



## A Systematic Review of Reports of COVID-19 Symptoms and Manifestations

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### KEYWORDS

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### ABSTRACT:

To conduct a systematic review of studies on the prevalence of COVID-19 symptoms and indicators. The most typical symptoms of COVID-19 are fever and cough, although there are other symptoms. Infrequent more study of symptoms in population samples is required to guide practical identification and testing programmes.

### Introduction

Most nations rely on SARS-CoV-2, the virus that produces COVID-19, symptom-based diagnostic methods. This is predicated on the presumption that the most effective way to use the limited testing resources is to test symptomatic persons and trace, test, and isolate their positive contacts. For SARS-CoV-2 testing in the UK, the presence of fever, a new, persistent cough, or a loss or change in smell is required; other nations use case definitions depending on symptoms.

By such case definitions, anyone exhibiting symptoms of fever, cough, or both are presumed to have COVID-19 until proven otherwise and must be quarantined until a negative SARS-CoV-2 test is achieved.<sup>1</sup> There is evidence that specific symptoms and indications in

adults have relatively poor diagnostic value for COVID-19, but healthy adults rarely have alternative causes of fever and cough. Nevertheless, 8–10 upper respiratory infections (URIs) per year, particularly during the winter, are possible, especially in young children. Hence, even when virus incidence is high, fever and URI symptoms are probably less accurate indications of SARS-CoV-2 positivity in children.<sup>2</sup> The number of CYP 0–18 years old reporting possible COVID-19 symptoms in England increased by 10 after the start of school in the UK in September 2020. This almost certainly represents a sizable number of kids who had moderate fevers and URI symptoms while attending school, which were brought on by several typical winter viruses currently circulating.<sup>3</sup>



Nonetheless, many kids were ordered to isolate themselves or undergo SARS-CoV-2 testing because of these URI symptoms before returning to school. However, there has been some debate on the symptoms that indicate COVID-19. Recent research has revealed that other signs and symptoms, including weariness or gastrointestinal issues, may also be prevalent with COVID-19.<sup>4</sup>

Evidence on the symptoms most frequently linked with test positivity and those that are not is required for the case definition policy and testing policy for COVID-19. In light of the rapidly expanding literature in this area, including several systematic reviews, we conducted a systematic review of reviews (or an umbrella review) of symptoms or indicators of verified COVID-19.<sup>5</sup>

## Goal

PRISMA checklist-based methods and results

## Methodology

**Methodology** The five steps of the evidence-informed decision-making (EIDM) process were followed by the review under Dr. Dobbin's Rapid Review Guidebook: Steps for Performing a Rapid Review. The following steps were taken using the health Evidenced tool: 1) locate and gather pertinent research evidence; 2) evaluate the methodological quality of the evidence; and 3) synthesize the evidence.

## Search Strategies

The brief review research questions and a mix of various study subjects were used to define the key search terms "COVID-19" and "symptoms and manifestations." The search criteria now include SARS-CoV-2, the virus that causes COVID-19, and symptom-based diagnostic techniques. In order to improve the accuracy and impartiality of the search, wildcards were used.

## The final search string is as below:

"Symptoms and manifestations" OR "COVID-19". For a thorough search of publications, five databases—PubMed, Cochrane, Google Scholar, and Scopus Library—have been used. Given the paucity of publications on COVID-19-related health issues, Google Scholar & Scopus have been added to provide more comprehensive coverage of the grey literature. PubMed

and the Cochrane library provided adequate coverage of peer-reviewed studies. A snowball search to track down references of references involving the review papers was added as a supplement to the literature search.

## Eligibility criteria

All articles, theses, and review papers about the care of young children published before February 2023 were included in the literature search, as was research carried out in developing nations using the World Bank checklist. The search was restricted to English-language publications. Data was taken from publications that describe how the conceptual framework for health issues, policy creation, and determinants of utilization, issues, and challenges has evolved.

## Data Extraction

Two unbiased reviewers from the university fraternity read the papers to ensure that the choice was not prejudicial. Both reviewers have developed an eighty percent agreement on the final list of publications for additional data extraction. Several different field experts carried out the investigations. Hence the approach needed to be more consistent. The quantity of evidence was utilized to assess the caliber.

## Results of the literature search

During the initial screening process, 298 articles were reduced to 43 potentially relevant articles by filtering out non-related articles based on their non-English language, title, abstract, and a book chapter. The final data extraction includes 29 studies from rich countries and 02 publications from developing countries by the inclusion criteria (Figure 1: Health Evidence™ tools: Literature search results).

