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Effect of Visiting Restrictions in the NICU during the Pandemic: A Literature Review

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ABSTRACT

Background: Parents of infants in the neonatal intensive care unit (NICU) experienced a tremendous amount of stress with the changing policies which added to the trauma of having an infant in the NICU. While family-centered and developmental care are the norms in the NICU, the 'visiting' policy that involved complete lockdown, one parent at a time, restrictions on partners and extended families including grandparents, no kangaroo care, no breastfeeding, … etc. affected women emotionally, impacting breast milk production, breastfeeding and increased incidence of postpartum depression. ***Purpose:*** The purpose of this literature review is to explore the consequences of visiting restrictions in NICUs during the pandemic. ***Methods***: Search terms, such as NICU, neonatal intensive care unit, parents, COVID-19 and visit, were used to search databases, such as CINAHL, PubMed and EBSCOhost, to identify peer-reviewed publications in English. The publications were after March 2020 by nature of the topic. ***Results*:** Visiting restrictions have a ripple effect on the infant and the family, where breastfeeding, milk production and parental mental health were affected. The changing policies have affected nurses too. ***Conclusion*:** Families are affected by the rapidly changing visiting policies during the COVID-19 pandemic. This has a ripple effect on mental health, bonding, breast milk production and family dynamics. ***Implications for Nursing***: Babies born during these challenging times must be followed-up for their developmental milestones and social and educational achievement.

Keywords: Neonatal intensive care unit: NICU, Parents, Visit, Pandemic, COVID-19.

What does this paper add?

1. Pandemic-related visiting restrictions resulted in mental health challenges for parents of NICU babies.
2. Pandemic-related visiting restrictions affected breast milk feeding (direct or pumped).
3. Pandemic-related visiting restrictions limited the access for cuddlers or other volunteers to support care in NCIU nurses to care for the babies.

Introduction

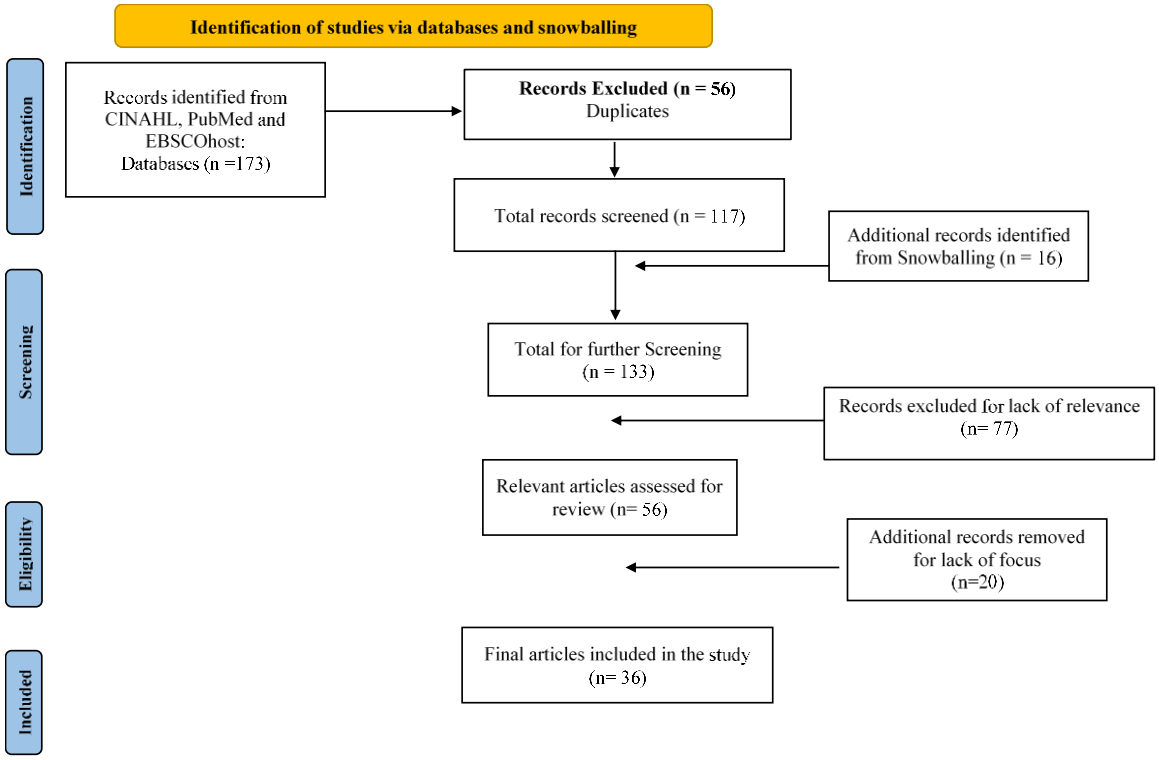
The COVID-19 pandemic impacted the lives of all globally. The pandemic sent waves of confusion due to fear and frequent changes in processes. Overwhelming number of admissions and scarcity of resources, including ICU beds, workforce, ventilators, medicine and personal protective equipment (PPE), sent panic across healthcare and people's lives (Breindahl et al., 2020). While there were no COVID-19 cases reported in newborns, due to the vulnerability of premature and sick infants in neonatal intensive care units (NICUs) across the globe, preventive measures were implemented in NICUs as well.

