http:// health-proviiders.ir
Review Article (Pages: 1-8)

To Breastfeed or not to Breastfeed? An Overview in the Time of the COVID-19 Pandemic

Nafiseh Pourbadakhshan[1], Fatemeh Vafi Sani[2], Iman Nosratabadi[3], Masumeh Ghazanfarpour[4], *Sara Saadat[5], Adeleh Khodabakhshi[6]

[1]Department of Pediatrics, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran. [2]MSc of Operating Room, Department of Operative Room and Anesthetics, School of Paramedical, Sabzevar University of Medical Sciences, Sabzevar, Iran. [3]Student Research Committee, School of Nursing and Midwifery, Sirjan University of Medical Sciences, Sirjan, Iran. [4]Department of Midwifery, Nursing Research Center, Kerman University of Medical Sciences, Kerman, Iran. [5]MD, Pediatric Nephrologist, Assistant Professor, Department of Pediatrics, Division of Nephrology, Dr. Sheikh Hospital, Mashhad University of Medical Sciences, Mashhad, Iran. [6]Student Research Committee, Kerman University of Medical Sciences, Kerman, Iran.

Abstract

Background: Despite the importance of breastfeeding for mothers and infants, many women refuse to breastfeed due to the lack of knowledge about the transmission of COVID-19 through breast milk. The present study aimed to summarize the latest evidence about breastfeeding during the COVID-19 pandemic.

Materials and Methods: In this overview, two independent researchers screened all reviews, systematic reviews and meta-analyses, and scoping reviews that addressed breastfeeding in the context of the COVID-19 pandemic in the Scopus, EMBASE, Cochrane, Web of Science, Medline, CIVILICA, and CINAHL databases available in full-text in Persian or English, without time restrictions up to November 2022.

Results: Vertical transmission from a mother with COVID-19 to her child cannot be confirmed or denied. There is no evidence of the virus in the amniotic fluid at the time of birth or in breast milk, so it is indicated that breastfeeding should be continued but under strict compliance with safety and hygiene measures. The World Health Organization still advises mothers suspected of or infected with COVID-19 to continue breastfeeding, taking into account the significant benefits of breastfeeding compared to its possible risks.

Conclusion: Breastfeeding is the best protective measure for healthy and at-risk infants and their mothers during the COVID-19 pandemic. Adherence to health protocols can reduce the risk of transmission of COVID-19 infection through breastfeeding from mother to baby.

Key Words: Breastfeeding; Breast milk; COVID-19, SARS-CoV-2.

*Please cite this article as: Pourbadakhshan N, Vafi Sani F, Nosratabadi I, Ghazanfarpour M, Saadat S, Khodabakhshi A. To Breastfeed or not to Breastfeed? An Overview in the Time of the COVID-19 Pandemic. Health Provid 2023; 3(1): 1-8. DOI: **10.22034/HP.2022.368456.1026**

Corresponding Author:

Sara Saadat, MD, Department of Pediatrics, Dr. Sheikh Hospital, Mashhad University of Medical Sciences, Mashhad, Iran.

Email: dr.sarasaadat90@gmail.com

Received date: Jan. 15, 2023; Accepted date: Jun.22, 2023

1- INTRODUCTION

There is well-documented evidence that breastfeeding is the optimal way of feeding babies, e.g., protecting children against morbidity and mortality due to infectious diseases, starting from birth and throughout infancy and childhood. Breastfeeding protects against respiratory infections and reduces the risk of otitis media and sudden infant death syndrome. In the long term, it reduces the risk of dental malocclusion, overweight/obesity, and diabetes mellitus. The World Health Organization (WHO) declares breast milk as the ideal food for infants because it is safe and clean and contains antibodies that protect against many common childhood illnesses (1-4).

