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COMMENTARY

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When separation is not the answer: Breastfeeding mothers and infants affected by COVID-19

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Abstract

The World Health Organization (WHO) has provided detailed guidance on the care of infants of women who are persons under investigation (PUI) or confirmed to have COVID-19. The guidance supports immediate post-partum mother–infant contact and breastfeeding with appropriate respiratory precautions. Although many countries have followed WHO guidance, others have implemented infection prevention and control (IPC) policies that impose varying levels of post-partum separation and discourage or prohibit breastfeeding or provision of expressed breast milk. These policies aim to protect infants from the potential harm of infection from their mothers, yet they may fail to fully account for the impact of separation. Global COVID-19 data are suggestive of potentially lower susceptibility and a typically milder course of disease among children, although the potential for severe disease in infancy remains. Separation causes cumulative harms, including disrupting breastfeeding and limiting its protection against infectious disease, which has disproportionate impacts on vulnerable infants. Separation also presumes the replaceability of breastfeeding—a risk that is magnified in emergencies. Moreover, separation does not ensure lower viral exposure during hospitalizations and post-discharge, and contributes to the burden on overwhelmed health systems. Finally, separation magnifies maternal health consequences of insufficient breastfeeding and compounds trauma in communities who have experienced long-standing inequities and violence, including family separation. Taken together, separating PUI/confirmed SARS-CoV-2-positive mothers and their infants may lead to excess preventable illnesses and deaths among infants and women around the world. Health services must consider the short-andlong-term impacts of separating mothers and infants in their policies.

KEYWORDS

breastfeeding, COVID-19, mother–infant separation, SARS-CoV-2

1 | BACKGROUND

Health policy development for pregnant women, new mothers and infants in the rapidly changing COVID-19 pandemic presents a significant challenge for governments and organizations.

On March 13, 2020, the World Health Organization (WHO) published detailed guidance on the care of infants of women who are confirmed to have COVID-19 or who are a person under investigation (PUI) for COVID-19. This guidance recommends immediate post-partum skin-to-skin contact, breastfeeding and rooming-in, with the addition of hand washing and mask-wearing precautions (WHO, 2020a). These recommendations are informed by evidence that SARS-CoV-2 has thus far not been found in breast milk and severe COVID-19 illness is rare in infants, coupled with extensive evidence that early proximity and breastfeeding are protective of infant health (WHO, 2020a). In the WHO guidance, separating an infant from their mother and supporting feeding of expressed milk, donor milk or a breast milk substitute are only recommended when the mother is too ill to care for the infant or the infant is too ill to breastfeed. The WHO guidance builds on decades of work on maternal and infant health (WHO, 2003, 2017a, 2017b) and has remained consistent since it was first released. Further clarification has been issued on April 28, 2020, strengthening these recommendations and providing additional information for the public as well as health care workers (WHO, 2020b). Many governments and health authorities have issued guidelines aligned with the WHO guidance (College Perinatale Zorg, 2020; Davanzo et al., 2020; Public Health Agency of Canada, 2020; Queensland Clinical Guidelines, 2020; Royal College of Obstetricians and Gynaecologists et al., 2020).

Nonetheless, reports from high- and low-resource contexts indicate that COVID-19-related hospital infection prevention and control (IPC) policies are being implemented that impose varying levels of post-partum separation and discourage or prohibit breastfeeding or provision of expressed breast milk by PUI or COVID-19-confirmed mothers. In China, where COVID-19 first arose, mothers and infants were routinely separated and recommended feeding infants with breast milk substitutes (L. Wang, Shi, et al., 2020). A number of other countries have put forth similar guidance to move, or to consider moving, PUI and COVID-19-confirmed mothers and infants immediately after birth into separate rooms, including the Philippines (Philippine Obstetrical and Gynecological Society, 2020), Indonesia (Pemerintah Kabupaten Kulon Progo, 2020), Thailand (Royal College of Obstetricians and Gynaecologists of Thailand, 2020), India (Chawla et al., 2020), Malaysia (Ministry of Health Malaysia, 2020), Japan (Japanese Society for Neonatal Health and Development, 2020) and, initially, the United States (Centers for Disease Control and Prevention, 2020). In the majority of cases where mothers and infants are separated, guidelines encourage mothers to express breast milk to be delivered via healthy caregivers; in some other cases, however, even expressed milk feeding may be prohibited (e.g., Malaysia). If separation is not possible due to facility limitations and/or 'maternal wishes', or 'rooming in' is allowed, 1.5–2 m of distance between mother and infant or other barriers may be recommended (Centers for Disease Control and Prevention, 2020; Republic of Vietnam Ministry of Health, 2020; Royal College of Obstetricians and Gynaecologists of Thailand, 2020; Western Sydney Local Health District, 2020). In practice, however, even when direct breastfeeding is permitted, it may not be prioritized or adequately supported, particularly when the default recommendation is separation. Similarly, adequate support for breast milk expression when separation is implemented may not be provided.

