

# Breastfeeding for children of mothers who are infected with SARS-CoV-2: a systematic scoping review

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## Systematic Review

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## Abstract

The aim of the present study was to perform a systematically review the literature in order to clarify whether breastfeeding is safe for babies of mothers infected with coronavirus, called SARS-CoV-2. The searches were carried out on MEDLINE (via PubMed), EMBASE and government statements and publications and manual search of reference lists on 5 July. The title, abstracts and full text were read in duplicate by two independent researchers to verify the eligibility criteria. From 2723 records, 17 citations were included. Eleven citations guide avoiding breastfeeding in cases of maternal infection confirmed by SARS-CoV-2. Fourteen citations did not present consensus on breastfeeding and twelve citations recommended to maintain breastfeeding.

Conclusion : Through the evidence found so far, it is emphasized that the mother / child separation in the neonatal period is discouraged, as it harms the maternal bond, in addition to interfering considerably in breastfeeding. Therefore, the evidence found so far is extremely low in quality and does not present quantitative evidence in one way or another with regard to vertical transmission of SARS-CoV-2, there is no way to recommend, avoid or even guarantee that there will be no infection, but it is recommended to continue breastfeeding.

## Introduction

In November 2019, several cases of pneumonia with an unknown cause were identified in the city of Wuhan, located in the People's Republic of China. Investigations that were conducted later have found the emergence of a new coronavirus, called SARS-CoV-2 [1].

World wide, until may 8, 2020, 6,931,000cases of the disease were confirmed, with 400,857 deaths, distributed in 200 countries[2]. The spread of this virus has been shown to be rapid in several countries [1,3]. In March 2020, the coronavirus disease (COVID-19) was characterized by the World Health Organization (WHO) as a pandemic [4].

The transmission of SARS-CoV-2 can occur when a person ingests or inhales droplets expelled by coughing or sneezing from people infected by the virus, called droplet transmission; or when an individual touches a contaminated surface or object, known as contact transmission. In addition, it can also occur in closed environments, called aerosol transmission [5].

The main clinical characteristics observed in infected individuals are: cough, fever, dyspnea, myalgia and radiological examination with inflammatory manifestations [6]. The clinical characteristics observed in pregnant women were similar to those observed in other individuals [7]. The clinical condition may vary according to the profile of the individuals, with the elderly people and patients with chronic diseases who are more likely to develop the severe form of the infection [8].

Evidence shows that pregnant women and newborns are at a particularly high risk for COVID-19 [9] because during pregnancy women experience changes in the immune and physiological systems inherent in this period, which predispose them to greater susceptibility to infections [9-10]. It is noteworthy that, until now, there is little scientific evidence demonstrating the possibility of vertical transmission of SARS-CoV-2 from the mother to the fetus, especially during breastfeeding [11] and the benefits on the health of the mother and child in relation to breastfeeding are known and proven [12].

In this context, this study aimed to review the literature in a systematic way, in order to clarify whether breastfeeding is safe for children of mothers infected by SARS-CoV-2.

## Methods

We conducted a systematic scope review to synthesize knowledge about breastfeeding safety by infected mothers. This systematic scope review is reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) [13] and was conducted following the recommendations of the Cochrane Handbook for Systematic Reviews of Interventions [14-15].

### *Search Strategy*

The searches were carried out on MEDLINE (via PubMed), EMBASE and related articles, and manual search of reference lists in March 25 and updated in July 5. In addition, governmental organizations and publications were used as a source of information on the subject. No period or language restrictions were used in the search strategy. The keywords were "breastfeeding", "puerperium", "newborn", "SARS-CoV-2", "COVID-19", "vertical transmission" and its synonyms. Pubmed and EMBASE search strategies are presented in *supplement 1*.

### *Eligibility criteria*

We included all trials, observational studies, letters, editorial sand documents in which the security of breastfeeding after COVID-19 infection was explored. We excluded, a priori, papers without the data or theory about vertical transmission of COVID-19.

