such as limiting to English language and screening being carried out by a single reviewer.
- Thematic synthesis was applied, including inductive coding and the use of participant quotes to ensure the findings remained grounded in the context of the primary studies.
- An explicit quality appraisal process was applied, which included the use of sensitivity analysis. This method and its rationale are transparently described, although the optimal approach in mixed methods or qualitative synthesis is debated.
- This review considered unscheduled healthcare as a whole undivided system, but there was potential bias in included studies towards the emergency department setting. There was also a bias in included studies towards high-income countries in Europe.

# INTRODUCTION

Unscheduled healthcare is healthcare that is usually provided with less than one day's notice through services such as emergency departments (EDs), general practitioners (GPs), and out-of-hours clinics.(1,2) During the COVID-19 pandemic, significant reductions in paediatric unscheduled healthcare utilisation were recorded.(3) Children as a group were generally less vulnerable to the direct impacts of COVID-19 but were disproportionately affected by the indirect consequences.(4,5) Important routine healthcare services were impacted; for example, disruptions to childhood vaccinations have increased the risk of future vaccine-preventable disease outbreaks.(6) Certain groups, such as children with disabilities and chronic illnesses, faced additional challenges and disruptions to their usual care.(7–10) Regarding children's unscheduled care use, paediatric ED visits dropped significantly across various regions; the average reduction reported in the literature was previously estimated at 64%, with a range of 17-89%.(3) There are concerns that delay or avoidance for acute presentations may have resulted in adverse health impacts for children,(11,12) with paediatricians in multiple countries reporting their experience of delayed presentations contributing to avoidable harm.(13–15) For instance, a survey of 4075 UK and Irish paediatricians in April 2020 estimated that delayed presentation had already contributed to nine deaths.(13) These potentially avoidable harms may relate to issues such as delayed cancer diagnoses,(16) delayed diagnosis of acute conditions such as appendicitis,(17) increased complications for new presentations of chronic diseases such as diabetes,(18) and reduced access to acute mental health services.(19)

The factors influencing paediatric healthcare-seeking are complex, involving interactions between individuals and complicated health systems. In studying the reasons for these changes in healthcare utilisation, it is important to understand the decision-making processes of people accessing services. Parent perspectives are an essential but sometimes overlooked aspect in understanding this process.(1,20) In addition, previous studies have shown that healthcare professionals explain healthcare use in terms of the clinical urgency of the medical issues, whereas patients focus on other practical issues as well, including accessibility, convenience and contextual factors.(20,21) Together, these findings illustrate the importance of including service user perspectives in research on accessing paediatric unscheduled healthcare.

Regarding evidence on parents' decision-making specifically, a systematic review before the pandemic identified several important factors associated with unscheduled care use, such as the perception of the condition's urgency, a need for reassurance, waiting times, and the availability of services.(1) In the context of previous pandemics and epidemics, the 2003 severe acute respiratory syndrome (SARS) pandemic and the 2015 Middle East respiratory syndrome (MERS) outbreak were associated with reduced paediatric ED visits.(3) Suggested reasons for the reduction during the SARS epidemic included fear of infection, media influence, and public health advice that people with symptoms should stay at home.(3,22–24) In contrast, the 2009 Influenza A (H1N1) pandemic was associated with increased paediatric ED use,(3) possibly related to parents' fears and media coverage at the time.(3,25,26)

How parents made these kinds of decisions during the COVID-19 pandemic is not currently clear. Some proposed causes for the reductions include fears around COVID-19 infection when attending hospitals or primary care, changes in infectious disease incidence with reduced social contact, and perceptions around healthcare availability.(14,27–29) Changes in the provision of hospital care may have also contributed; for example, some services required the redeployment of paediatric staff to adult services, restructuring of emergency departments, and cancelling outpatient care.(30)

We aimed to gain a greater understanding of parent decision-making around accessing paediatric unscheduled healthcare during the COVID-19 pandemic, to inform planning for future public health emergencies to ensure safe access to paediatric healthcare

services. Our specific objectives were: (i) to describe which factors were important to parents in decisions to access paediatric unscheduled healthcare during the pandemic; (ii) to describe which factors were important to parents in decisions to delay or avoid accessing paediatric unscheduled healthcare during the pandemic; and (iii) to describe differences in these results across different geographic regions and country economic classifications. Of note, various terms for parents, caregivers, and guardians may be applied in this area. For this review, we use the term 'parent' to include a range of individuals responsible for care and decision-making for children, including biological parents, legal guardians, and other primary caregivers.

# METHODS

This mixed methods review and thematic synthesis was conducted and reported based on best practice guidance, adapted from the Joanna Briggs Institute (JBI) recommendations for mixed methods systematic reviews, the ENTREQ statement, and the updated PRISMA statement.(31–35) The mapping of ENTREQ items to specific sections of the report is provided in Supplemental Table S1.

## Search methods

We applied the SPIDER (Sample, Phenomenon of Interest, Design, Evaluation, Research type) tool to the research aims and objectives to develop the research question, identify search concepts, and define a comprehensive search strategy.(36) The SPIDER tool was chosen as it is designed specifically for qualitative and mixed methods research.(36) The research question was: 'What factors were reported by parents to influence their decision-making regarding accessing paediatric unscheduled healthcare during the COVID-19 pandemic?' Potential search terms were initially identified from a previous systematic review on the topic prior to the COVID-19 pandemic.(1) COVID-19-related terms were identified from the Royal College of Surgeons in Ireland library guide website.(37) Further search terms were identified by examining the title, abstracts, and subject indexing of three studies which were known to be relevant to this review.(21,38,39) Inclusion and exclusion criteria were developed by applying the SPIDER tool to the research question, aim, and objectives. These criteria are outlined in Table 1. The search concepts and the strategy for each source are included in Supplemental Tables S2 and S3.

**Table 1.** Inclusion and exclusion criteria

| SPIDER tool item | Inclusion criteria | Exclusion criteria |
|---|---|---|
| **Sample** | Studies that involved the parents of children aged under 18 years | Studies that did not examine and report child and adult data separately (for those studies that included adult data) |
| **Phenomenon of Interest** | Studies that assessed factors associated with paediatric unscheduled healthcare utilisation decisions | Studies that did not examine and report child unscheduled healthcare data separately from other forms of healthcare (for those studies that included different types of healthcare) |
| | Studies published since 31 January 2020 | |
| **Design** | Primary research, including grey literature | Editorials, reviews, and expert opinions |
| **Evaluation** | Studies that directly examined parent-reported factors | |
| **Research type** | Qualitative, quantitative, or mixed methods studies | |
| **Other** | Available in English | |

The searches were carried out in July 2023, and the sources accessed were MEDLINE, Embase, Web of Science, PsycEXTRA, PsycINFO, Global Health, Global Index Medicus, Dissertations and Theses Global, Google Scholar, and OAISter. Forward and

backward citation searching was also carried out on included articles using citationchaser.(40) We screened the title and abstract of all studies returned against the above inclusion and exclusion criteria and then examined the full text of any potentially relevant articles for inclusion. A single reviewer carried out the screening.

## Data extraction

Initial categories for data extraction were identified based on a previous review and the JBI guidance,(1,34) and incorporated into a standardised data collection tool (Supplemental Table S4). These categories were chosen primarily to provide background on the study design and context. The results section of all included reports was entered into Nvivo 14.23.0 to facilitate thematic synthesis.

## Data synthesis and analysis

This review followed a convergent integrated mixed methods design,(34) which has the benefit of producing results that consider the entire range of evidence together and may provide more detailed insights.(41) We applied the thematic synthesis approach outlined by Thomas and Harden.(33,35) Quantitative results were transformed by coding the data into 'textual descriptions', also described as 'qualitizing'.(34,41) This approach has been used in several other reviews that applied thematic synthesis to the combined results.(42–45)

This synthesis process initially involved inductive line-by-line open coding using Nvivo 14.23.0. Relevant text for coding included any text in the 'Results' sections of included studies which described parent-reported factors in decision-making around accessing paediatric unscheduled care during the pandemic. This text could include direct quotes from participants, the authors' interpretations, and the authors' reporting on quantitative results.

The codes emerging from this process were then organised into descriptive themes. This was done by repeatedly reviewing the initial codes and the text of the studies and associating related codes, thinking deductively about the themes occurring in multiple reports.(46) Direct quotes are included where relevant to ensure the original context and meaning are represented.

We then developed analytic themes by examining how the descriptive themes explain the research question. This involved abductive and retroductive reasoning in inferring general conclusions about the results across the included studies.(46) It is important to note the distinction between the descriptive themes and the analytic themes, in that the descriptive themes aim to 'stay close to' the primary studies and use their own terms, whereas the analytic themes seek to 'go beyond' the primary studies in an attempt to answer the research question.(33) This separation aims to create a synthesis result that includes 'abstract and formal theories' which are still 'empirically faithful' to the primary studies from which they were developed, as described by Sandelowski and cited by Thomas and Harden.(33,47)

Regarding different regions and economies (Objective (iii)), we categorised studies according to their WHO regional groupings and The World Bank classification.(48,49) We then compared and contrasted the contribution of studies from different regional groupings and income classifications to the different themes and subthemes.