Based on the breastfeeding benefits, the World Health Organization recommends that breastfeeding begins within the first hour of a baby's life and continues as often and as much as the baby wants (5). The WHO also recommends exclusive breastfeeding for the first six months of life, followed by continued breastfeeding with appropriate complementary foods for up to two years and beyond (1, 2, 6). Coronavirus disease 2019 (COVID-19) is a contagious disease caused by a virus, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first known case was identified in Wuhan, China, in December 2019. The disease quickly spread worldwide, resulting in the COVID-19 pandemic (7-10).

Since late 2019, COVID-19 has affected many around the world, including pregnant and breastfeeding women. In the recent coronavirus pandemic, there have been many concerns about the transmission of this virus from mother to baby during pregnancy and after delivery. As breastfeeding is the golden key to the health of the mother and the baby, following the instructions of the World Health Organization on the exclusive feeding of the baby with breast milk in the first six months of life and considering the weakness and lack of development of the immune system of babies, especially premature babies, the importance of breastfeeding increases in the COVID-19 pandemic (11, 12). Some aspects of the COVID-19 disease remain unknown, and there is not much information about it. Also, many studies about breastfeeding during the COVID-19 pandemic published worldwide need to be updated with more recent data. Therefore, this overview investigates the latest published studies (reviews, systematic reviews and meta-analyses, and scoping reviews) on breastfeeding during the COVID-19 pandemic.

2- MATERIALS AND METHODS

This overview includes all reviews, systematic reviews and meta-analyses, and scoping reviews written in Persian or English, which addressed the issue of breastfeeding in the context of COVID-19 on the electronic databases of Scopus, EMBASE, Cochrane, Web of Science, CIVILICA, CINAHL, and Medline (via PubMed), available in full-text with no time limitation (up to November 20, 2022). Two independent researchers conducted the search process, and one supervisor resolved any discrepancies. The following steps were taken to develop this review: (1) identifying the research question; (2) identifying the relevant studies; (3) selecting the studies; (4) summarizing and reporting the data. Articles that met the inclusion criteria were selected for the review, and relevant references were searched for further studies.

3- RESULTS

Based on the available literature and the goal of the present review, 17 articles were included (14 review articles, two systematic reviews and meta-analyses, and one scoping review). In the following, the

results found about breastfeeding during the COVID-19 pandemic are summarized in the following:

1. A review of the latest studies on breastfeeding during the COVID-19 pandemic found no evidence of the COVID-19 virus in breast milk or its transmission through breastfeeding. The review stated that all mothers with confirmed or suspected COVID-19 should continue to breastfeed their infants following hygiene and respiratory precautions (13).

2. A review on how to map the current evidence-based literature about breastfeeding and COVID-19 showed that breastfeeding should not be interrupted, mothers and infants should not be separated, and skin-to-skin contact should not be discontinued. While ensuring normality as far as possible, general infection control measures should be in place and adhered to very strictly (14).

3. A review of publications on breastfeeding during COVID-19 aimed to summarize the latest evidence about the safety of breastfeeding among suspected/confirmed infected mothers and the recommendations on breastfeeding during COVID-19 from different organizations. The results showed that the transmission of SARS-CoV-2 from infected mothers via breast milk was unlikely. However, owing to the low quality of the current evidence, the safety of breastfeeding during COVID-19 is still insufficiently reported. Therefore, further studies with robust designs are warranted to determine the safety of breastfeeding (15).

4. A scoping review aimed to determine the effectiveness of protective recommendations on perinatal care on breastfeeding during the COVID-19 pandemic. Most of the reviewed papers (73 out of 86, 85%) included recommendations concerning breastfeeding. In 23, which addressed this issue (32%), feeding babies with expressed mother's milk (EMM) was allowed when breastfeeding was not possible. Few papers (22, 30%) provided information about donor human milk (DHM) as an alternative in the absence of EMM because of COVID-19 (16).

5. A rapid review aimed at mother-to-child transmission of COVID-19 during breastfeeding found no evidence of SARS-CoV-2 viral nucleic acid in breast milk. The benefits of breastfeeding outweigh the risk of SARS-CoV-2 infection in infants (17).