### *Study selection, data-collection process, and data items*

The title and abstracts were read in duplicate by two independent investigators to check for eligibility criteria, with differences resolved by consensus or with a third investigator. The software ENDNOTE X9 was used to read titles and abstracts.

Data were extracted independently and in duplicate by two researchers, including the year the study was conducted and reported, study design, sample size, country, type of population studied, type of breastfeeding, tests performed on milk maternal, breast milk collection day, neonatal infection and results with breastfeeding recommendation during and after COVID-19 infection by the mother. The summary tables were prepared to present the main results.

### *Risk of bias assessment*

All included studies were assessed for quality using the Newcastle-Ottawa scale (NOS) [16], the most used instrument for evaluating the quality of observational studies. It evaluates seven items of the study, divided into three domains: Selection (Representativeness of the sample, sample size, non-respondents and ascertainment of exposure), comparability (Adjustment for confounders) and outcome (Assessment of the outcome and statistical test). The Newcastle-Ottawa Quality Assessment Scale for cohort studies was adapted in order to allow the quality assessment of the cross-sectional studies included in the systematic scope review [13].

## **Results**

The search identified 436 citations (*figure-1*). After reading the titles and abstracts, 47 references met the eligibility criteria and were selected for review of the full text. At the end, 30 studies were eligible for this review. A search was also carried out on documents published by health organizations and governments as guidelines and statements that could answer the research question, 7 guidelines were identified. At the end, 37 citations were included in this review.

We separated the citations into three tables, table 1 shows the characteristics of the 12 studies included in the systematic scope review, most of the selected studies are located in China, among them, cohort studies, cross-sectional studies, case report and cross sectional were found. Table 2 presents the characteristics of 14 guidelines from different regions, including China, Italy, Portugal and London. Table 3, on the other hand, presents other 11 citations included in this study, comments, letters to the editor, protocols and other documents that answered the systematic scope review question. The synthesis of the results was divided into three topics: studies that guide the prevention of breastfeeding, studies that recommend the maintenance of breastfeeding or studies without consensus on guidelines.

It is noteworthy that for the three articles [17-21] of cross-sectional design, cohort and transversal, the risk of bias assessment was performed using the Newcastle-Ottawa scale. In all articles, the final score obtained by NOS was six.

### *Evidences that guide avoiding breastfeeding*

Eleven citations [7, 17, 21-29] guide avoiding breastfeeding in cases of maternal infection confirmed by SARS-CoV-2. It can be seen that, based on the lack of consistent results or studies with high scientific evidence about the vertical transmission of SARS-CoV-2 by breast milk, specialists and authors are concerned to encourage breastfeeding in the current scenario, mainly of mothers suspected or infected with SARS-CoV-2 [7, 22-24, 26].

A Chinese study analyzed the presence of SARS-CoV-2 in breast milk: in two cases of mothers who are infected with SARS-CoV-2 [17] the authors chose to advise avoiding breastfeeding during the disease period, even with negative samples for SARS-CoV-2 in maternal milk, due to the risk of transmission by contact [17]. Additionally, it was recommended to isolate the neonate from the mother for 10 days, until the end of the period of mother's isolation [27].

One study [25] highlighted that vertical transmission cannot be discarded, due to the lack of reliable evidence. In this specific work, mothers with SARS-CoV-2 infection were advised to avoid breastfeeding and that the newborn should receive breast milk through the donation of other women, requiring pasteurization and screening for SARS-CoV-2 in donated milk [25]. In addition, a study [21] carried out in China, identified a sample of breast milk with the presence of SARS-CoV-2, however, other samples collected, presented a negative result, the author reports that the possibility of vertical transmission through breast milk cannot be excluded, and until larger studies demonstrate the safety of breast milk, it is recommended not to offer breast milk until the mother's full recovery from infection [21].

### *Evidences without consensus on breastfeeding*

Fourteen statements [18-20, 30-40] do not present a consensus on breastfeeding in cases of mothers infected with SARS-CoV-2. Two studies [30-31] report that although there are negative data for the presence of the virus in breast milk, the evidence is insufficient to guide breastfeeding, there is no consensus on the indication.