### Analytical model

We followed a similar approach to that used by Houghton et al. to create a model to convey the key analytical findings.(50) The purpose of this model is to provide a simple visual representation of the main analytic and descriptive themes, as opposed to a detailed framework of all potential factors identified. First, considering the research question, we examined the relationships between the descriptive and analytic themes in an iterative process. Then, abductive and retroductive reasoning were again used to organise factors into those that encouraged or discouraged attendance. Following this, we created multiple mind maps to design an optimal way of displaying the core results and then adapted these

into a final overarching analytical model. These steps were repeated until it was felt that the model accurately provided a simple visual representation of the main descriptive and analytical themes.

## Quality appraisal of included studies and sensitivity analysis

We used the Mixed Methods Appraisal Tool (MMAT) to appraise the quality of individual studies, applied by a single reviewer.(51) Regarding incorporating critical appraisal into the results and conclusions, there is a lack of consensus on the best method for qualitative and mixed methods reviews.(52) In addition, the MMAT advises against calculating an overall score, instead recommending that the individual scoring is presented. Consequently, we included all studies in the synthesis and results, presented the full MMAT results for each study, and also conducted a sensitivity analysis after synthesis to examine the contribution of potentially lower-quality studies to the results. This process is similar to the approach described by Carroll and Booth, which has previously been applied to qualitative syntheses of mixed methods research.(53,54) For this sensitivity analysis, we selected three criteria from the MMAT that were identified as being particularly relevant for accurately capturing parent perspectives, and studies that did not meet these three criteria (where applicable) were classified as being potentially of lower quality. These three criteria are outlined in Supplemental Table S5, along with the rationale for their selection. We then examined the contribution of the potentially lower-quality studies to the results by assessing what themes and subthemes would have remained without the evidence from these studies. This overall quality appraisal and sensitivity analysis process (Figure 1) serves to transparently and explicitly examine the impact of potentially lower-quality studies on the results; at the same time, it does not exclude any studies based on criteria that may be considered controversial and unvalidated. Similar approaches have been previously described elsewhere.(53,55,56)

**Figure 1.** Quality appraisal and sensitivity analysis process

## Patient and public involvement

This rapid review was conducted without patient or public involvement.

# RESULTS

A total of 14 reports relating to 12 studies were ultimately included in the review (Figure 2, Table 2 and Supplemental Table S6).(38,39,57–68) This includes the studies with potentially lower quality, as described in further detail in the Methodological quality appraisal and sensitivity analysis section below. The studies were mainly conducted in Europe, and all were in high-income economy countries.(48) The studies were performed over various periods and with various pandemic restrictions, with data collection occurring in 2020 for most.

**Figure 2.** PRISMA flow diagram

**Table 2.** Summary of included studies

| Author and year, country | Dates of data collection | Type of healthcare assessed | Research type | Sampling strategy | Data collection and sample size | Data analysis | Results – factors influencing decision-making |
|---|---|---|---|---|---|---|---|
| **Appleby et al., 2022(39)**<br><br>**England** | November - December 2020 | Paediatric ED | Mixed methods | Convenience sample attending paediatric ED or assessment unit | Semi-structured interview (n = 2)<br>Survey (n = 80)<br>Semi-structured interview and survey (n = 18) | Descriptive statistics<br>Thematic analysis<br>Convergent mixed methods analysis | Parents discussed issues around caregiver roles, perceptions of the healthcare system (NHS), understanding and navigating risk (e.g., child's health and COVID-19 risk), and sources of information |
| **Berry, 2022(59)**<br><br>**England** | Unclear | Paediatric ED | Qualitative | Purposive sample attending paediatric ED | Semi-structured interviews (n = 19) | Thematic analysis | Parental anxiety was unchanged, and parents continued to seek medical attention early in the course of illness |
| **Breckons et al., 2023(60)**<br><br>**England** | May - July 2020 | Children's emergency services | Qualitative | Purposive sample recruited through public involvement groups, online forums, and social media groups | Semi-structured interviews (telephone) (n = 21) | Thematic analysis | The main themes identified involved parents making sense of risks to children and risks posed by children, understanding information, and trying to make the right decisions for their children |
| **Davis et al., 2021(58)**<br><br>**USA, Canada, Israel, Spain, Switzerland** | May - June 2020 | Paediatric ED | Quantitative | Convenience sample attending paediatric ED | Survey (online) (n = 1543) | Descriptive statistics and logistic regression | 18.6% reported delaying attending due to COVID-19 infection concerns |
| **Lim et al., 2020(61)**<br><br>**England** | April – June 2020 | Healthcare services for when your | Quantitative | Convenience sample recruited | Survey (online) (n = 171) | Descriptive statistics<br>Inductive content analysis | 19.2% used the advice leaflet. Of these, just over 40% changed their behaviour as a result, mainly seeking |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | child is seriously ill | | through social media | | | healthcare when they would not have previously. |
| **McCarthy et al., 2021(62)**<br><br>**Australia** | October - November 2020 | Hospital and oncology care | Quantitative | Unclear. 'Eligible children were identified through the RCH electronic medical records database.' | Survey (online) (n = 85) | Descriptive statistics Linear regression Content analysis | 12% were reluctant to attend the ED; reasons included avoiding swabbing and avoiding COVID-19 exposure |
| **Nicholson et al., 2020(57)**<br><br>**Ireland** | June 2020 | Paediatric unscheduled healthcare | Quantitative | Stratified random sample from Qualtrics™ market research panels with representation of all age groups of children | Survey (online) (n = 1044) | Descriptive statistics Multinomial logistic regression | The most commonly reported concern when considering attending healthcare was fear of contracting COVID-19 (n = 706, 67%), followed by concern that the service would be busy (n = 315, 30%) and belief that others needed the services more (n = 263, 25%). Hesitancy was associated with the belief that government messaging meant avoid healthcare. |
| **Poppe et al., 2021(63)**<br><br>**Portugal** | May 2020 | ED and routine healthcare services | Quantitative | Convenience sample recruited through social media | Survey (online) (n = 12390) | Descriptive statistics | Of parents who visited the ED, 33.9% would have gone earlier if not for the pandemic. Of parents whose children were ill and did not attend ED, 22.8% would have gone if there had been no pandemic. |
| **Sanderson et al., 2023(64)**<br><br>**Canada** | May 2020 - May 2021 | Paediatric virtual care emergency clinic | Qualitative | All patients who had a virtual emergency clinic visit were | Survey (n = 773) | Content analysis | Parents were satisfied with the virtual emergency clinic and were motivated to use it to avoid the hospital environment during the pandemic |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | invited to participate | | | |
| **Tan et al., 2023(68)**<br><br>**Italy, Spain, Sweden, the Netherlands, the UK** | March 2020 - May 2022 | Healthcare for sick or injured children | Quantitative | Virtual snowball sampling through social media | Survey (online) (n = 598) | Descriptive statistics. Thematic analysis | Parents continued to access healthcare for their children during the pandemic when needed. Fear of COVID-19 infection was noted in all countries, leading some parents to delay attendance. |
| **Wagh et al., 2022(65)**<br><br>**USA** | June - December 2020 | Acute medical care, paediatric ED, routine and chronic non-urgent medical care | Quantitative | Convenience sample attending paediatric ED | Survey (online) (n = 290) | Descriptive statistics | Reasons for not seeking healthcare when a child was ill included concern of COVID-19 infection (43%), media and government advice not to attend (43%), and the illness not being severe enough (29%) |
| **Watson et al., 2021(38)**<br><br>**England** | May - June 2020 | Paediatric acute services via the ED | Qualitative | Convenience sample attending paediatric ED | Semi-structured interviews (n = 15) | Thematic content analysis | Delay in deciding to attend was related to fear of infection, which was caused by the media and personal or community experience |

## Descriptive themes

We described four key descriptive themes: (i) concerns about COVID-19 infection; (ii) balancing and navigating risks; (iii) perception of healthcare status and conditions; and (iv) perception of information and advice. The contribution of each study to the various themes is demonstrated in Table 3.

**Table 3.** Contribution of studies to themes

| Study | WHO region* | World Bank income classification† | Impact of background child and family factors reported | Themes | | | |
|---|---|---|---|---|---|---|---|
| | | | | Concerns about COVID-19 infection | Balancing and navigating risks | Perception of healthcare service focus and conditions | Perception of information and advice |
| **Appleby et al., 2022(39)** | EUR | High income | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Berry, 2022(59)** | EUR | High income | | | ✓ | ✓ | ✓ |
| **Breckons et al., 2023(60)** | EUR | High income | | ✓ | ✓ | ✓ | ✓ |
| **Davis et al., 2021(58)** | EUR and AMR | High income | ✓ | ✓ | | | |
| **Lim et al., 2020(61)** | EUR | High income | | | | | ✓ |
| **McCarthy et al., 2021(62)** | WPR | High income | | ✓ | | | |
| **Nicholson et al., 2020(57)** | EUR | High income | ✓ | ✓ | | ✓ | |
| **Poppe et al., 2021(63)** | EUR | High income | | | ✓ | | |
| **Sanderson et al., 2023(64)** | AMR | High income | | | | ✓ | |
| **Tan et al., 2023(66–68)** | EUR | High income | | ✓ | ✓ | ✓ | ✓ |
| **Wagh et al., 2022(65)** | AMR | High income | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Watson et al., 2021(38)** | EUR | High income | ✓ | ✓ | ✓ | ✓ | ✓ |

*Note.* EUR, European Region; AMR, Region of the Americas; WPR, Western Pacific Region. *World Health Organization regions.(49) †World Bank income classifications for the 2024 fiscal year.(48)

## Concerns about COVID-19 infection

Concerns about COVID-19 infection were directly described in eight studies.(38,39,57,58,60,62,65,68) This mainly related to concerns that the child or family would acquire COVID-19 infection while attending healthcare services.