Key messages

- The World Health Organization has provided comprehensive guidance that promotes proximity and breastfeeding for mothers and infants affected by COVID-19.
- Some settings followed WHO guidance, whereas others implemented policies that impose separation on COVID-19-affected mothers and infants.
- Separation policies aim to protect infants from potential harm from maternal infection with SARS-CoV-2 but fail to account for the impacts of separation.
- Separation policies have detrimental effects on breastfeeding and do not ensure lower viral exposure, resulting in potential excess deaths.
- Health services must consider the full impacts of separating mothers and infants in their policies.

Separation policies aim to protect infants from potential harm of post-natal infection by their COVID-19-suspected or -confirmed mothers. Although we share these concerns, in this commentary, we suggest that these policies may fail to fully account for the impact of separation given current evidence on infant risks from SARS-CoV-2 infection and established importance of proximity and breastfeeding for infants' and women's health.

2 | LIMITED EVIDENCE ON COVID-19 IN INFANTS

The body of evidence on COVID-19 in infants has grown substantially since February 2020. Research data and reviews show that children constitute a lower proportion of cases than would be expected and generally have milder illness (Du et al., 2020; Ludvigsson, 2020; Tan et al., 2020; Wu & McGoogan, 2020; Zhu et al., 2020). Nevertheless, some severe cases among infants have been reported, and robust understanding of prevalence and severity continues to be hindered by insufficient testing.

To date, the largest study of COVID-19 focusing on children (n = 2,143) originates from China and combines 35.9% laboratory confirmed and 64.1% suspected cases (Dong et al., 2020). The authors

argued that, whereas children had relatively mild symptoms overall, infants as a subset had relatively more severe illness compared with other children. However, suspected cases were more likely to have severe symptoms than confirmed cases (Robinson, 2020), and, among the 85 infants with confirmed COVID-19, 78 (92%) had no, mild or moderate symptoms, whereas 7 infants (8.2%) had severe or critical symptoms (Dong et al., 2020).

Several other settings have so far reported on infection rates in children. As of April 27, 2020, Italy reported 1.8% of confirmed cases were among children and two deaths <10 years (no details provided) out of 199,470 individuals (The COVID-19 Task Force of the Department of Infectious Diseases and the IT Service Istituto Superiore di Sanità, 2020). These cases are relatively proportionate to the 1.5% of <18 population of Italy, an aging nation. In Spain, with a younger population, 0.8% of 4,695 confirmed cases constituted children, 60% of whom required hospitalization, and 9.7% were admitted to PICU (Tagarro et al., 2020). In the United States, in a much younger population (22% under 18 years), data through April 2, 2020, suggest similarly low proportions: of 149,082 cases, 1.7% were among children, of which infants constituted 15% (n = 380) (CDCMMWR, 2020). This likely represents significant underreporting of actual cases across all age groups. In these data, a greater proportion of severe cases have been reported among infants, requiring hospitalization (59/95 paediatric cases with known hospitalization status and 5/15 PICU admissions) (CDCMMWR, 2020). In the limited sample (n = 295) where hospitalization and underlying condition data were available, most of those hospitalized (28/37 or 77%) had at least one underlying condition, including all those admitted to an ICU. Most paediatric cases, however, lacked data on hospitalization and underlying conditions, and feeding mode was unavailable (CDCMMWR, 2020). Moreover, three infants infected with SARS-CoV-2 were reported to have died; however, their cause of death has not been reported, and it is unknown whether COVID-19 was implicated in these cases (CDCMMWR, 2020). Among 16,749 patients hospitalized with COVID-19 in the United Kingdom as of April 18, 2020, children were again under-represented, with only 0.8% of the cases under 5 years of age (Docherty et al., 2020). These data further suggest low prevalence of severe cases among children. Finally, recent work from Iceland (Gudbjartsson et al., 2020), where both targeted and large-scale population screening were undertaken, reported substantially lower incidence of infection among children under 10 years despite elementary schools remaining open. Among children under 10 years, no positive cases were found in the large-scale population screening (n = 848) and 38 (6.7%) tested positive in the targeted screening group (n = 564), compared with 0.8% and 13.7%, respectively, in persons aged 10 and over. Debates over susceptibility remain unresolved, however, as detailed contact tracing from China suggests that children within households had the same likelihood of being infected as adults (Bi et al., 2020) and viral loads of children are similar to those of adults (Jones et al., 2020). Taken together, global COVID-19 data are suggestive of potentially lower susceptibility and a typically milder course of disease among children, although the potential for severe disease in infancy remains.