Two researches [19, 32] reported cases of a woman with the infection, however, even with negative samples for the virus in breast milk, the authors contraindicate breastfeeding because of the limitation of the sample. Guidelines have been developed [33] in Europe to cope with SARS-CoV-2, emphasizing that it is not possible, so far, to prove transmission through breast milk. The author stressed that in China, for safety, newborns are separated from mothers confirmed for SARS-CoV-2 for 14 days, it is not advisable to offer breast milk, however, milking should be encouraged to stimulate lactation and to avoid complications resulting from not breast-feeding. The International Society of Gynecology and Obstetrics [34] issued guidelines for case management and the study concluded that there was no consensus on breastfeeding, due to the lack of evidence. According to the College of Specialty of Gynecology/Obstetrics of Portugal, the separation of mother and child after childbirth is a controversial issue, as the benefits of breastfeeding do not outweigh the risk of contamination of the newborn. However, he stresses that health institutions make individual decisions, taking into account the mother's will, the facilities available in the hospital and the availability of health teams. The recommendations are added when there is a mother-child separation, it is recommended to express the milk with pump and its waste until the mother has two negative tests [36].

In a retrospective cohort study [18] with women in China, the breast milk was collected from mothers diagnosed with SARS-CoV-2 and all samples showed negative results for the infection. The authors concluded that due to the low sample size, there was not enough evidence on the safety of breastfeeding in this period. Also, a case report [35] with a woman with SARS-CoV-2, in which the collection of breast milk was performed after delivery, it showed a negative result for the infection in the sample, however the author reported that even with this result, vertical transmission cannot be discarded, requiring further investigation. Finally, a study carried out with a 40-year-old woman and her 8-month-old son, concluded that although two samples of breast milk showed the presence of SARS-CoV-2, the risk of contamination of the sample by the environment or by the mother was not can be discarded; considering the uncertain whether there is a risk of infection with breast milk [40].

#### *Evidences that guide maintaining breastfeeding*

Twelve statements [6, 10, 41–50], advised to maintain breastfeeding in confirmed cases of SARS-CoV-2 infection. WHO (43) issued guidelines on breastfeeding in cases confirmed by SARS-CoV-2, highlighting the effectiveness of breastfeeding against infectious diseases, in addition to strengthening the newborn's immune system. Therefore, he advised to maintain breastfeeding, with precautions related to transmission, recommending, still, washing hands frequently and wearing masks. The Centers for Disease control and Prevention (CDC) [6] the Brazilian Ministry of Health (MS) [10, 41–48]. NHS and Royal College of Obstetricians & Gynaecologists, advise breastfeeding with measures to prevent airborne transmission, as the available evidence is insufficient, and the benefits of breastfeeding outweigh the risk.

A study [44] does not recommend the separation of mother and child, nor contraindicated breastfeeding during the mother's infection period. However, it stressed that transmission prevention measures must be rigorous, such as hand hygiene.

## **Discussion**

Based on the studies selected in this review, no original research has demonstrated the possibility of vertical transmission of SARS-CoV-2 through breast milk. However, recommendations to avoid maintaining breastfeeding take into account the potential risk of transmission through contact.

Currently, organizations such as WHO, CDC, NHS e *Royal College of Obstetricians & Gynaecologists* [6,10, 42- 43] issue guidelines on encouraging breastfeeding in cases of mothers confirmed by SARS-CoV-2, highlighting the effectiveness of breastfeeding against infectious diseases and benefits for the child - mainly for the improvement of their immune system. These publications emphasize that mothers with positive diagnoses for SARS-CoV-2 should be encouraged to continue offering breast milk, if they wish, and to further strengthen hygiene measures, such as: washing hands frequently and wearing masks if the mother is not in a position to breastfeed, due to the worsening of the signs of infection [6,10, 42- 43], milking breast milk and offering it by other means should be encouraged, always providing guidance in relation to adequate care in relation to preventing disease transmission [51].