6. A review aimed to summarize the current evidence-based literature about breastfeeding during COVID-19 showed no evidence of SARS-CoV-2 transmission through breast milk. A growing number of studies indicate the presence of antibodies in the mother's milk that protect against severe and even morbid COVID-19 (18).

7. A review aimed to map scientific evidence on the possible risks of vertical or horizontal transmission of SARS-CoV-2 through breastfeeding and the benefits of human milk for the child's immunologic protection against COVID-19. The results showed that although the presence of viral RNA had already been detected by reverse transcriptase polymerase chain reaction in breast milk samples, no proven cases of vertical transmission via human milk exist. In addition, there is evidence of potential immunological protection by transferring antibodies against SARS-CoV-2 through breast milk (19).

8. A systematic review (n=14 studies) aimed to provide comprehensive evidence regarding potential virus transmission and antibody transfer through breast milk and the experiences of mothers from breastfeeding during the COVID-19 pandemic. The results showed that considering the benefits of breastfeeding and no adequate evidence for transmission

of COVID-19 via breast milk, there was no indication against breastfeeding. However, adherence to universal protocols can reduce the risk of mother-to-child transmission of COVID-19 (20).

9. A systematic review of 20 studies aimed to describe perinatal and neonatal outcomes in newborns exposed to SARS-CoV-2. The results based on current studies showed that vertical transmission could not be confirmed or dismissed. Current literature does not support abstaining from breastfeeding nor separating mothers and newborns. Further evidence and data collection networks are needed to establish definitive guidelines and recommendations (21).

10. A review aimed to provide guidance to clinicians and families on breastfeeding in the context of SARS-CoV-2. The results showed that breast milk did not play a significant role in the transmission of SARS-CoV-2, and mothers with suspected or confirmed COVID-19 could directly breastfeed with appropriate precautions (22).

11. A review of 20 studies aimed to provide guidance on breastfeeding for mothers with suspected or confirmed COVID-19. The results showed that all maternal decisions for breastfeeding could be justifiable as the infection by COVID-19 is still poorly known. However, puerperal women and their families must be well informed to make a conscious choice based on the information available in the literature so far (23).

12. A review examined the available evidence on the risks of transmission of infection from COVID-19 mothers to their newborns through breastfeeding. The results showed that based on the currently available evidence and recognizing the benefits of breastfeeding when the health of the mother and her newborn allows, direct breastfeeding or extracted breast milk should be encouraged by healthcare providers after a careful discussion of the risks of vertical transmission to the mother and her family. Preventive measures should be taken by COVID-19-positive mothers to prevent droplet transmission of infection to infants while breastfeeding (24).

13. A review aimed to investigate the action plan on breastfeeding in postpartum women with SARS-CoV-2 and their newborns. The results highly recommended breastfeeding in postpartum women with SARS-CoV-2 for the newborn if the health of the mother and newborn allowed it. If the mother's health does not permit direct breastfeeding, her breast milk should be extracted and kept unpasteurized (25).

14. A review aimed to summarize the current evidence-based literature about breastfeeding during COVID-19. The results showed that even in the communities where COVID-19 is prevalent, mothers should breastfeed as it provides not only survival and lifelong health and development advantages to newborns and infants but also improves the health of mothers. Also, the COVID-19 virus was not found in breast milk, and no amniotic fluid, breast milk, cord blood, or neonatal pharyngeal sample swabs tested positive. Mothers should follow infection prevention measures, such as washing hands, cleaning surfaces, and sneezing or coughing into a tissue while feeding the infant (26).

15. A review aimed to delineate the role of breastfeeding by women with suspected or diagnosed COVID-19. It looked for reports on the role of the breast-milk microbiota in the COVID-19 pandemic. The results showed that vertical transmission of COVID-19 from mother to child has not been documented. There was no evidence of the virus in the amniotic fluid at the time of birth or in breast milk, so breastfeeding should be continued, but

under strict compliance with safety and hygiene measures (27).