### *Exposure to COVID-19 in healthcare settings*

The risk of COVID-19 exposure was a key finding in a number of the quantitative surveys and was the most commonly reported concern for parents in some.(57,58,62,68) Similarly, qualitative studies demonstrated related concerns and expanded on parents' reasoning and understanding. The hospital environment, including the physical setting and behaviour of others (staff and patients), appeared to influence parents' perceptions of COVID-19 risk. Some parents reported feeling reassured when they noted 'how well everything was managed,'(60) and specifically due to COVID-19 measures in place including social distancing.(39,60,67) The concept of trust in health professionals and their practices to reduce this risk was apparent; some parents were reassured that they had 'things in place keeping everyone safe'.(39) In contrast, other parents were concerned about being in confined spaces where they witnessed people not following precautions,(39,60) such as in waiting rooms where they noted 'the majority of people not wearing masks and people coughing'.(39) In some studies, this concern of acquiring COVID-19 extended further to exposure while travelling to or from the healthcare setting, particularly with public transport.(39,57,65,67)

Concern about acquiring COVID-19 was noted to change over time in three studies, with a reduction in concern being the main finding.(39,57,60) Some parents were reassured that healthcare settings would be better adapted to reduce the risk of infection as the pandemic progressed: 'I imagine now that the hospital is so slick.'(60) Others were reassured by their previous experience attending during the pandemic.(39,60)

### *Sources of fears and concerns*

Some parents described the media as contributing to their fears,(38,39) such as through 'scaremongering tactics' associated with social or mainstream media and a 'hyperawareness of mortality' due to media reports.(39) Another stated outright that the media 'gives you the impression that the corona is coming from the hospital.'(38) In one study, reports from parents about fears were felt to reflect comments by the UK Health Secretary at the time, of 'don't kill your gran by catching coronavirus and then passing it on.'(38) In addition to the media, some participants in this study described concern and advice not to attend coming from family members,(38) and others noted the fact that the virus was new and not fully understood as being a cause for concern in itself.(39,60)

## Balancing and navigating risks

Balancing and navigating risks relates to other themes but was also reported by parents as a process in its own right.(39,59,60,63,68) This could include weighing up COVID-19 concerns, the severity of the child's illness, and different responsibilities. Some parents explicitly described this process of weighing up risks, depicting going to the ED as a 'judgement call' based on their assessment of how unwell a child was or after seeing a GP.(39) This weighing-up of risks was sometimes described as a challenging process by parents.(60) Some described attending ED when they found it was a difficult decision to make and were uncertain: 'It was a very sort of, 'do I take him, do I not'. . .[but] I would never forgive myself if I didn't take him.'(60)

### *Risk to children versus risk from children*

Some parents also explicitly differentiated the infection risk to children versus from children; the risk to children was mainly felt to be 'minimal', whereas passing on COVID-19 to others was a worry.(60) Parents reported concern that children would acquire COVID-19 in the hospital and pass it on to 'vulnerable' people afterwards,(39,60) and concern that children would pass on COVID-19 to 'vulnerable' people in the hospital while attending.(60,62)

### *Severity of the child's illness*

The severity of the child's illness was another factor in decision-making in several studies.(38,39,59,60,65) Parents described seeking care when they judged the illness sufficiently severe,(38,39,60) and avoiding seeking care when they did not feel it was severe enough.(65) Some tried to manage things at home but sought help when the potential severity of the condition meant it was something they were not confident dealing with themselves, such as a head injury.(60) Others referred to the 'parent's instinct' or their 'gut feeling', which allowed them to decide when help was needed and could outweigh other concerns.(39)

> '.so you have that instinct, if you think that your son or daughter . . .is poorly. . . You know . . . then you don't think of anything else apart from getting them the treatment he needs or she needs.(39)

There was some divergence of opinion among parents regarding changes in the threshold for seeking care during the pandemic. Some described being more cautious in their decision-making around accessing care during the pandemic and discussed the concept of 'raising the bar' for when to attend in terms of the severity of the illness.(60) Conversely, others described how they only used services when needed, but that this was the same as before the pandemic,(60) or how they continued seeking help early when needed.(59) There was similar divergence in the surveys, with some supporting an unchanged threshold,(68) and others indicating reduced attendance rates for the same level of illness during the pandemic.(63)

### *Responsibility*

The concept of responsibility was noted in two studies, which both described two contrasting issues: responsibility to their child to get healthcare and a broader social responsibility to follow the rules or guidance. (39,60) Some parents discussed the responsibility to act in the child's best interests, regardless of other factors, and an obligation to protect or negotiate care for one's children.(39,60) Conversely, several parents in both studies reported concern with 'breaking the rules' and feeling responsible for 'following the rules' and acting in a 'socially responsible' way.(39,60) These feelings of social responsibility supported decisions to delay or avoid seeking healthcare. Some parents reported a reluctance to seek healthcare due to fear of judgement by others, which may have contributed to this concern about social responsibility and following the rules.(39,57) Fear of judgement by professionals was a prominent reason for not attending in one survey.(57) In addition, several parents found the rules and changes to be 'confusing' and 'unfair'.(39) As a result, they did not know what they should be doing and how best to follow the rules and fulfil their social responsibilities. This ultimately 'undermined trust and left participants feeling frustrated'.(39)

> 'when we were in the initial lockdown there was less confusion and I think that most people were aware of what was happening and then suddenly we're in another lockdown and everything was rushed and nothing was really broadcast very, very well shall we say and. . . a lot of the time people are unclear as to what they should be doing'.(39)

## Perception of healthcare service status and conditions

Perception of the status of and conditions in healthcare services was identified as a theme from most studies.(38,39,57,59,60,64,65,68) Parents frequently raised this as a reason for avoiding care, and parents' understanding of whether healthcare services were open influenced their decision-making.

### *Perception of burden or capacity issues*

Several studies described the concept of not wanting to attend healthcare to avoid adding to a healthcare system already experiencing a significant 'burden'.(39,57,60,68) Parents discussed in interviews how they 'didn't want to put any extra pressure on the doctors'(60) or 'don't want to put additional pressure' on the National Health Service (NHS).(39) Others were advised by friends or family not to attend ED due to the conditions there, sometimes described as 'horrible'.(38)

Some parents were worried that others believed they 'don't deserve an appointment', leaving them in a situation of 'potentially dying or becoming seriously ill with something that could be treated or prevented entirely.'(39) In parallel, others described how limited services were likely needed by other patients:

> 'that the doctors was probably, massively overly used at that point because of all this Covid so we were like we're not going to get an appointment or, even if we do, there's probably somebody who needs it more than us.'(60)

Survey findings supported both of these concepts; concerns that the service would be busy or that others were in greater need were frequently reported by participants in two studies.(57,67)

#### *Perception of whether healthcare was open or accessible*

Interpreting government or public health advice as meaning to stay away from all healthcare was described in three studies.(57,60,66) Several parents in an English study described their interpretation of the 'Stay home, Protect the NHS, Save lives' message as meaning people should not use health services: '"protect the NHS" had that impact, if there's any worries apart from Covid then stay away, quite a blunt message.'(60) Despite this, most parents in the same study reported that they understood health services were available throughout the pandemic: 'I think there's been enough encouragement that if you've got an unwell child they should be seen. I certainly haven't seen anything to say otherwise.'(60) In addition to this divergence in understanding of the meaning of public health advice, other parents were concerned by a lack of clarity about how hospitals were operating during the pandemic.(60) Survey results included similar beliefs about advice meaning to stay away,(57,66) with a significant proportion of respondents interpreting government advice as meaning to 'avoid health services'.(57) Some parents in a US-based survey endorsed a more specific interpretation of the advice, with 43% of those who did not seek medical care when their children were sick noting that the government advice was not to go to the doctor for a minor problem.(65)

Some studies described a shift towards increased virtual attendances,(59,65,67) which may be related to the perceived status of face-to-face services and the interpretation of public health advice.(67) Experiences of virtual or remote services were mixed. Many parents reported satisfaction and positive experiences with virtual emergency clinics,(64) virtual GP appointments,(67) and text information from GPs.(39) Conversely, others reported negative experiences with telephone consultations and were concerned that they were insufficient to diagnose and treat their child's illness, resulting in ED attendance: 'I needed someone to look at him properly, to listen to his chest. You can't do that over the telephone.'(59) Some parents were concerned that language barriers would mean they would not be adequately understood over the phone, and so felt an in-person review was essential.(38)

### Perception of information and advice

The impact of information and advice on decision-making was apparent across seven studies.(38,39,59–61,65,68) Parents commonly sought advice before attending unscheduled care, and their perceptions of the quality of information sources factored into the process. When questioned on whether participants sought advice before attending the emergency department, most reported that they had, with complementarity between qualitative and quantitative studies; commonly used sources of advice were GPs and NHS 111.(39,59–61) Parents described seeking advice for 'validation' or 'reassurance' that they were doing the right thing in seeking care.(39,66) In addition to healthcare professionals and official sources, some sought advice from friends or family.(38,39)

Parents described a range of positive perceptions towards certain kinds of information and information sources.(38,39,61,66) Some sources were identified as reliable by parents, including NHS 111,(38) pharmacies, educators, and medical professionals.(39) This 'trustworthiness' of information sources directly influenced perceptions around COVID-19 and the pandemic.(39) One study specifically examined the impact of an information

leaflet for identifying when your child is seriously unwell, and found that it increased confidence in recognising severe illness and sometimes caused parents to seek healthcare where they would not have otherwise.(61) Similar to seeking advice for validation or reassurance, some parents described finding information useful because it was reassuring: 'The information was useful since it reassured me, useful tips and information on when to seek medical help (again) were given.'(66)

On the other hand, negative perceptions around information or advice were also reported across several studies.(38,39,60,66,67) These negative perceptions related to misinformation online,(38,60) unclear or confusing information,(67) delays and confusion with NHS 111,(39,59,67) information not being child-specific,(66) and a lack of available information.(67) Parents in these studies reported that this contributed to their confusion, upset, and uncertainty; in some cases, this led to a decision that they would not consult information sources before attending ED in the future.