## Criteria

The clinical manifestations (symptoms or signs) of COVID-19 disease with laboratory confirmation were included in our systematic reviews. We only incorporated reviews that 1. used predetermined processes to find and review the literature systematically. 2. Only studies with SARS-CoV-2 patients that have been proven in labs were included. 3. Estimated and reported the prevalence or frequency of COVID-19 symptoms or indications. Studies of research findings, investigations of diseases associated with



COVID-19 (such as pediatric inflammatory and multisystem syndrome), and preprints deposited for

more than five months without an update or publication were also removed.

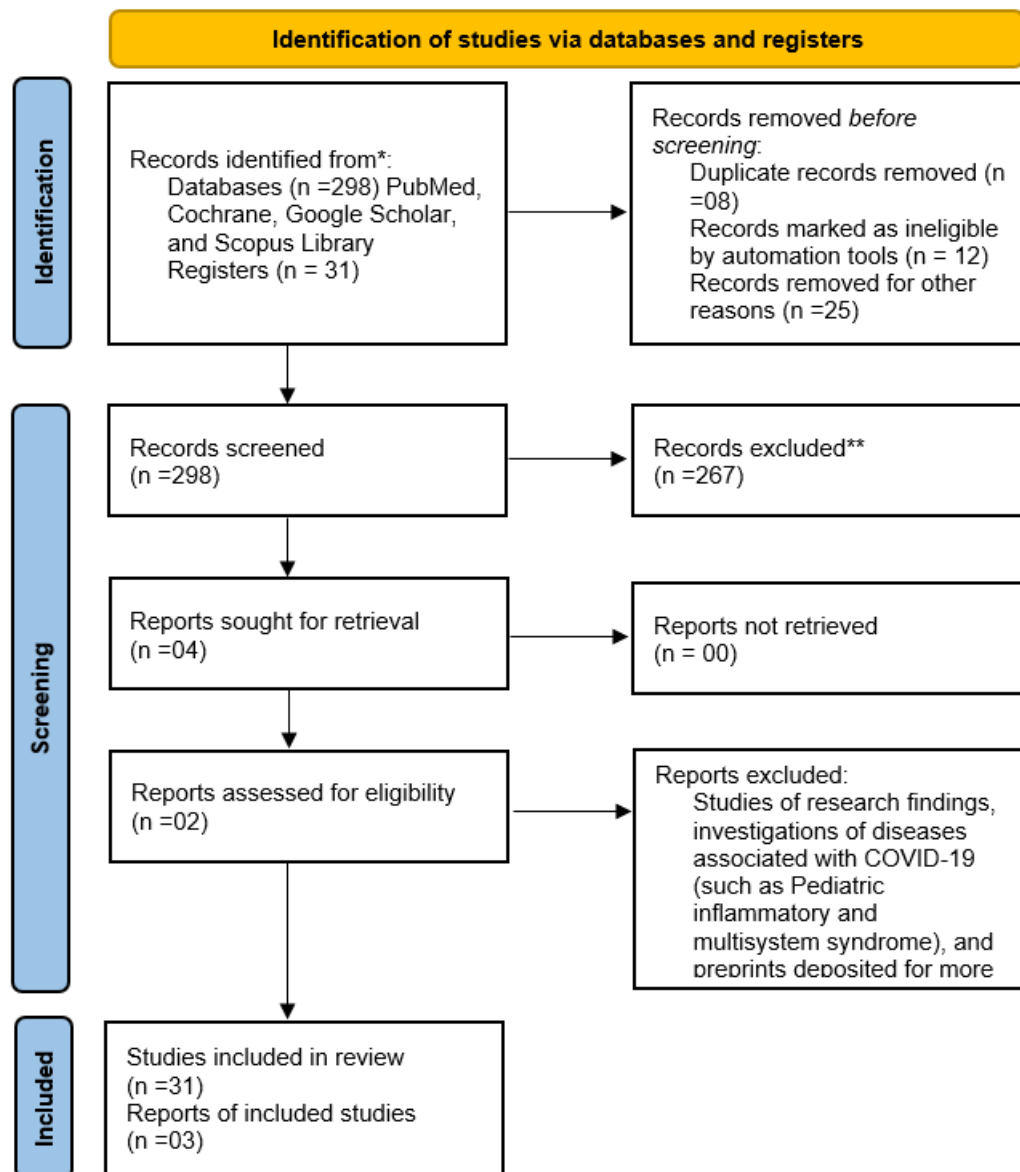


Figure 1: Health Evidence™ tools: Literature search results

## Result & Discussion

The vast majority of the studies included in the reviews involved hospitalized patients. No reviews directly evaluated symptoms in hospitalized versus out-of-hospitalized children, nor did any focus on symptoms or indicators among community samples of sick children. One analysis only looked at research involving newborns; another compared symptoms in Chinese