3 | THE CUMULATIVE IMPACTS OF SEPARATION

Acute harms of physical separation on overall infant health and breastfeeding are well documented. They constitute a key foundation for the '10 Steps to Successful Breastfeeding' and the basis for implementing the Baby Friendly Hospital Initiative (WHO, 2020), a global effort to protect, promote and support breastfeeding in the context of maternity services. Skin-to-skin contact and proximity are important for infant health and for early maternal–infant interaction regardless feeding mode, but closeness is particularly important for initiating and maintaining breastfeeding (cf. Escamilla, Martinez, Segura-Pscamilla, Martinez, & Segura, 2010; Moore, Bergman, Anderson, & Medley, 2016; Widström, Brimdyr, Svensson, Cadwell, & Nissen, 2019). While there is growing concern about the impact of separation policies (Bartick, 2020; Stuebe, 2020), the sequelae of COVID-19-related separation and corresponding insufficient breastfeeding have not yet been adequately mapped.

3.1 | Separation limits breastfeeding's protection against infectious disease

Lactation, an evolutionary adaptation shared by mammals, simultaneously provides infants with developmentally appropriate nutrition and protection against infectious diseases (Tomori, Palmquist, & Quinn, 2018). Infants are inherently vulnerable to infections due to their immature immune systems (Goronzy & Weyand, 2019). Breastfeeding provides infants with passive immune support through a complex of nutrients, immune cells and other biologically active components that support infant health, growth and development (Cacho & Lawrence, 2017). Worldwide, infants who are not exclusively breastfed are more likely to become seriously ill or perish from infections (Victora et al., 2016). The impact of breastfeeding on respiratory infections is especially notable (Quigley, Carson, Sacker, & Kelly, 2016; Raheem, Binns, & Chih, 2017; Victora et al., 2016). Whereas SARS-CoV-2 is a novel virus, breastfeeding's antimicrobial and antiviral properties are well documented and likely to provide important protective effects (Cacho & Lawrence, 2017; Liang et al., 2020). A case study from China of a breastfeeding mother and 13-month-old child found no evidence of virus but detected IgG antibodies in the mother's breast milk (Yu, Xu, Li, Hu, & Li, 2020). Furthermore, breastfeeding provides protection from other serious infections that infants may encounter, including respiratory syncytial virus disease (Nishimura, Suzue, & Kaji, 2009), influenza A (Melendi et al., 2010) and severe gastroenteritis (Plenge-Bönig et al., 2010). If IPC procedures for COVID-19 compromise breastfeeding, infant morbidity and mortality from other infections may increase, potentially outweighing any benefits of avoiding COVID-19. Furthermore, infants may still become exposed to SARS-CoV-2 during their first year of life via caregivers and additional contacts, and decreased breastfeeding may limit their protection from the virus. Thereby, separation policies

may ultimately increase infants' cumulative risk of COVID-19 itself in the first year of life.

3.2 | Insufficient breastfeeding disproportionately impacts vulnerable infants

Insufficient breastfeeding is particularly harmful for poor and marginalized infants who disproportionately suffer adverse health outcomes. In low- and middle-income countries, 72% of admissions for diarrhoea and 57% of those for respiratory infections could be prevented if infants were exclusively breastfed, and infants who are not breastfed have eightfold higher mortality than exclusively breastfed infants (Victora et al., 2016). Additionally, risk is impacted by the level of poverty and marginalization. For instance, a study of infants from slum or otherwise impoverished environments in India, Ghana and Peru found that non-breastfeed infants were 33 times more likely to die from lower respiratory tract infections than exclusively breastfed infants (Bahl et al., 2005).