## Analytic themes and analytical model

The studies had various perspectives and focus, and the findings underscore the complexity of this decision-making process. The following two overarching analytic themes are intended to summarise the main commonalities across the range of findings when considering the specific research question of this review. The proposed analytical model summarising the key factors identified and their impact is presented in Figure 3.

### Parents balance a range of different risks and competing responsibilities

Parents' decision-making depends on their perception of various risks, including COVID-19 acquisition by the child or family, passing on COVID-19 to others, negatively impacting healthcare services or other users by attending, and potential harm to the child from not attending. Parents balance and navigate these risks, and this process may be moderated by their perception of different responsibilities related to the parent role: the responsibility to look after their children and a broader social responsibility to follow the rules and behave conscientiously. This process of weighing up different priorities and concerns can be challenging; sometimes, the decision is made based on parents' instincts or gut feelings.

### Parents are amenable to external information and advice influencing their decisions

The impact of external factors was clear from the studies, particularly concerning parents seeking information and advice from trusted sources, with most seeking advice before attending ED. Parents often found this advice reassuring or validating in that it confirmed that they were doing the right thing by deciding to attend when uncertain. On the other hand, many reported issues with some information sources, such as those found online, and with increased fear or uncertainty being driven by the media. Potential misconceptions around official public health advice were common in some studies. Patients' perspectives on risks, roles, and responsibilities may also be influenced by external agents and sources of information, including the media, healthcare professionals, and the community.

**Figure 3.** Analytical model

## Methodological quality appraisal and sensitivity analysis

The full methodological quality appraisal results for each study are shown in Supplemental Table S7. Considering the pre-selected MMAT criteria for sensitivity analysis, one of the qualitative studies did not meet criterion 1.2.,(64) one of the quantitative studies did not meet criterion 4.3.,(63) and the quantitative part of the mixed methods study did not meet criterion 4.3.(39) Results from the quantitative part of the mixed methods study and all parts of the other two studies did not significantly contribute to the descriptive themes and subthemes, as shown in Table 3 and the results presented above.

# DISCUSSION

## Key findings

The included studies describe how parents balanced a range of risks, concerns, worries, and responsibilities in their decision-making. They also show how external information or advice influenced the decision-making process and outcomes. Parents were concerned about the family acquiring or passing on COVID-19 while attending healthcare, but infection control measures and other experiences reassured some. Some described the contrast between responsibility to their children, related to the severity of illness, and a broader social responsibility to follow COVID-19 rules and guidelines. Concern about adding to an already burdened healthcare service was a common theme. It was noteworthy how minimal reference there was to background child and family factors, such as sociodemographic aspects, influencing this process. In addition, most of the studies were carried out in Europe, and all were carried out in high-income settings, limiting comparisons across different geographical regions or economic contexts.

## Comparison to other literature

Parents' perception of the severity of the child's presenting condition and their need for reassurance is evident from studies before the COVID-19 pandemic,(1) and complementarity is seen with some of the results of this review. The concept of understanding and balancing different risks in order to make the decision has also been described in previous studies(1,60,69); prior to the pandemic, these risks related to the child's health risks from their current illness, whereas this review adds additional risks to children, families, and broader society from COVID-19 transmission within healthcare settings. These additional risks weigh into the mix of factors parents must consider and balance when deciding whether to attend unscheduled care with their children.

Interpreting and understanding information influenced decision-making in some studies before the pandemic but was not a prominent theme in a recent systematic review.(1) In our review, however, this was a key theme; parents frequently reported that information and the quality and reliability of information sources directly influenced decision-making. For example, it is concerning that there was a wide variation in parents' understanding of public health guidance, with many parents understanding official guidance to mean they should stay away from hospitals entirely. This contrast with the systematic review before the pandemic may point to the increasingly important role of trusted information sources today, especially with rapid changes in circumstances, rules and guidance, such as during the COVID-19 pandemic. Parents in included studies raised concerns about the vast amount of information available and about misinformation online, a concept described by others as an 'infodemic' and a significant public health issue to address.(57,70) The critical importance of transparency and trust in risk communication and public health messaging was also apparent during the 2003 SARS.(71) Although not reported in this review, health literacy has previously been shown to impact parental health-seeking behaviour and ED use for children,(1,72) and it is an essential consideration in public health communications.

In this review, parents frequently highlighted hesitancy in attending due to concern about adding to already burdened healthcare services or due to others being in greater need of limited resources. In contrast, parents did not explicitly report this in the systematic review immediately before the pandemic.(1) This may relate to public health and media reports on the disease burden and strains on healthcare services, which added to some parents' worries

Finally, in studies conducted before the pandemic, background child and family factors such as race, ethnicity, and socioeconomic status were found to be important in influencing parents' healthcare-seeking behaviour in accessing unscheduled care(1,73–76); however, this is not evident in the current study. This is likely because the included studies

focused on the impact of COVID-19 and, for the most part, did not directly aim to study differences due to background characteristics.

## Strengths and limitations

### *Review methods*

This review took a transparent approach to describing and justifying methodological decisions. We used a convergent integrated approach to combining the different types of research, which is appropriate to this specific research question, as outlined in the JBI guidance.(34)

Thematic synthesis is appropriate to the review question and inductive approach taken and is a thorough method which develops findings that are clearly connected to the results of the included primary studies.(33) Separating descriptive themes from analytic themes differentiates between the primary studies' data and our more analytical engagement with the evidence to apply it to the research question and develop original conceptualisations of the phenomenon, increasing transparency in the results.

Due to time and resource constraints, we could not consult with experts in the area or pilot the search strategy to ensure its completeness, and screening was carried out by a single reviewer. While using the SPIDER tool is a strength of this study, in that it is appropriate for the type of research synthesis and research question, we note that it has been found to have a lower sensitivity in searches in some circumstances.(77) Again due to time and resource constraints, we did not conduct independent validation of the inclusion and exclusion criteria with multiple reviewers, which would have added to the reliability of the findings. In addition, only English language studies and the selected data sources were included, and significant studies in other languages or sources may be missed. Further to this, there is potential for publication bias to have impacted on the findings of this review, and this was not formally assessed.

We have described the contribution of different studies to themes and outlined the strengths and weaknesses of the included studies and the review methods. However, we did not conduct a formal, comprehensive assessment of confidence in the review findings. It has been noted that there is a need for the development of a GRADE approach to assessing confidence in the findings of mixed methods reviews(78). Quality assessment was carried out by a single reviewer.

Finally, in this study, we conceptualised unscheduled healthcare as one system, as this is thought to reflect how patients view and navigate services more accurately.(1,2,57,79) However, most of the included studies were based on a specific type of service, commonly the ED. Thus, the results may be biased towards ED access decisions instead of unscheduled care in general. We also did not assess how difference healthcare systems may have impacted parents' perspectives of what was the most appropriate course of action, outside of that which was explicitly described in the results sections of included studies.

### *Included studies*

The included studies were biased towards high-income, European settings; this limits generalisability to other settings. In addition, two studies carried out in similar settings in England contributed heavily to the descriptive themes.(39,60) Participants were mainly recruited in healthcare settings, which may bias the results by excluding people who could not access mainstream healthcare during the pandemic. Most of the included surveys were carried out online or circulated through social media, which again may risk excluding certain vulnerable groups.(80) Only three studies did not meet the pre-specified quality criteria; when the contribution of the parts of these studies in question was examined in sensitivity analysis, they did not significantly contribute to the review findings.

As discussed above, background child and family factors were previously found to influence parent decision-making. However, they were not consistently reported in this review, likely due to the focus of the included studies.

## Implications and future research

In terms of public health communications, this review has demonstrated that different parents may understand the same public health advice differently. Of particular concern was the potential misconception of the 'stay home' type of advice as meaning not to access healthcare services at all. This finding highlights the importance of research that directly explores parent perceptions, including factors that contribute to the differences in understanding, to inform public health policy.

Furthermore, understanding what parents find reassuring and their perception of risks is important in developing messaging that illustrates how healthcare is safe during times of uncertainty, such as the COVID-19 pandemic. In addition, ensuring that healthcare systems can meet the needs of the populations they serve, and that the public understands this capacity exists, is necessary to prevent potentially harmful delays or avoidance.

Specific measures that may improve public health communication in this area include involving parents in developing messaging and ensuring a transparent and unified communication approach.(81) Of note, parents identified social responsibility and responsibility to their child as potentially competing aspects in decision-making; this could be an area to further explore in terms of achieving a balance with parents understanding to attend when they are concerned about their child while also taking into account the current public health guidance.