children and adults, and another exclusively looked at gastrointestinal symptoms. One study did not give pooled symptom prevalence estimates. It only provided descriptive data from included studies—the study in the online supplemental displays the percentages with reported COVID-19 symptoms or indications. From 14.6% to 42% of participants were asymptomatic. The most prevalent symptoms were fever and cough; percentages with fever varied from 46% to 64.2%, and



percentages with cough from 32% to 55.9%.<sup>6</sup> Less than 10% to 20% of all other symptoms or indicators were present. In most research, vomiting, diarrhea, and abdominal pain were all recorded independently; however, several studies combined these gastrointestinal symptoms. These projections covered a range of 7.4% to 17.7%.<sup>28</sup> Except Assaker et al., who reported myalgia in 14% of cases and exhaustion in 8%, all studies that reported fatigue and myalgia did so as "fatigue or myalgia." The research discussed symptom or sign combinations. 30% of patients, according to Wang et al.'s high-quality analysis, had both fever and cough, compared to 58.4% of patients, according to Christophers et al.'s medium-quality review, who only had one symptom, which in 23.2% of cases was fever, 5.6% of cases was a cough, and 1.6% of cases was diarrhea.<sup>7,8,9</sup>

Several studies have examined how CYP symptom patterns vary by age. A short, low-quality review by Yasuhara et al. corroborated the findings of an extensive, high-quality review by Cui et al. that the proportions of babies with fever and cough were comparable to those in older children. In contrast, Christophers et al. revealed in a short, medium-quality review that fever appeared more common in older children (65%) than in babies (48%). While Yasuhara et al. observed that gastrointestinal symptoms were more common in teenagers, while numbers were modest and symptoms were unusual in all ages, Christophers et al. reported that vomiting and diarrhea occurred primarily in children under the age of 9 years.<sup>10,11</sup>

Just one review made the adult and CYP comparison. Pei et al. performed a moderate-quality study comparing symptoms in 170 children and 275 adults, focusing only on research from China. According to their findings, Children had a higher rate of asymptomatic than adults (20% vs. 5.5%). We found articles, systematic reviews, and meta-analyses that provided helpful information on the frequency of COVID-19 symptoms and signs. The results demonstrate that fever and cough are the symptoms that affect roughly 40%–60% of infected patients, whereas all other symptoms have significantly lower prevalences, between 10% and 20%. Typical URI symptoms like rhinorrhea and sore throat, somatic symptoms like headache and fatigue/myalgia, and gastrointestinal symptoms like diarrhea and vomiting are

infrequent in COVID-19. With these reports, we could not find information on how often things go lost or change scent. There was a lack of information on the incidence of symptom combinations. However, one study did find that fever and cough were less prevalent together than separately, occurring in around one-third of Cases. Both younger and older children appeared to be equally susceptible to the typical signs of fever and cough. The amount of information was insufficient to conclude that younger and older children had various symptoms more frequently depending on their age. Some further restrictions apply to our results. Although the majority of reviews looked at a variety of symptoms, it is conceivable that the early pandemic concentration on a small number of symptoms led studies included in reviews to focus on things like fever and cough rather than other symptoms. In our investigation, certain studies were cited in multiple reviews. We decided not to do a meta-summary of findings from various reviews because of this.<sup>13,14,15</sup>

Nonetheless, even in this narrative review, the significance of some research may still be exaggerated compared to others. The included reviews were rather heterogeneous, and several had different publication bias levels depending on the symptom. Only three reviews covered papers released after June 2020, and most assessments used data from the pandemic's early months. As a result, studies from China and case series of children hospitalized with more severe COVID-19 dominate the research, as these studies were more promptly established early in the pandemic. One review was disregarded since it was determined that it was not a systematic study. Since it needed more relevant information, a review of COVID-19 with developmental problems was disregarded.<sup>16</sup>

## Conclusion

The evidence indicates that fever and cough are the main COVID-19 symptoms, supporting their inclusion in case definitions of possible COVID-19 in this age group. Additional symptoms are substantially less expected, indicating that including them in COVID-19 case criteria may lessen specificity.

Given the prevalence of URI and related symptoms in young children, the rarity of rhinitis and sore throat in COVID-19 shows that their presence is far more likely



to signify infection with viruses other than SARS-CoV-2.

In order to guide practical identification and testing programs and prevent misclassification as probable COVID-19 cases necessitating isolation of friends and families, additional data on symptoms in community samples, including in schools, are urgently needed.

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**Conflicts of Interest:** The authors declare no conflicts of interest.

### Ethics approval and consent to participate

This evaluation does not require ethical approval because no patient data will be collected. Plagiarism, confidentiality, malfeasance, data and falsification, double publishing and submission, and duplication are the ethical problems examined in this study.

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