Among the studies selected in this review, those ones that contraindicate breastfeeding from mothers confirmed with SARS-CoV-2 are mainly based on the possibility of transmissibility of the virus from mother to baby due to the close contact inherent in breastfeeding and reinforce that they should be isolated from their children. It should be noted that this guidance should be carefully considered, since the physical separation of mother and child is a primary factor for early weaning, and there may be an early introduction of formula [52- 53]. A study advises that mothers confirmed for SARS-CoV-2 should avoid breastfeeding and that their child should be fed breast milk from a milk bank, however, the need to perform the examination for SARS-CoV-2 in the milk offered is emphasized for screening the infection associated with milk pasteurization [26].

Some studies that contraindicate breastfeeding suggest that infants born to suspected or confirmed mothers for SARS-CoV-2 should be isolated until they complete the recommended isolation period [23, 25, 27]. Maternal separation in mothers confirmed or suspected for SARS-

CoV-2 may cause anxiety for the family, especially the mother. Therefore, if this recommendation is followed, the presence of psychological support is advised [54] and strengthening the maternal support network.

Among the studies without consensus on breastfeeding, a retrospective study [18] with women in China collected breast milk from mothers infected with SARS-CoV-2 and all samples showed a negative result for the infection. Even so, the author concludes that, due to the low sample size, there is not enough evidence about the safety of breastfeeding in this period. A case report [35] performed with a woman with SARS-CoV-2, in which the collection of breast milk was performed after delivery, showed a negative result for the infection in the sample; however the author reports that even in the face of this result, vertical transmission cannot be ruled out, and further studies are needed.

There are studies in the literature on the potential for intrauterine vertical transmission of SARS-CoV-2 [18], but newborns from mothers infected with SARS-CoV-2 were negative [9, 17- 18, 30, 32], demonstrating that vertical transmission is still uncertain. Although in a study [32] a positive sample for SARS-CoV-2 was found in the neonate pharyngeal via swab after 36 hours of birth. The author reports that the mother was positive for the infection and during delivery preventive actions were taken to reduce the risk of infection. The newborn had no contact with the mother after delivery, being transferred to isolation and breastfeeding was not performed. As it was not possible to perform the swab collection shortly after birth, transmission by contact during this interval cannot be ruled out. In addition, it is reinforced that among the studies found in this review, none of them identified the presence of the SARS-CoV-2 in breast milk [17-18, 30, 32-33].

As much as the evidence in this review demonstrates that there is no transmission of the SARS-CoV-2 through breast milk, it is emphasized that there is the possibility of contamination of the newborn through the respiratory tract and, both mother and child, must adopt measures of social distance to mitigate the expansion of the SARS-CoV-2 [55] in addition to strict transmission prevention measures [6, 42- 43]. A study [32] emphasized the importance of implementing preventive measures during childbirth, such as, for example, the use of a negative pressure delivery room, aiming at reducing the risk of transmission to the newborn, and considering that the main forms of virus transmission are by droplets and aerosols.

Despite the caution during the process of study selection, data extraction and writing according to the standards of the Cochrane Collaboration [14], this study has some limitations. The first one is related to the small number of studies published so far; in addition to the lack of prospective studies on vertical transmission through breast milk in mothers suspected or confirmed case of SARS-CoV-2. Furthermore, the studies presented have a limited sample size. On the other hand, although this infection is recent, the detailed search in different databases made it possible to include studies from different continents.

## Conclusion

There is insufficient evidence to conclude the occurrence of vertical transmission of SARS-CoV-2 through breast milk, and further investigations are needed. Therefore, it is essential that health professionals strictly carry out infection prevention from the delivery room, according to current recommendations, in addition to promoting health education in groups at risk, especially pregnant women.

Through the evidence found so far, it is emphasized that the mother/child separation in the neonatal period is discouraged, as it impairs the maternal bond, in addition to interfering considerably in breastfeeding. Therefore, due to the low quality of the evidence found, we cannot recommend, avoid or even guarantee that there will be no infection, but we recommend maintaining breastfeeding, considering that all arguments and benefits of breastfeeding are recognized, as long as the mother wants to breastfeed and is breastfed under suitable conditions for this. Therefore, strict measures to prevent the transmission of infection must be carried out by the mother.