# CONCLUSION

This mixed methods review and thematic synthesis describes the factors influencing parent decision-making when considering accessing paediatric unscheduled healthcare during the COVID-19 pandemic. Parents balance a range of risks, concerns, advice and responsibilities; this can be a complex process with multiple competing priorities. External sources of advice and information are important, and parents are amenable to these influencing their decisions if they are perceived as trustworthy and are correctly understood. Potential misconceptions around public health advice may reflect the multitude of information sources and the rapidly changing circumstances of the pandemic. Public health policy and planning should consider parent perspectives in developing measures to ensure equitable access to safe and appropriate paediatric healthcare services.

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## COMPETING INTERESTS STATEMENT

The authors declare that they have no competing interests related to the content of this manuscript.

## DATA AVAILABILITY STATEMENT

All data relevant to the study are included in the article or uploaded as supplementary information.

# AUTHOR CONTRIBUTIONS AND ACKNOWLEDGEMENTS

## Author contributions

CDC conceived the study idea; CDC designed the search strategy, synthesis method, and quality appraisal plan; CDC and DS reviewed and revised the search strategy, synthesis method, and quality appraisal plan; CDC screened studies for eligibility, extracted data, and initially synthesised the data; CDC and DS reviewed and revised the synthesis results; CDC wrote the first draft of the manuscript; CDC and DS critically reviewed and revised the manuscript. CDC and DS both reviewed the results and approved this final version of the manuscript.

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## ETHICS APPROVAL

Ethical approval not required as this review only used data from previously published studies.

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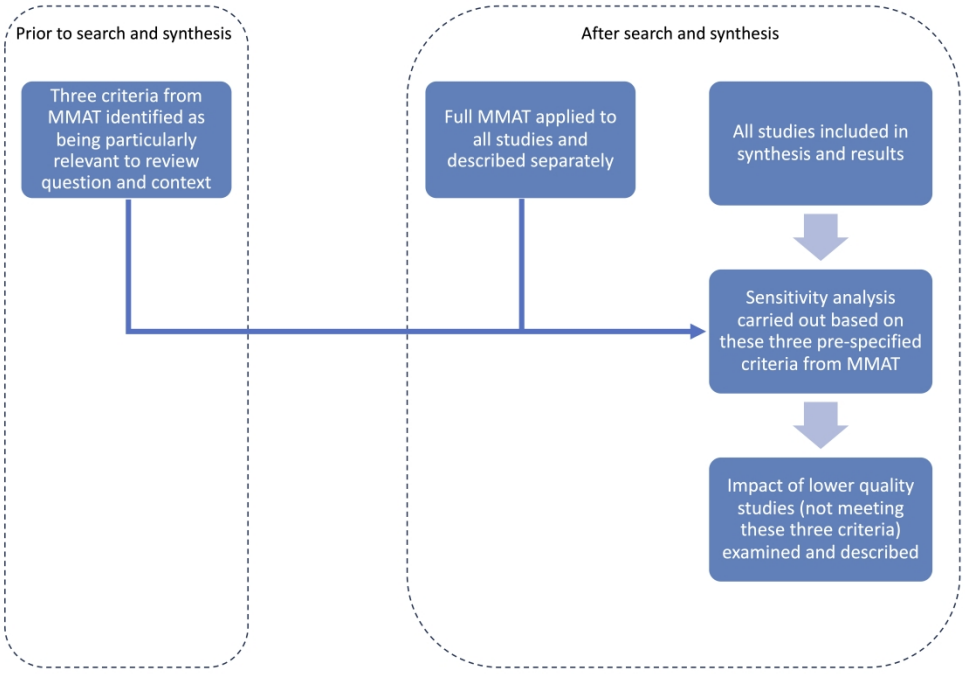


Figure 1. Quality appraisal and sensitivity analysis process

2212x1520mm (72 x 72 DPI)

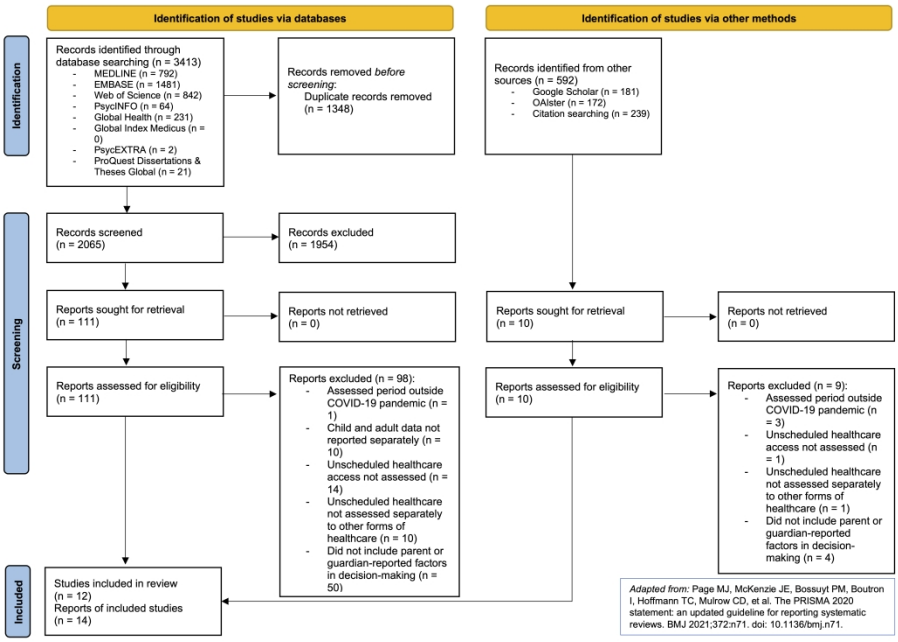


Figure 2. PRISMA flow diagram

2475x1749mm (72 x 72 DPI)

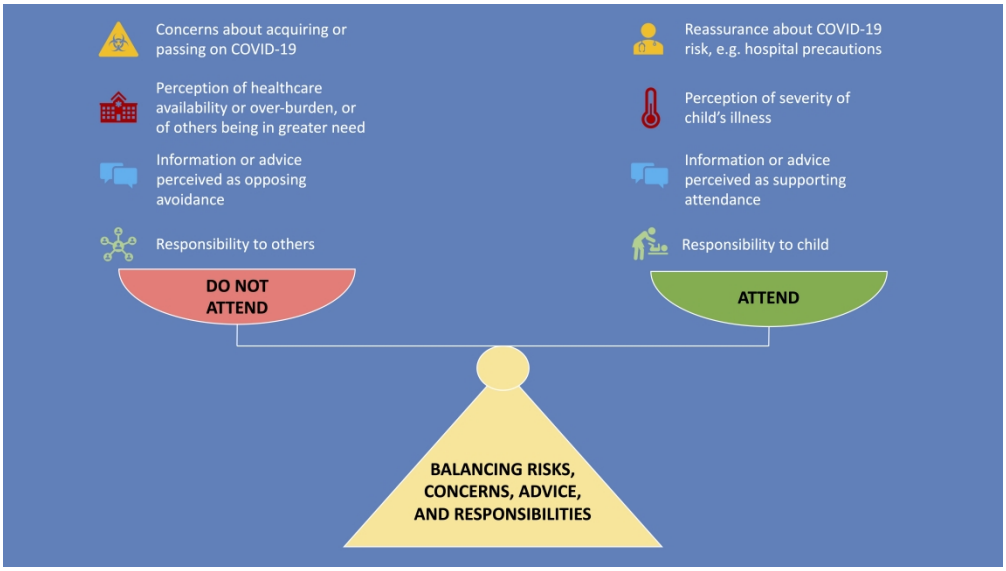


Figure 3. Analytical model

2822x1587mm (72 x 72 DPI)

**Table S1.** ENTREQ items and corresponding sections in the report

| Item | Section in report |
|---|---|
| **Aim** | Introduction |
| **Synthesis methodology** | Methods – Data synthesis and analysis |
| **Approach to searching** | Methods – Search methods |
| **Inclusion criteria** | Methods – Search methods, Table 1 |
| **Data sources** | Methods – Search methods |
| **Electronic Search strategy** | Supplemental Table S3 |
| **Study screening methods** | Methods – Search methods |
| **Study characteristics** | Results – Table 2. Supplemental Table S6 |
| **Study selection results** | Results. Figure 2 |
| **Rationale for appraisal** | Methods – Quality appraisal of included studies and sensitivity analysis |
| **Appraisal items** | Methods – Quality appraisal of included studies and sentivity analysis. Supplemental Table S5 |
| **Appraisal process** | Methods – Quality appraisal of included studies |
| **Appraisal results** | Results – Methodological quality appraisal and sensitivity analysis. Supplemental Table S7 |
| **Data extraction** | Methods – Data extraction |
| **Software** | Methods – Data extraction |
| **Number of reviewers** | Methods – Search methods. Discussion – Strengths and limitations |
| **Coding** | Methods – Data synthesis and analysis |
| **Study comparison** | Methods – Data synthesis and analysis |
| **Derivation of themes** | Methods – Data synthesis and analysis |
| **Quotations** | Results – Descriptive themes |
| **Synthesis output** | Results – Analytic themes and analytical model. Discussion |

*Note.* Items adapted from the ENTREQ statement.[1]

[1] Tong A, Flemming K, McInnes E, Oliver S, Craig J. Enhancing transparency in reporting the synthesis of qualitative research: ENTREQ. BMC Med Res Methodol. 2012 Nov 27;12:181.