16. A review investigated the published data so far regarding the transmission risk of SARS-CoV-2 via human milk. The results showed that most existing studies on women with COVID-19 did not detect the virus in breast milk. Based on currently available data, breastfeeding and human milk were not contraindicated for infants born to mothers suspected or confirmed with COVID-19 (28).

17. A review aimed to investigate the action plan on breastfeeding in postpartum women with SARS-CoV-2 and their newborns. The results found breastfeeding the best for the newborn. The analysis of mothers' milk samples detected coronavirus antibodies, a protective factor against infection. Breastfeeding in postpartum women with SARS-CoV-2 is highly recommended for the newborn if the health of the mother and newborn allows it (29).

4- DISCUSSION

This rapid overview summarized the latest evidence on breastfeeding during the COVID-19 pandemic. The review of the results showed that current literature does not support abstaining from breastfeeding nor separating mothers and newborns, and breast milk is the best source of nutrition for infants, including infants whose mothers have confirmed or suspected coronavirus infection. The vertical transmission of COVID-19 from mother to child has not been documented.

The risk of viral transfer from the mother to her infant through breast milk appears very low. In the limited studies available so far, there is little evidence to suggest a risk of SARS-CoV-2 (i.e., the virus that causes COVID-19) transmission from mother to baby via breast milk. A systematic review of eight studies showed that of 24 pregnant women with COVID-19 pneumonia during their third trimester, no breast milk samples were positive for SARS-CoV-2 genetic material and thus could not cause infection (30). Therefore, vertical transfer of the virus through breast milk is unlikely. Rather, the risk of viral transfer is mostly through respiratory droplets and secretions from infected individuals to the newborn (31). In various studies, breast milk samples of mothers suspected and infected with COVID-19 were negative for the coronavirus (32-34). Moreover, a study reported secretory immunoglobulin A (sIgA) immune response against the COVID-19 virus was found in 12 of 15 breast milk samples from mothers with COVID-19 (35). Even in the face of the COVID-19 pandemic, breastfeeding is still safe and highly recommended. Current guidelines from all major health organizations, including the World Health Organization (36), UNICEF (37), the American College of Obstetrics and Gynecology (38), the American Academy of Pediatrics (39), and the CDC (40), are in agreement that mothers can and should breastfeed their newborns even if they are positive for COVID-19.

Close contact with the mother and early and exclusive breastfeeding help babies thrive. Therefore, even if a mother has COVID-19, she is encouraged to touch and hold her baby, breastfeed safely with good respiratory hygiene, hold the baby skin-to-skin, and share a room with the child. The WHO recommends that mothers exclusively breastfeed their infants for the first six months of life. Afterward, mothers should both breastfeed and give the child nutritious and healthy food up to the age of two years and even beyond (1-6, 41). If a mother is too unwell to breastfeed her baby due to COVID-19, she should receive support for safely giving her baby breast milk via other means, including expressing milk, re-lactation (the process of resuming breastfeeding after a period of no or very

little breastfeeding), or the use of human donor milk from certified milk banks (41). Guidelines for COVID-19-positive mothers and their infants have changed dramatically since the start of the pandemic. Initially, infected mothers in Wuhan were urged to stay isolated from their newborns and stop breastfeeding. On March 18th, 2020, the WHO released recommendations that allowed for direct breastfeeding of the infant with certain precautions if possible (42). Now, it seems not only safe but highly recommended by all major global health organizations for COVID-positive women to breastfeed directly and have skin-to-skin contact with their newborns. However, certain precautions must be taken to minimize transfer by respiratory droplets and secretions, the main method of viral transmission for COVID-19 (43). These precautions include:

- Washing hands with soap and water before touching the baby,
- Wearing a face mask while feeding,
- Washing feeding equipment such as pumps and bottles with soap and water before feeding,
- Frequently sanitizing all high-contact surfaces in the environment,
- If a mother is too ill to breastfeed directly, the next best option would be to feed express milk to the infant remotely. However, all efforts should be given to keeping the mother and child dyad together and supporting the continued expression of milk to maintain milk stores (36-40).