## Declarations

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### *Author Contribution*

APVF: Conceptualised and designed overall study, individually shortlisted studies, designed data collection form, extracted data from included studies, interpreted results, co-authored first draft, critically revised all subsequent drafts and approved final draft before submission.

TPRS: Conceptualised and designed overall study, individually shortlisted studies, designed data collection form, extracted data from included studies, interpreted results, co-authored first draft, critically revised all subsequent drafts and approved final draft before submission.

CKD: Conceptualised and designed overall study, prepared and ran searches, cross-checked shortlisted articles and extracted data, analysed extracted data, interpreted results, co-authored first draft, critically revised all subsequent drafts and approved final draft before submission.

LCS: Interpreted results, co-authored first draft, critically revised all subsequent drafts and approved final draft before submission.

MMLF: Interpreted results, co-authored first draft, critically revised all subsequent drafts and approved final draft before submission.

NCPS: Interpreted results, co-authored first draft, critically revised all subsequent drafts and approved final draft before submission.

FPM: Conceptualised and designed overall study, prepared and ran searches, cross-checked shortlisted articles and extracted data, analysed extracted data, interpreted results, co-authored first draft, critically revised all subsequent drafts and approved final draft before submission.

#### *Compliance with Ethical Statements*

*Conflict of Interest:* The authors declare that they have no conflict of interest.

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*Ethical approval:* This article does not contain any studies with human participants or animals performed by any of the authors.

## Abbreviations

CDC - The Centers for Disease control and Prevention

COVID-19 - coronavirus disease

MS - Brazilian Ministry of Health

PRISMA - Preferred Reporting Items for Systematic Reviews and Meta-Analyses

WHO - World Health Organization

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## Tables

**Table 1:** Characteristics of studies included in the scope review (n= 12)

First author, year	Place - City/ State/ Country	Number of Participants	Type of Publication	Milk collection time	Results of milk antibodies (RT-PCR)	Baby's age at infection	Results	Breastfed child
Cuifang Fan, 2020 [17]	China	2 pregnant/2 neonates	Cross-sectional	Day 1	Not detected	Not detected	The study found no evidence about vertical transmission, due to the limited sample size, it is not possible to conclude with clarity whether it really can occur.	Not
Chen et al, 2020 [18]	China	6 pregnant/6 neonates	Cross-sectional	Day 1	Not detected	not specified	The study found no evidence about vertical transmission, due to the limited sample size, it is not possible to conclude with clarity whether it really can occur.	uninformed
Lan Dong, 2020 [30]	China	1 pregnant/1 neonate	Research letter	Day 6	Not detected	Not detected	In this study, high levels of antibodies were detected in a newborn of a mother with COVID-19, however, negative nasopharyngeal swab results detected repeatedly, hinder the conclusion if there was vertical transmission.	Not
Weiyong Liu, 2020 [19]	China	3 pregnant/3 neonates	Cross-sectional	Day 11	Not detected	Not detected	It is not possible to conclude whether there is a risk of vertical transmission of SARS-CoV-2.	Not
Shaoshuai Wang, 2020 [35]	China	1 pregnant/ 1 neonate	Case report	36 hours after delivery	Not detected	<2 days	The data is limited, more studies are needed to determine whether vertical transmission can occur.	Not
Yang Li, 2020 [32]	China	1 pregnant/ 1 neonate	Case report	Day 1	Not detected	Not detected	It is not possible to conclude whether there is a risk of vertical transmission of SARS-CoV-2, even with negative values in the samples collected from the pregnant woman, due to the low sample number.	uninformed
Guan-jing Lang, 2020 [29]	China	1 pregnant/1 neonate	Case report	Day 1 and 4	Not detected	Not detected	Despite negative tests on breast milk samples, the author suggests that breastfeeding can be practiced after the isolation period, and after a negative test for infection.	uninformed