In high-income countries, better social infrastructure (e.g., sanitation) and health care means that aggregate excess mortality is not as significant. Nevertheless, almost one third of UK infant hospitalizations for infections could be prevented with 6 months of breastfeeding (Payne & Quigley, 2017) with the impact of the lack of breastfeeding being greater in more disadvantaged families (Quigley, Cumberland, Cowden, & Rodrigues, 2006). Similarly, research in the United States calculated that over 700 infant deaths annually could be averted if all infants were breastfed on discharge from hospital (Bartick et al., 2017). Most of these deaths were a result of sudden infant death syndrome and necrotizing enterocolitis. Both conditions disproportionately impact Black infants reflecting the historical and structural inequities Black communities face in the United States (Bailey et al., 2017; Bartick et al., 2017; Roberts, 1997). Therefore, immediate post-partum separation introduces significant risk of secondary iatrogenic harms due to disruption of breastfeeding, particularly in communities already facing marginalization, poor health and structural barriers to care prior to the COVID-19 pandemic. For these reasons, consideration of any clinical or public health intervention that may reduce the ability of infants to be exclusively breastfed must be seriously interrogated.

3.3 | Hidden assumptions about the replaceability of breastfeeding

Guidance that recommends separation builds on an implicit assumption that the harmful impacts of separation on breastfeeding can be mitigated. This assumption undervalues the importance of breastfeeding on infant health even under non-emergency conditions. During the pandemic, the impact of disruptions to breastfeeding is magnified. Those struggling with breastfeeding due to early separation at the hospital may not have access to human milk: the first-line replacement feeding option (Kotalik, 2020; WXIN-TV Indianapolis, 2020). In the United States and the United Kingdom, panic buying of infant formula after emergency measure declarations have resulted in shortages (Brown, 2020; National WIC Association, 2020). Families without access to appropriate breast milk substitutes may be forced to resort to even more risky alternatives such as unmodified cow's milk or early use of solid foods if separation has resulted in insufficient maternal milk. Finally, in some settings, infant formula manufacturers are using the pandemic as a further marketing opportunity that will undermine overall breastfeeding and consequently maternal and infant health (Small, 2020).

3.4 | Separation does not ensure lower viral exposure during hospitalization or afterwards

The assumption that infants will have lower total likelihood of becoming infected with SARS-CoV-2 if separated from their mothers assumes that WHO (2020a, 2020b) precautions (e.g., handwashing, wearing a medical mask, coughing/sneezing into tissues and disinfecting surfaces) are insufficient and that there is no other source of infection. In limited available data to date, no infections have been reported from proximate care and breastfeeding. An Australian case study reported no illness, including during post-discharge follow-up, in the infant of a mother who tested positive and received proximate care. The mother breastfed while observing mask-wearing and handwashing precautions (Lowe & Bopp, 2020). Considerable evidence of nosocomial transmission of SARS-CoV-2 from China (Y. Wang, Wang, Chen, & Qin, 2020), Italy (Nacoti et al., 2020), Germany (Schwierzeck et al., 2020) and the United States (Butler, 2020; Goch, 2020), however, suggests that health care workers also constitute a significant source of exposure. Health care settings around the world are currently facing critical shortages of personal protective equipment, testing capacity and staff needed to implement recommended IPC in facilities. Additionally, alternate caregivers who appear healthy may still be sources of exposure (Li et al., 2020; Wu et al., 2020). As much as 44% of viral transmission may take place during the presymptomatic stage (He et al., 2020). Finally, infants who are separated in hospital are likely to be reunited with their mothers upon discharge, potentially before viral shedding is complete (~14 days) (Wölfel et al., 2020). The infant will then be exposed to the virus from the mother as well as to other sources of infection in the home. Separation may therefore not serve its intended purpose of protection from the virus.

3.5 | Overwhelmed health systems

A mandate to separate or isolate mothers and infants who are COVID-19 confirmed or PUI but otherwise relatively well risks placing undue stress on already overwhelmed health systems. This concern is increased in locations where the practice of routinely COVID testing women admitted in labour will likely yield additional

SARS-CoV-2-positive cases with mild, or presymptomatic or asymptomatic presentation in pregnancy (Breslin et al., 2020; Sutton, Fuchs, D'Alton, & Goffman, 2020). With COVID-19 cases continuing to rise in many settings, and in potential future secondary waves of outbreaks, many hospitals are likely to reach or exceed their capacity. In China (Liu & Tsoi, 2020), Italy (Ramsey, 2020), Spain (Marx, 2020) and the United States (Rothfeld, Sengupta, Goldstein, & Rosenthal, 2020), journalists have reported extraordinary conditions where entire hospitals were turned into COVID-19 wards, with staff completely overwhelmed and under extreme stress. Health workers cared for large numbers of acutely ill and dying patients and also often became sick themselves. Under these conditions, separation may not be a feasible strategy for those mothers and infants who do not require separate care due to severe illness.