If a mother with confirmed COVID-19 is unable to breastfeed, the best alternatives are in this order: 1) expressed breast milk, 2) donor human milk, 3) wet nursing, and 4) infant formula as the last option (44).

5- CONCLUSION

The current literature does not support abstaining from breastfeeding nor separating mothers and newborns. The vertical transmission of COVID-19 from mother to child has not been documented. Further evidence and data collection networks are needed to establish definitive guidelines and recommendations. Even in the face of the COVID-19 pandemic, breastfeeding is still safe and highly recommended. Based on available evidence, WHO recommendations on the initiation and continued breastfeeding of infants and young children also apply to mothers with suspected or confirmed COVID-19. Preventive measures should be taken by COVID-19-positive mothers to prevent droplet transmission of infection to infants while breastfeeding.

6- CONFLICT OF INTEREST: None.

7- REFERENCES

1. "Infant and young child feeding Fact sheet N°342". World Health Organization (WHO). 9 June 2021. Archived from the original on 8 February 2015. Retrieved 8 February 2015.

2. Johnston M, Landers S, Noble L, Szucs K, Viehmann L, et al. "Breastfeeding and the use of human milk". Pediatrics, 2012;129(3):e827–e41. doi:10.1542/peds.2011-3552.

3. Ip S, Chung M, Raman G, Trikalinos TA, Lau J. "A summary of the Agency for Healthcare Research and Quality's evidence report on breastfeeding in developed countries". Breastfeeding Medicine. 2009; 4 (Suppl 1): S17–S30.

4. Eglash A, Leeper K. The Little Green Book of Breastfeeding Management for Physicians & Other Healthcare Providers (7 ed.). Madison, WI: The Institute for the Advancement of Breastfeeding and Lactation Education, 2020. ISBN 978-0-9987789-0-7.

5. "Infant and young child feeding Fact sheet N°342". WHO. February 2014. Archived from the original on 8 February 2015. Retrieved 8 February 2015.

6. Kramer MS, Kakuma R. "Optimal duration of exclusive breastfeeding". The Cochrane

Database of Systematic Reviews. 2012(8): CD003517.

7. Zhou P, Yang XL, Wang XG, Hu B, Zhang L, Zhang W, et al. A pneumonia outbreak associated with a new coronavirus of probable bat origin. Nature. 2020; 579(7798):270–3.

8. Page J, Hinshaw D, McKay B. "In Hunt for Covid-19 Origin, Patient Zero Points to Second Wuhan Market – The man with the first confirmed infection of the new coronavirus told the WHO team that his parents had shopped there". The Wall Street Journal. Retrieved 27 February 2021.

9. Ghodsi A, Malek A, Ghahremani S. A review of multisystem inflammatory syndrome in children (MIS-C) associated with COVID-19. cal. Hormozgan Med J., 2020;e107048. doi: 10.5812/hmj.107048.

10. Ghodsi A, Bijari M, Alamdaran SA, Saberi A, Mahmoudabadi E, Balali MR, et al. Chest computed tomography findings of COVID-19 in children younger than 1 year: a systematic review. World J Pediatr. 2021 Jun;17(3):234.

11. Breastfeeding and COVID-19. Scientific Brief. 23 June 2020.

12. Taghizade Moghaddam, H., Khodaee, G., Ajilian Abbasi, M., Saeidi, M. Infant and Young Child Feeding: a Key area to Improve Child Health. International Journal of Pediatrics, 2015; 3(6.1): 1083-92.

13. Heydarpoor Z, Valizadeh L. COVID-19 and Breastfeeding. J Arak Uni Med Sci 2020; 23 (5) :646-653

14. Lubbe, W., Botha, E., Niela-Vilen, H. et al. Breastfeeding during the COVID-19 pandemic – a literature review for clinical practice. Int Breastfeed J, 2020;15: 82.