**Table S2.** Search concepts, definitions, and terms

| SPIDER tool item | Search concept | Definition | Search terms |
|---|---|---|---|
| **Sample** | Child | Persons under the age of 18[2] | • child*<br>• paediatric<br>• pediatric<br>• infant*<br>• adolescent*<br>• baby<br>• babies<br>• neonate*<br>• newborn* |
| **Phenomenon of Interest** | COVID-19 pandemic | The period from the declaration of COVID-19 as a PHEIC by the WHO[3] | • COVID-19<br>• covid<br>• covid19<br>• coronavirus<br>• corona virus<br>• 2019-nCoV<br>• SARS-CoV-2<br>• SARS2<br>• SARS-CoV-19<br>• novel cov |
| | Unscheduled care | 'When someone seeks treatment or advice for a health problem without arranging to do so more than a day in advance.'[4] | • unscheduled care<br>• primary care<br>• general practice<br>• emergency department*<br>• emergency care<br>• emergent care<br>• after-hours<br>• out-of-hours<br>• out of hours<br>• urgent care |
| **Evaluation** | Decision-making | Any description of parent-reported attitudes, views, experiences, or characteristics in the context of deciding to access or delay or avoid accessing unscheduled care for their children. | • decision*<br>• preference*<br>• reason*<br>• delay*<br>• avoid*<br>• hesita*<br>• miss*<br>• attend*<br>• access* |

*Note.* PHEIC, public health emergency of international concern; WHO, World Health Organization.

[2] United Nations Office of the High Commissioner for Human Rights. Convention on the Rights of the Child [Internet]. United Nations. [cited 2023 Sep 16]. Available from: https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-child

[3] World Health Organization. Statement on the second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV) [Internet]. World Health Organization. 2020 [cited 2022 Oct 18].

[4] O'Cathain A, Knowles E, Munro J, Nicholl J. Exploring the effect of changes to service provision on the use of unscheduled care in England: population surveys. BMC Health Serv Res. 2007 Apr 27;7:61.

**Table S3.** Search Strategies

Ovid MEDLINE search strategy (14 July 2023)

| # | Query | Results |
|---|---|---|
| **1** | (child* or p?ediatric or infant* or adolescent* or baby or babies or neonate* or newborn*).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word] | 4,735,220 |
| **2** | Child/ | 1,913,964 |
| **3** | 1 or 2 | 4,735,220 |
| **4** | (COVID-19 or covid19 or coronavirus or corona virus or 2019-nCoV or SARS-CoV-2 or SARS2 or SARS-CoV-19 or novel cov).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word] | 385,793 |
| **5** | COVID-19/ | 231,417 |
| **6** | 4 or 5 | 385,793 |
| **7** | (unscheduled care or primary care or general practice or emergency care or emergent care or emergency department* or after-hours or urgent care or out-of-hours or out of hours).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word] | 322,722 |
| **8** | (decision* or preference* or reason* or delay* or avoid* or hesita* or miss* or attend* or access*).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word] | 3,371,892 |
| **9** | Decision Making/ | 104,647 |
| **10** | 8 or 9 | 3,371,892 |
| **11** | 3 and 6 and 7 and 10 | 821 |
| **12** | limit 11 to (english language and yr="2020 -Current") | 792 |

Embase search strategy (14 July 2023)

| # | Query | Results |
|---|---|---|
| **1** | (child* or p?ediatric or infant* or adolescent* or baby or babies or neonate* or newborn*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword heading word, floating subheading word, candidate term word] | 5,404,375 |
| **2** | child/ | 2,386,519 |
| **3** | 1 or 2 | 5,404,375 |
| **4** | (COVID-19 or covid19 or coronavirus or corona virus or 2019-nCoV or SARS-CoV-2 or SARS2 or SARS-CoV-19 or novel cov).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug | 496,220 |

| | | |
|---|---|---|
| | manufacturer, device trade name, keyword heading word, floating subheading word, candidate term word] | |
| **5** | coronavirus disease 2019/ | 369,445 |
| **6** | 4 or 5 | 496,220 |
| **7** | (unscheduled care or primary care or general practice or emergency care or emergent care or emergency department* or after-hours or urgent care or out-of-hours or out of hours).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword heading word, floating subheading word, candidate term word] | 543,608 |
| **8** | (decision* or preference* or reason* or delay* or avoid* or hesita* or miss* or attend* or access*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword heading word, floating subheading word, candidate term word] | 4,805,997 |
| **9** | patient decision making/ | 11,834 |
| **10** | 8 or 9 | 4,805,997 |
| **11** | 3 and 6 and 7 and 10 | 1,511 |
| **12** | limit 11 to (english language and yr="2020 -Current") | 1,481 |

Web of Science search strategy (14 July 2023)

| # | Query | Results |
|---|---|---|
| **1** | ALL=(child* OR p$ediatric OR infant* OR adolescent* OR baby OR babies OR neonate* OR newborn*) | 2,672,501 |
| **2** | ALL=("COVID-19" OR covid19 OR coronavirus OR "corona virus" OR "2019-nCoV" OR "SARS-CoV-2" OR SARS2 OR "SARS-CoV-19" OR "novel cov") | 477,270 |
| **3** | ALL=("unscheduled care" OR "primary care" OR "general practice" OR "emergency care" OR "emergent care" OR "emergency department*" OR "after-hours" OR "urgent care" OR "out-of-hours" OR "out of hours") | 429,387 |
| **4** | ALL=(decision* OR preference* OR reason* OR delay* OR avoid* OR hesita* OR miss* OR attend* OR access* ) | 8,285,340 |
| **5** | 1 and 2 and 3 and 4 | 1,008 |
| **6** | 1 and 2 and 3 and 4 Timespan: 2021-01-31 to 2023-07-14 | 857 |
| **7** | 1 and 2 and 3 and 4 and English (Languages) Timespan: 2021-01-31 to 2023-07-14 | 842 |

PsycINFO search strategy (14 July 2023)

| # | Query | Results |
|---|---|---|
| **1** | (child* or p?ediatric or infant* or adolescent* or baby or babies or neonate* or newborn*).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word] | 1,247,087 |
| **2** | exp Child Health/ | 1,127 |
| **3** | 1 or 2 | 1,247,087 |
| **4** | (COVID-19 or covid19 or coronavirus or corona virus or 2019-nCoV or SARS-CoV-2 or SARS2 or SARS-CoV-19 or novel cov).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word] | 34,642 |
| **5** | exp COVID-19/ | 23,338 |
| **6** | 4 or 5 | 34,642 |
| **7** | (unscheduled care or primary care or general practice or emergency care or emergent care or emergency department* or after-hours or urgent care or out- | 52,677 |

| | | |
|---|---|---|
| | of-hours or out of hours).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word] | |
| **8** | (decision* or preference* or reason* or delay* or avoid* or hesita* or miss* or attend* or access*).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word] | 1,064,663 |
| **9** | exp Health Care Seeking Behavior/ | 9,998 |
| **10** | 8 or 9 | 1,070,447 |
| **11** | 3 and 6 and 7 and 10 | 77 |
| **12** | limit 11 to (english language and yr="2020 - 2023") | 64 |

Global Health search strategy (14 July 2023)

| # | Query | Results |
|---|---|---|
| **1** | (child* or p?ediatric or infant* or adolescent* or baby or babies or neonate* or newborn*).mp. [mp=abstract, title, original title, heading words, cabicodes words] | 679,988 |
| **2** | exp children/ | 441,537 |
| **3** | 1 or 2 | 679,988 |
| **4** | (COVID-19 or covid19 or coronavirus or corona virus or 2019-nCoV or SARS-CoV-2 or SARS2 or SARS-CoV-19 or novel cov).mp. [mp=abstract, title, original title, heading words, cabicodes words] | 127,919 |
| **5** | coronavirus disease 2019.sh. | 109,069 |
| **6** | 4 or 5 | 127,919 |
| **7** | (unscheduled care or primary care or general practice or emergency care or emergent care or emergency department* or after-hours or urgent care or out-of-hours or out of hours).mp. [mp=abstract, title, original title, heading words, cabicodes words] | 46,519 |
| **8** | (decision* or preference* or reason* or delay* or avoid* or hesita* or miss* or attend* or access*).mp. [mp=abstract, title, original title, heading words, cabicodes words] | 559,144 |
| **9** | exp decision making/ | 13,805 |
| **10** | 8 or 9 | 559,144 |
| **11** | 3 and 6 and 7 and 10 | 243 |
| **12** | limit 11 to (english language and yr="2020 - 2023") | 231 |

Global Index Medicus search strategy (14 July 2023)

| # | Query | Results |
|---|---|---|
| **1** | (tw:(child* OR paediatric OR pediatric OR infant* OR adolescent* OR baby OR babies OR neonate* OR newborn* )) | 432,600 |
| **2** | (tw:("COVID-19" OR "covid 19" OR covid19 OR coronavirus OR "corona virus" OR "2019 nCoV" OR "SARS-CoV-2" OR SARS2 OR "SARS-CoV-19" OR "novel cov")) | 14,731 |
| **3** | (tw:("unscheduled care" OR "primary care" OR "general practice" OR "emergency care" OR "emergent care" OR "emergency department" OR "emergency departments" OR "after-hours" OR "urgent care" OR "out-of-hours" OR "out of hours")) | 16 |
| **4** | (tw:(decision* OR preference* OR reason* OR delay* OR avoid* OR hesita* OR miss* OR attend* OR access* )) | 233,493 |
| **5** | (tw:(child* OR paediatric OR pediatric OR infant* OR adolescent* OR baby OR babies OR neonate* OR newborn* )) AND (tw:("COVID-19" OR "covid 19" OR covid19 OR coronavirus OR "corona virus" OR "2019 nCoV" OR "SARS-CoV-2" OR SARS2 OR "SARS-CoV-19" OR "novel cov")) AND (tw:(unscheduled | 0 |

| | |
|---|---|
| | care" OR "primary care" OR "general practice" OR "emergency care" OR "emergent care" OR "emergency department*" OR "after-hours" OR "urgent care" OR "out-of-hours" OR "out of hours")) AND (tw:(decision* OR preference* OR reason* OR delay* OR avoid* OR hesita* OR miss* OR attend* OR access* )) |