Zhoujie Peng, 2020 [39]	China	1 pregnant/ 1 neonate	Case report	Day 1	Not detected	Not detected	The results demonstrated that vertical transmission of SARS-CoV-2 is unlikely, however, further studies are needed.	No
Augusto Pereira, 2020 [20]	Spain	23 pregnant/ 21 neonatos	Transversal	There was no collection	-	Not detected	There was no vertical or horizontal transmission diagnosed in neonates during labor or breastfeeding, of all breastfed infants, none had the infection.	Yes
Serafina Perrone, 2020 [50]		1 pregnant, 1 neonato	Case report	Day 11	Not detected	Not detected	Hygiene measures by health professionals and mothers of newborns, contribute to the control of infections and their prevention of spread, in the cases of mothers infected with SARS-CoV-2.	Yes
Patrick C. K. Tam, 2020 [40]	Australia	1 woman /1 baby	Case report	5 days after symptom onset	Detected	8 months	Although two samples of breast milk with the presence of SARS-CoV-2 are demonstrated, the risk of contamination of the sample by the environment or by the mother cannot be ruled out, therefore, these findings are uncertain, do not conclude whether there is really a risk of infection through breast milk.	Yes
Y Wu, 2020 [21]	China	3 pregnancy	cohort	Days 1,6 and 27	Detected in a sample	Not detected	The study detected a sample of breast milk with SARS-CoV, however, later samples were negative, so the possibility of viral transmission through breast milk cannot be excluded, until larger studies demonstrate the safety of breast milk, it is recommended not to offer breast milk until the mother's full recovery from the infection.	uninformed

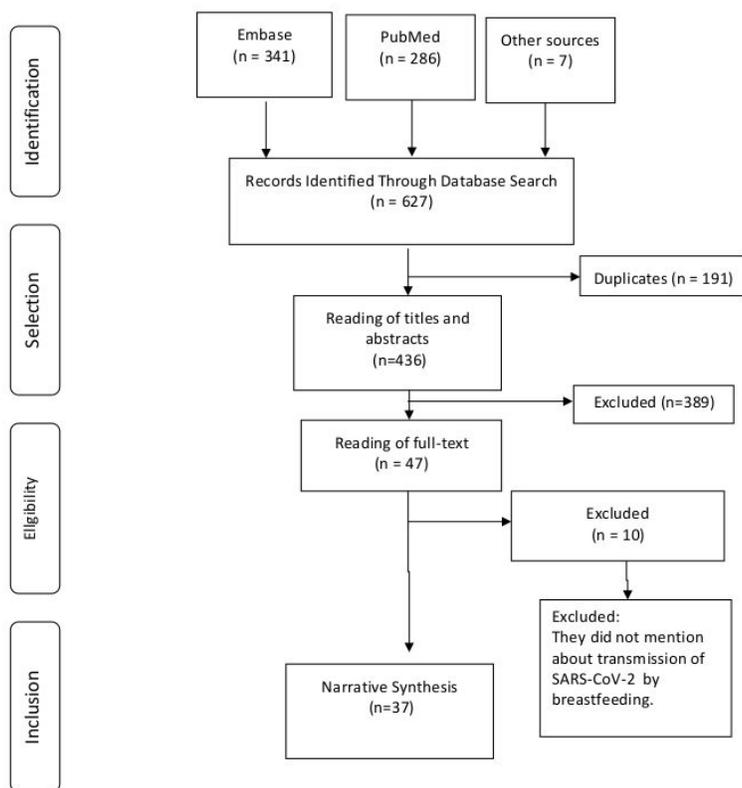
**Tabela 2:** Characteristics of the guidelines included in the scope review (n=14 )