15. Liu X, Chen H, An M, Yang W, Wen Y, Cai Z, Wang L, Zhou Q. Recommendations for breastfeeding during Coronavirus Disease 2019 (COVID-19) pandemic. Int Breastfeed J. 2022 Apr 11;17(1):28.

16. Wesołowska A, Orczyk-Pawiłowicz M, Bzikowska-Jura A, Gawrońska M, Walczak B. Protecting Breastfeeding during the COVID-19 Pandemic: A Scoping Review of Perinatal Care Recommendations in the Context of Maternal and Child Well-Being. Int J Environ Res Public Health. 2022 Mar 11;19(6):3347.

17. Yang N, Che S, Zhang J, Wang X, Tang Y, Wang J, et al. COVID-19 Evidence and Recommendations Working Group. Breastfeeding of infants born to mothers with COVID-19: a rapid review. Ann Transl Med. 2020 May;8(10):618.

18. UNICEF. Breastfeeding during the COVID-19 pandemic. Tips on keeping your baby healthy and safe. Available from: https://www.unicef.org/eap/breastfeeding-during-covid-19.

19. Natarelli TRP, Brassarola HGM, Fonseca LMM. Breastfeeding during the COVID-19 pandemic: what do we know so far? Einstein (Sao Paulo). 2022 Jul 8; 20: eRW6609.

20. Eighty Mardiyan Kurniawati, Nur Anisah Rahmawati, Innas Safira Putri, Deandra Maharani Widiatmaja, Venansya Maulina Praba, Visuddho, Faida Ufaira Prameswari, et al. The Content of Breast Milk and the Challenges Experienced by Breastfeeding Mothers during the COVID-19 pandemic: A Systematic Review. Open Public Health Journal, 2022; 15(1): e187494452206130.

21. Duran P, Berman S, Niermeyer S, Jaenisch T, Forster T, Gomez Ponce de Leon R, De Mucio B, Serruya S. COVID-19 and newborn health: systematic review. Rev Panam Salud Publica. 2020 Apr 27;44:e54.

22. Cheema R, Partridge E, Kair LR, Kuhn-Riordon KM, Silva AI, Bettinelli ME, Chantry CJ, Underwood MA, Lakshminrusimha S, Blumberg D. Protecting Breastfeeding during the COVID-19 Pandemic. Am J Perinatol. 2020 Jul 21:10.1055/s-0040-1714277.

23. Calil VMLT, Krebs VLJ, Carvalho WB. Guidance on breastfeeding during the Covid-19 pandemic. Rev Assoc Med Bras (1992). 2020 Apr;66(4):541-46.

24. Bhatt H. Should COVID-19 Mother Breastfeed her Newborn Child? A Literature Review on the Safety of Breastfeeding for Pregnant Women with COVID-19. Curr Nutr Rep. 2021 Mar;10(1):71-75.

25. Fernández-Carrasco FJ, Vázquez-Lara JM, González-Mey U, Gómez-Salgado J, Parrón-Carreño T, Rodríguez-Díaz L. Infección por coronavirus Covid-19 y lactancia materna: una revisión exploratoria. Coronavirus Covid-19 infection and breastfeeding: an exploratory

review. Rev Esp Salud Publica. 2020 May 27;94:e202005055.

26. S Suvitha, S.Sridevy. Review on Breast Feeding and Covid-19. Indian J Surg Nurs. 2020;9(2):90–2.

27. Lubbe, W., Botha, E., Niela-Vilen, H. et al. Breastfeeding during the COVID-19 pandemic – a literature review for clinical practice. Int Breastfeed J, 2020; 15: 82.

28. Rozeta Sokou, Aikaterini Konstantinidi and Theodora Boutsikou et al. Breastfeeding in the era of COVID-19. A narrative review. Journal of Obstetrics and Gynaecology,2021; 42(4):539-45.