PsycEXTRA search strategy (23 July 2023)

| # | Query | Results |
|---|---|---|
| **1** | (child* or p?ediatric or infant* or adolescent* or baby or babies or neonate* or newborn*).mp. [mp=title, abstract, heading word, keywords] | 53,657 |
| **2** | (COVID-19 or covid19 or coronavirus or corona virus or 2019-nCoV or SARS-CoV-2 or SARS2 or SARS-CoV-19 or novel cov).mp. [mp=title, abstract, heading word, keywords] | 684 |
| **3** | (unscheduled care or primary care or general practice or emergency care or emergent care or emergency department* or after-hours or urgent care or out-of-hours or out of hours).mp. [mp=title, abstract, heading word, keywords] | 2,388 |
| **4** | (decision* or preference* or reason* or delay* or avoid* or hesita* or miss* or attend* or access*).mp. [mp=title, abstract, heading word, keywords] | 49,624 |
| **5** | 1 and 2 and 3 and 4 | 2 |
| **6** | limit 5 to (english language and yr="2020 -Current") | 2 |

Proquest Dissertations & Theses Global (23 July 2023)

Search limited to publication date 2020-2023 and English language.

| # | Query | Results |
|---|---|---|
| **1** | noft(child* OR paediatric OR pediatric OR infant* OR adolescent* OR baby OR babies OR neonate* OR newborn*) AND noft("COVID-19" OR "covid 19" OR covid19 OR coronavirus OR "corona virus" OR "2019-nCoV" OR "SARS-CoV-2" OR SARS2 OR "SARS-CoV-19" OR "novel cov") AND noft("unscheduled care" OR "primary care" OR "general practice" OR "emergency care" OR "emergent care" OR "emergency department*" OR "after-hours" OR "urgent care" OR "out-of-hours" OR "out of hours") AND noft(decision* OR preference* OR reason* OR delay* OR avoid* OR hesita* OR miss* OR attend* OR access*) AND la.exact("English") | 22 |

Google Scholar search strategy

Advanced search conducted on 23/07/2023

Find articles
with all of the words:
child attend "unscheduled care"
with the exact phrase:
"COVID-19"

Return articles dated between 2020 – 2023

Results for screening: 181 total

OAIster search strategy

All searches limited to publication year 2020-2023, English language. Search carried out on 23/07/2023

1. kw:(child*) 66,700
2. kw:(paediatric*) 3,100
3. kw:(pediatric) 11,000
4. kw:(covid) 58,800
5. kw:(covid) OR kw:(covid-19) 58,800
6. kw:(unscheduled) 145
7. kw:(urgen*) 11,500
8. kw:(emergen*) 11,000
9. kw:("primary care") 5,700
10. kw:(child*) AND kw:(covid) AND kw:(unscheduled) 0
11. kw:(paediatric*) AND kw:(covid) AND kw:(unscheduled) 0
12. kw:(pediatric*) AND kw:(covid) AND kw:(unscheduled) 0
13. kw:(child*) AND kw:(covid) AND kw:(urgen*) 74
14. kw:(paediatric*) AND kw:(covid) AND kw:(urgen*) 2
15. kw:(pediatric*) AND kw:(covid) AND kw:(urgen*) 12
16. kw:(child*) and kw:(covid) AND kw:(emergen*) 12
17. kw:(paediatric*) AND kw:(covid) AND kw:(emergen*) 0
18. kw:(pediatric*) AND kw:(covid) AND kw:(emergen*) 2
19. kw:(child*) AND kw:(covid) AND kw:("primary care") 54
20. kw:(paediatric*) AND kw:(covid) AND kw:("primary care") 6
21. kw:(pediatric*) AND kw:(covid) AND kw:("primary care") 10

Results from lines 13-21 were included for screening: 172 total

Citation search

I used citationchaser[5] with 12 of the included articles (all included articles except for Berry, 2022 and Lim et al., 2020). This was performed on 25/07/2023, and identified:

- 212 references (backward citation searching)
- 79 citations (forward citation searching)

Of these, 199 were published between 2020-2023.

In addition, manual backward citation searching was carried out on the 165 references from one study (Berry, 2022) as this was not recognised by citationchaser. 40 of these were published between 2020-2023.

Results for screening: 239 total

[5] Haddaway NR, Grainger MJ, Gray CT. Citationchaser: A tool for transparent and efficient forward and backward citation chasing in systematic searching. Res Synth Methods. 2022 Jul;13(4):533–45.

**Table S4.** Data extraction tool (adapted from a previous review and the JBI guidance)[6]

| Aspect | Data to be extracted | Notes |
|---|---|---|
| **Background and context** | Author and year | |
| | Dates of data collection | |
| | COVID-19 restrictions in place at the time | As described by the authors |
| | Sample size | |
| | Caregiver gender, relationship to child, and age | |
| | Other caregiver features | Include ethnicity, socioeconomic status, education, insurance status, and other factors of note reported by authors |
| | Age of paediatric population | |
| | Other contextual factors | Include specific child or family factors of note that the authors commented |
| | Specific disease group or condition | |
| | Type of healthcare accessed | For example, emergency department, GP, urgent care centre |
| | | |
| **Study design and methods** | Study type | Qualitative, quantitative, or mixed methods |
| | Research question or aim | |
| | Data collection methods | |
| | Data analysis methods | |
| | Sampling strategy | |
| | Inclusion criteria | |
| | Exclusion criteria | |
| | | |
| **Results** | Factors influencing decision-making | As described by the authors in the discussion or conclusion section |

[6] Nicholson E, McDonnell T, De Brún A, Barrett M, Bury G, Collins C, et al. Factors that influence family and parental preferences and decision making for unscheduled paediatric healthcare-systematic review. BMC Health Serv Res. 2020 Jul 17;20(1):1–23.
Stern C, Lizarondo L, Carrier J, Godfrey C, Rieger K, Salmond S, et al. Methodological guidance for the conduct of mixed methods systematic reviews. JBI Evid Synth. 2020 Oct;18(10):2108.

**Table S5.** Quality criteria from Mixed Methods Appraisal Tool[7] selected for sensitivity analysis

| Item | Rationale for using this criterion for sensitivity analysis |
|---|---|
| **1.2. Are the qualitative data collection methods adequate to address the research question?** | For qualitative studies aiming to assess parent-reported factors, it is important that they use the appropriate data collection methods (e.g., interviews, focus groups) to allow participants to describe and explain their perspectives |
| **1.3. Are the findings adequately derived from the data?** | It is important to ensure appropriate techniques are used, such as coding and analysis, so that the results are adequately derived from parent reporting of their perspectives and opinions |
| **4.3. Are the measurements appropriate?** | Important considerations include whether surveys and other measurement tools are appropriately piloted or tested for validity and reliability to ensure they are accurately measuring parent perspectives and are acceptable to participants |

[7] Hong QN, Pluye P, Fàbregues S, Bartlett G, Boardman F, Cargo M, et al. Mixed Methods Appraisal Tool (MMAT) Version 2018 User Guide. Regist Copyr 1148552 Can Intellect Prop Off Ind Can [Internet]. [cited 2022 Oct 24]; Available from: http://mixedmethodsappraisaltoolpublic.pbworks.com/w/file/fetch/127916259/MMAT_2018_criteria-manual_2018-08-01_ENG.pdf