3.6 | Maternal health and inequities

Furthermore, although the focus has been on neonatal health, the maternal health consequences of these separation measures, vis-à-vis compromised breastfeeding, are notable across low-, middle- and high-income settings. For mothers, lack of breastfeeding is associated with increased risk of post-partum haemorrhage, maternal anaemia and closely spaced births, all of which can be life threatening (Gribble, McGrath, MacLaine, & Lhotska, 2011; Victora et al., 2016). Women who do not breastfeed also face greater risks of breast and other reproductive cancers, and cardiovascular morbidity and mortality (Chowdhury et al., 2015; Victora et al., 2016).

The impact of separation on maternal mental health is also significant. Mothers who have experienced separation from their infants due to prematurity, for instance, have experienced acute suffering (Palmquist, Holdren, & Fair, 2020). Mothers report severe stress from not being able to touch or hold their infants with long-lasting effects (Carmon, 2020). Similar to infants, these impacts disproportionately affect mothers, families and communities who have faced historical and persistent structural inequities, such as racism, poverty, neglect and political economic marginalization (Bailey et al., 2017; Commonwealth of Australia, 1997; Davis, 2019; Roberts, 1997; 'Rohingya refugees in Bangladesh', 2020; Truth and Reconciliation Commission of Canada [TRC], 2015). Separation policies may carry with them other unintended negative mental health consequences among communities who have experienced traumas due to exposure to violence including family separation, such as in the context of the recent Rohingya refugees crisis in Bangladesh (Reid, 2020), and forced displacement in Syria (McNatt et al., 2018), or in the historical context of enslavement of Black Americans in the United States (Davis, 2019; Roberts, 1997) and the 'stolen generations' of Aboriginal and Torres Strait Islander children in Australia (Commonwealth of Australia, 1997). Current COVID-19 post-partum separation policies may exacerbate the negative effects of chronic unresolved grief and psychological distress associated with these recent and historical traumas.

4 | POLICYMAKING IN THE FACE OF LIMITED EVIDENCE

Concerns about severe disease from SARS-CoV-2 in infants appear to be the main driver of guidelines for post-partum separation of mothers and infants. Though motivated by good intentions, this strategy does not sufficiently account for epidemiological evidence or opportunity costs and underestimates the expected sequelae of separation for PUI/confirmed positive mothers and infants. As frequently seen in areas of maternal and child health, the precautionary principle may lead authorities to react to health threats with a perceived abundance of caution. These perceptions may lead to maternal and infant separation recommendations in the context of broader attempts to limit transmission via isolation of cases. In this case, however, such a strategy may inadvertently impose more risks than benefits. The WHO's April 28, 2020, update explicitly addresses discrepancies between its own and different national and professional organizations' guidelines, noting the importance of breastfeeding regardless of socio-economic circumstance and states that it takes a holistic approach 'based on a full consideration not only of the risks of infection of the infant with COVID-19, but also the risks of serious morbidity and mortality associated with not breastfeeding or the inappropriate use of infant formula milks as well as the protective effects of skin-to-skin contact and breastfeeding' (WHO, 2020b).

4.1 | Limitations

This commentary provides a synthesis of unintended consequences of separation policies and the harmful impacts of separation on breastfeeding. However, as this is not a systematic review, it highlights only key literature and does not engage with the full scope of available literature. Moreover, further emerging research may yield new findings that may lead to novel and different approaches in managing SARS-CoV-2 infection in birthing mothers and infants. Nevertheless, both current literature and evidence from prior epidemics suggest that the integrative perspective taken by the WHO that combines concern for minimizing infection to newborns with that for maintaining proximity and breastfeeding is appropriate in the COVID-19 pandemic.

5 | CONCLUSION AND FUTURE DIRECTIONS

Separating all mother–infant dyads who are suspected or confirmed positive for SARS-CoV-2 regardless of illness severity may lead to a constellation of preventable illnesses and deaths among infants and women around the world. Given the growing evidence of presymptomatic and asymptomatic community transmission, the absence of any effective vaccine or pharmaceutical treatments and the devastating toll COVID-19 has on health systems, health services must fully

consider the short-and-long-term impacts of separating mothers and infants in their policies.

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CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

CONTRIBUTIONS

The authors initiated the manuscript via group discussion. CT and KG drafted the initial versions, and AELP, M-TV and MSG provided additional input and revisions. All authors agreed to the final manuscript.

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