29. Fernández-Carrasco FJ, Vázquez-Lara JM, González-Mey U, et al. Coronavirus Covid-19 infection and breastfeeding: an exploratory review. Revista Espanola de Salud Publica. 2020 May;94:e202005055. PMID: 32458823.

30. Martins-Filho PR, Santos VS, Santos Jr HP. To breastfeed or not to breastfeed? Lack of evidence on the presence of SARS-CoV-2 in breastmilk of pregnant women with COVID-19. Revista Panamericana de Salud Pública. 2020;44:e59.

31. Cheema R, Partridge E, Kair LR, et al. Protecting Breastfeeding during the COVID-19 Pandemic. Am J Perinatol.2021, MEDLINE- ID: covidwho-658632.

32. Chen, Huijun; Guo, Juanjuan; Wang, Chen; Luo, Fan; Yu, Xuechen; Zhang, Wei; et al. Lancet ; 395(10226): 809-815, 2020 03 07.

33. Wang S, Guo L, Chen L, Liu W, Cao Y, Zhang J, Feng L. A Case Report of Neonatal 2019 Coronavirus Disease in China. Clin Infect Dis. 2020 Jul 28;71(15):853-857.

34. Zhu H, Wang L, Fang C, Peng S, Zhang L, Chang G, Xia S, Zhou W. Clinical analysis of 10 neonates born to mothers with 2019-nCoV pneumonia. Transl Pediatr. 2020;9(1):51-60.

35. Fox A, Marino J, Amanat F, Krammer F, Hahn-Holbrook J, Zolla-Pazner S, Powell RL. Evidence of a significant secretory-IgA-dominant SARS-CoV-2 immune response in human milk following recovery from COVID-19. medRxiv preprint doi: https://doi.org/10.1101/2020.05.04.20089995.

36. Breastfeeding and COVID-19. World Health Organization; 06/23/2020, 2020. Accessed November 23, 2020. https://www.who.int/news-room/commentaries/detail/breastfeeding-and-covid-19.

37. Breastfeeding safely during the COVID-19 Pandemic. UNICEF; May 28, 2020, 2020. Accessed Nov 23, 2020. https://www.unicef.org/coronavirus/breastfeeding-safely-during-covid-19-pandemic.

38. Novel Coronavirus 2019 (COVID-19). American College of Obstetricians and Gynecologists; Nov 6, 2020, 2020. Accessed Nov 23, 2020. https://www.acog.org/clinical/clinical-guidance/practice-advisory/articles/2020/03/novel-coronavirus-2019.

39. Breastfeeding Guidance Post Hospital Discharge for Mothers or Infants with Suspected or Confirmed SARS-CoV-2 Infection. American Academy of Pediatrics; Sep 18, 2020, 2020. Accessed Nov 23, 2020. https://services.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/breastfeeding-guidance-post-hospital-discharge/.

40. Coronavirus Disease (COVID-19) and Breastfeeding. Centers for Disease Control and Prevention; Jun 4, 2020, 2020. Accessed Nov 23, 2020. https://www.cdc.gov/breastfeeding/breastfeeding-special-circumstances/maternal-or-infant-illnesses/covid-19-and-breastfeeding.html.

41. WHO, Retinol office for Europe. COVID-19 and breastfeeding.

42. Pereira A, Cruz-Melguizo S, Adrien M, et al. Breastfeeding mothers with COVID-19 infection: a case series. International breastfeeding journal. 2020;15(1):1-8.

43. Meyerowitz EA, Richterman A, Gandhi RT, Sax PE. Transmission of SARS-CoV-2: A Review of Viral, Host, and Environmental Factors. Ann Intern Med. 2021 Jan;174(1):69-79.

44. World Health Organization. Frequently asked questions: Breastfeeding and COVID-19 for health care workers. Journal of Human Lactation. 2020;36:392-96.