First author, year	Place - City/ State/ Country	Type of Publication	Results
Duijin Chen [7]	China	Guideline	It is recommended that newborns born to mothers suspected of or confirmed by infection, remain in isolation for 14 days, and not be breastfed.
Shi Yuan [23]	China	Guideline	Mothers who are suspected or confirmed by the infection should not breastfeed their children, and they should be isolated for 14 days.
Laishuan [25]	China	Guideline	It is recommended not to breastfeed, as transmission through breast milk cannot be ruled out.
Liona [34]	China, London	Guideline	Due to the lack of evidence to date, mothers who are sick, the separation of mother and child should be performed, and it is recommended to express breast milk to maintain milk production. However, mothers who are able to breastfeed should follow hygiene measures to prevent transmission.
Pavel [33]	Czech Republic	Guideline	There is no consensus on the recommendation of breastfeeding in confirmed or suspected mothers of the infection.
Ordem dos Médicos [36]	Portugal	Guideline	There is no consensus on breastfeeding, due to the lack of evidence.
World Health Organization [43]	Geneva	Guideline	It is recommended that mothers infected or suspected by the infection, be encouraged to breastfeed, hygiene measures must be respected to avoid the transmission of the disease to the newborn.
Centers For Disease Control and Prevention [6]	The United States	Guideline	Breastfeeding should be recommended for mothers who are suspected or confirmed by the infection, respecting hygiene care to prevent infection.
Brazil [45]	Brazil	Technical note	Based on the evidence found so far, there is no recommendation to suspend breastfeeding, so it must be maintained.
NHS [42]	-	Guideline	Confirmed or suspected mothers who have the desire and conditions to breastfeed must perform, respecting the transmission care.
Royal College of Obstetricians & Gynaecologists [10]	London	Guidelines	Confirmed or suspected mothers who have the desire and conditions to breastfeed must perform, respecting the transmission care.
Riccardo [41]	-	Guidelines	Mothers suspected of or confirmed by the infection should be encouraged to breastfeed, following infection transmission protocols.
Talakrishnan Ashokka, 2020 [38]	Singapore	Guidelines	Evidence shows that there is no vertical transmission during pregnancy, however, skin-to-skin contact between mothers and newborns is not recommended, and considerations can be made to allow the use of donated breast milk from COVID-19-free mothers.
Giuliani, 2020 [49]	Italy	Suggestions	It is recommended that mothers suspected of or confirmed by infection should be encouraged to breastfeed, following transmission prevention measures.

**Table 3** - Characteristics of those included in other citations included in the scope review (n = 11)

First author, year	Place - City/ State/ Country	Type of Publication	Results
Jie Qiao, 2020 [22]	China	Comment	Based on the evidence found, it is recommended that newborns be isolated for at least 14 days after birth, avoiding breastfeeding while the mother is suspected or confirmed by COVID-19.
Shao-shuai, 2020 [28]	China	Expert opinion	It is recommended not to breastfeed the children of mothers suspected or infected by the disease, as drugs used such as Lopinavir / ritonavir can be secreted in breast milk.
Sonja, 2020 [26]	The United States	Expert opinion	In view of the scarcity of available evidence, it is recommended that breastfeeding may be instituted after the mother's infection period.
Feng, 2020 [24]	China	Letter	Breastfeeding should be avoided in mothers confirmed by the infection, until their recovery.
David, 2020 [27]	Canada	Expert opinion	It is recommended to isolate the newborn born to mothers with the infection, for 10 days or more, avoiding breastfeeding during the isolation period.
Sonja, 2020 [31]	The United States	Comments	Data on transmission of SARS-CoV-2 through breast milk are limited, so the numbers to determine the recommendation for breastfeeding are insufficient
Paul, 2020 [37]	France	Letter to the Editor	<b>There is a shortage of data to support the transmission of infection through breast milk.</b>
Peyronnet, 2020 [44]	France	Protocol	It has not been possible to prove transmission until now by breast milk, therefore, breastfeeding is recommended respecting the hygiene measures
Kathleen, 2020 [46]	Estados Unidos	Expert opinion	Due to a lack of data on the transmission of infection through breast milk, suspected or confirmed mothers should be encouraged to offer breast Milk.
Liona, 2020 [42]	China	Guidance	<b>Due to the lack of evidence demonstrating the transmission of infection through breast milk, mothers who are able to breastfeed should perform it, following strict hygiene measures.</b>
Pradip, 2020 [48]	Singapore	Narrative	Breastfeeding should not be contraindicated, based on the guidelines, mothers who wish to breastfeed should follow strict hygiene control.

## Figures



**Figure 1**

PRISMA diagram. Details of the literature search and extraction of data for the systematic review

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