**Table S6.** Individual study aims, background and context

| Study | Research question or primary aim | COVID-19-related restrictions | Caregiver gender, relationship to child, and age | Other caregiver features | Child age | Other context-related information | Specific disease group or condition |
|---|---|---|---|---|---|---|---|
| **Appleby et al., 2022** | 'to investigate the impact of COVID-19 on health-seeking behaviour and decision-making processes of caregivers presenting to paediatric emergency services at a National Health Service (NHS) Trust in London.' | Interviews were conducted during a second lockdown | 80% female, 16% male.<br><18 years: 1%<br>18-24 years: 2%<br>25-34 years: 26%<br>35-44 years: 48%<br>45-54 years: 15%<br>55-64 years: 2% | 62% White British or White Other, 21% Black, 4% Asian | 0-5 years: 53%<br>6-10 years: 21%<br>11-15 years: 24% | The local area was a large, diverse population with high levels of deprivation | N/A |
| **Berry, 2022** | 'What are the expectations and experiences of parents who bring their child to the accident and emergency department with non-urgent medical illness?' | Not described | 18 mothers, 1 father.<br>Age not reported. | Unclear (not reported separately for interviews prior to versus after onset of COVID-19 restrictions) | Unclear (not reported separately for interviews prior to versus after onset of COVID-19 restrictions) | | N/A |
| **Breckons et al., 2023** | 'to understand parents' views on the use of children's urgent healthcare services during the first wave of the COVID-19 pandemic and in particular factors which may | Not described | 19 female, 2 male.<br>All parents.<br>25-29 years: 14%<br>30-34 years: 10%<br>35-39 years: 48%<br>40-44 years: 19%<br>45-49 years: 10% | IMD decile:<br>9-10: 33%<br>7-8: 14%<br>5-6: 24%<br>3-4: 10%<br>1-2: 5%<br>Missing: 14% | Age of youngest child:<br><12 months: 14%<br>1-3 years: 57%<br>4-6 years: 5%<br>7-9 years: 24%<br>IMD deciles:<br>9-10: 33%<br>7-8: 14% | | N/A |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | affect seeking care during “lockdown”.’ | | | | 5-6: 24%<br>3-4: 10%<br>1-2: 5% | | |
| **Davis et al., 2021** | ‘to determine if caregivers of children 0–19 years old presenting to the pediatric ED during the COVID-19 pandemic with non-COVID-19-related concerns are delaying presentation for fear of contracting COVID-19 in the hospital.’ | Not described | 73% mother, 24% father<br>Mean age 39 years | 75% of parents had a greater than high school education | Mean age 7.8 years | | N/A |
| **Lim et al., 2020** | ‘to evaluate the experiences of parents using this decision-making and risk assessment leaflet for a potentially seriously ill child during COVID-19 lockdown. More specifically, we explored the confidence of parents, their health-seeking behaviours, and usefulness of the leaflet.’ | Recruitment was carried out during the first lockdown up until it was eased | Not reported | 93% White British, 2% White Other | Not reported | | N/A |
| **McCarthy et al., 2021** | ‘to understand the impact of the COVID-19 pandemic and any associated | During a lockdown period with | 95% mother, 5% father | 51% of parents had a degree or | Mean age 8.13 years | Australia had low COVID-19 infection rates compared to | Oncology – children receiving hospital-based |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | changes on the health and well-being of children and families receiving hospital-based oncology care at RCH.' | strict restrictions | | postgraduate education | | other countries. The hospital had had few COVID-19 positive inpatients. | cancer treatment only |
| **Nicholson et al., 2020** | 'to examine avoidance behaviour and the level of hesitancy in parents towards accessing healthcare for their child during the COVID-19 pandemic and to determine the factors associated with healthcare avoidance and hesitancy.' | During the first phase of easing of COVID-19 restrictions | 62% female.<br>All parents.<br><29 years: 12%<br>30-39 years: 41%<br>40-49 years: 37%<br>>50 years: 10% | 53% of parents had a degree or postgraduate education.<br>38% had a medical card, 8% a GP visit card, 26% private insurance only, and 10% insurance and a medical card. | <2 years: 23%<br>2-4 years: 30%<br>5-9 years: 46%<br>10-16 years: 52% | included participants from counties in and | N/A |
| **Poppe et al., 2021** | 'to describe the impact of the pandemic on the use of healthcare services by the pediatric population and to assess the perspective of parents regarding the consequences for their children's health and wellbeing.' | Parents were asked to consider the period between school closure and the day of completion, which remained open until just prior to kindergarten opening after the first lockdown | <20 years: <1%<br>20-29 years: 7%<br>30-39 years: 48%<br>40-49 years: 38%<br>>50 years: 6% | 75% of mothers and 59% of fathers had a Bachelor's degree or higher education | 0-2 years: 27%<br>3-6 years: 30%<br>7-11 years: 25%<br>12-17 years: 18% | | N/A |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Sanderson et al., 2023** | 'to identify the motivations for use and value of the paediatric emergency virtual clinic by analysing common themes identified within the responses of patients and families who have used the service.' | Not described | Not reported | Not reported | 'the full range of paediatric ages with a skew toward younger patients.' | Based in areas around South-western Ontario. Included urban and rural locations | N/A |
| **Tan et al., 2023** | 'To provide insight into the help-seeking behaviour and care for a sick or injured child from the parental perspective during the COVID-19 pandemic in five European countries with different healthcare systems and changes in healthcare services due to the COVID-19 pandemic.' | Restrictions varied by country and during data collection periods within countries. | Not reported | Not reported | <1 year: 11%<br>1-2 years: 14%<br>2-5 years: 23%<br>5-12 years: 38%<br>12-16 years: 10%<br>16-18 years: 4% | | N/A |
| **Wagh et al., 2022** | 'to assess . . . during the height of the COVID-19 pandemic: Patterns of pediatric health care use by an urban PED patient population; factors that influenced caregivers' decision- | Just following the easing of the 'stay-at-home' lockdown period | <20 years: 6%<br>21-40 years: 70%<br>41-60 years: 24% | 76% Hispanic or Latino.<br>62% above a high school education.<br>61% government insurance/Medicaid, 32% private insurance. | Not reported | | N/A |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | making to access health care for their children; caregivers' perceptions on ease of accessing medical care, and their inputs to overcome barriers and prepare for future health care emergencies.' | | | | | | |
| **Watson et al., 2021** | 'To establish care-seeking behaviours for children during the pandemic and any perceived or felt barriers to care for children.' | Not described | 14 mothers, 1 father.<br>25-29 years: 27%<br>30-34 years: 27%<br>35-40 years: 33%<br>40-45 years: 0%<br>≥45 years: 13% | 7 Asian, 1 Afro-Caribbean, 1 White British, 6 White other | 0-1 month: 20%<br>1-3 months: 20%<br>3-12 months: 20%<br>1-5 years: 7%<br>5-10 years: 13%<br>10-16 years: 20% | e hospital had ached capacity for ult intensive nte unit beds; s was reported in the media. | N/A |

*Note.* IMD, indices of multiple deprivation; deciles 9-10 are least deprived, and 1-2 are most deprived. N/A, not applicable

**Table S7.** Methodological quality appraisal of individual studies

| Study | S1 | S2 | 1.1. | 1.2. | 1.3. | 1.4. | 1.5. | 4.1. | 4.2. | 4.3. | 4.4. | 4.5. | 5.1. | 5.2. | 5.3. | 5.4. | 5.5. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Appleby et al., 2022** | Y | Y | Y | Y | Y | Y | Y | N | C | N | C | Y | Y | Y | Y | Y | N |
| **Berry, 2022** | Y | Y | Y | Y | Y | Y | Y | | | | | | | | | | |
| **Breckons et al., 2023** | Y | Y | Y | Y | Y | Y | Y | | | | | | | | | | |
| **Davis et al., 2021** | Y | Y | | | | | | N | C | Y | N | Y | | | | | |
| **Lim et al., 2020** | Y | Y | | | | | | N | C | Y | N | Y | | | | | |
| **McCarthy et al., 2021** | Y | Y | | | | | | N | N | Y | N | Y | | | | | |
| **Nicholson et al., 2020** | Y | Y | | | | | | N | Y | Y | Y | Y | | | | | |
| **Poppe et al., 2021** | Y | Y | | | | | | N | C | N | N | Y | | | | | |
| **Sanderson et al., 2023** | Y | Y | Y | N | Y | Y | Y | | | | | | | | | | |
| **Tan et al., 2023*** | Y | Y | | | | | | N | C | Y | N | Y | | | | | |
| **Wagh et al., 2022** | Y | Y | | | | | | N | C | Y | N | Y | | | | | |
| **Watson et al., 2021** | Y | Y | Y | Y | Y | Y | Y | | | | | | | | | | |

*Note.* Red numbers represent the pre-specified quality criteria for sensitivity analysis. Y, Yes; N, No; C, Can't tell.
* The results of Tan et al., 2021 and Neill et al., 2021 are also reported in this paper. The three papers were considered in relation to the MMAT criteria, and the results for the study overall are reported here and the MMAT under Tan et al., 2023 only.

ENTREQ items and corresponding sections in the report

| Item | Section in report |
|---|---|
| **Aim** | Introduction |
| **Synthesis methodology** | Methods – Data synthesis and analysis |
| **Approach to searching** | Methods – Search methods |
| **Inclusion criteria** | Methods – Search methods, Table 1 |
| **Data sources** | Methods – Search methods |
| **Electronic Search strategy** | Supplemental Table S3 |
| **Study screening methods** | Methods – Search methods |
| **Study characteristics** | Results – Table 2. Supplemental Table S6 |
| **Study selection results** | Results. Figure 2 |
| **Rationale for appraisal** | Methods – Quality appraisal of included studies and sensitivity analysis |
| **Appraisal items** | Methods – Quality appraisal of included studies and sentivity analysis. Supplemental Table S5 |
| **Appraisal process** | Methods – Quality appraisal of included studies |
| **Appraisal results** | Results – Methodological quality appraisal and sensitivity analysis. Supplemental Table S7 |
| **Data extraction** | Methods – Data extraction |
| **Software** | Methods – Data extraction |
| **Number of reviewers** | Methods – Search methods. Discussion – Strengths and limitations |
| **Coding** | Methods – Data synthesis and analysis |
| **Study comparison** | Methods – Data synthesis and analysis |
| **Derivation of themes** | Methods – Data synthesis and analysis |
| **Quotations** | Results – Descriptive themes |
| **Synthesis output** | Results – Analytic themes and analytical model. Discussion |

*Note.* Items adapted from the ENTREQ statement.[1]

[1] Tong A, Flemming K, McInnes E, Oliver S, Craig J. Enhancing transparency in reporting the synthesis of qualitative research: ENTREQ. BMC Med Res Methodol. 2012 Nov 27;12:181.