The pandemic-related hospital restrictions in NICUs had adverse effects on care delivery and outcomes for neonates, families and staff. The panic induced by the pandemic resulted in responses that caused significant changes in NICU policies, including restriction of parental access and involvement in care. The rapidly

progressing pandemic forced frequent fluctuations in policies and guidelines to professionals and families. Unlike other patient care areas, sick babies need their parental presence and care for early recovery and parents need to see and care for their babies to establish bonding and adaptation to the care continuum. This manuscript aims to examine the consequences of visiting restrictions in NICUs during the pandemic.

Methods

Terms, such as NICU (neonatal intensive care unit), parents, COVID-19 and visit, were used to search databases, like CINAHL, PubMed and EBSCOhost, to identify peer-reviewed publications in English. Publications that reported only the COVID-related issues were accessed. By nature of the search, all the articles retrieved were published after March 2020. Of the 173 articles accessed and additional articles accessed using snowballing, several were removed for different reasons and 36 were included in the final review. A PRISMA flow diagram is given in Figure 1. Only those publications that discussed NICU and visiting restrictions were included in the review. However, most of the articles discussed the ripple effect of visiting restrictions on neonates, families and nurses.



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BMJ 2021; 372:n71. doi: 10.1136/bmj.n71. For more information, visit: http://www.prisma-statement.org/

Figure 1. PRISMA flow diagram to identify publications for the review

Findings and Discussion

In the initial phase, NICU researchers from U.S., Norway, Italy and the U.K. collaborated with a total of 23 experts from 21 countries to develop practical care recommendations from international, national and local guidelines on the management of newborn infants born in multiple countries (Lavizzari et al., 2021). They found that all countries restricted family access to the NICU by limiting access to one parent at a time, hygiene precautions and denying access to any symptomatic person. Of particular note are restrictions in mother-infant contact in China and Poland, the epicenters of the pandemic. In the U.S., the American Academy of Pediatrics (AAP) advised a temporary separation of mother and baby, which was revised later (Muniraman et al., 2020; Puopolo et al., 2020). In the UK, the Royal

College of Pediatrics and Child Health (RCPCH), the British Association of Perinatal Medicine and the Bliss Baby Charity advocated for the entry of parents, stating that parents are essential members of the therapeutic team and not just visitors (Garfield et al., 2021). Murthy and Nagesh (2021) discussed the confusion of guidelines for viral testing and the lack of personal protective equipment (PPE) in the Indian context, while emphasizing the need to continue kangaroo care (KC) and family-centered care (FCC) in NICUs. One could see that the lack of proper guidelines and frequent revisions of guidelines placed nurses on constant learning and implementing policies. This has resulted in confusion and visiting-related stress to parents, nurses and all healthcare workers.

With the disruption in family-centered care in NICUs, a team of researchers in the Netherlands carried out a systematic review and gathered relevant data from 286 NICUs globally (van Veenendaal et al., 2021). According to their review, the pandemic has negatively impacted breastfeeding, bonding, caregiving, parents' mental health and staff's stress. Based on their findings, they have developed recommendations to restore FCC practices in NICUs.

The pandemic has affected neonatal outcomes. Hedstrom et al. (2021) reported higher infant mortality rates (an increase of 5%) in Uganda compared to previous years. They attributed that to fear, resulting in decreased antenatal care, limited transport and difficulty with expenses and support among pregnant women, while hospitals experienced staffing and supply issues. Mernenko et al. (2022) reported low transfer rates to referral hospitals and assumed that the infants might have died prior to the transfer. Parents were generally worried about their babies in NICUs during the pandemic. Research on these topics usually does not include non-English speakers, because of access and communication issues (Mernenko et al., 2022).

Visiting practices in NICUs varied from no interaction to 24-hour access. Mahoney (2020) reported variations in the duration of visits, the presence of both parents simultaneously, parental presence during rounds and choosing one parent for the entire hospital stay among the 277 NICUs surveyed. Danish NICUs used three principles in handling the visiting-policy issue (Breindahl et al., 2020). The first was their basic principle of adhering to FCC and the Newborn Individualized Developmental Care and Assessment Program (NIDCAP). If the parents could follow the hygiene guidelines and were asymptomatic even when positive, they could stay in the unit. The second was the precautionary principle, where staff and families adhered to all precautions. Thirdly, they followed a holistic principle, where they considered the families' resources and the impact of COVID on their lives. Contrary to the Danish study, Kostenzer et al. (2021) reported restrictions experienced by parents to perform KC.

It was found that family-centered developmental care was disrupted in 56 countries during the first year of the pandemic (Kostenzer et al., 2021). Of the 2103 participants, 52% were not allowed to have another person with the mother at birth, while 21% reported that no one was allowed in ICUs. While 79% of the respondents were permitted to touch the newborn in the incubator or bed, only more than a half (53%) could do so as often as they desired. Thus, access of parents to their babies in NICUs was restricted.

Fear of transmission can distract parents from visiting. There is no evidence for vertical transmission of COVID-19 (Tran et al., 2020), although COVID positive mothers or hospital staff could facilitate the transmission. Tran et al. (2020) reported on 33 babies born to COVID-positive mothers, where only three of them were positive and none was fatally ill. When these mothers were allowed to be with their babies with appropriate protection, they could provide skin-to-skin care and breastfeed their babies. However, Tschrening et al. (2020) described the guilt feeling when mothers are COVID-positive, which can spiral their stress, anxiety and depression.

Visiting restrictions can affect parent-infant bonding. Attachment and bonding are enhanced by skin-to-skin contact, proximity and caregiving activities, allowing parents to identify cues and manage care (Muniraman, 2020; Tschrening et al., 2020, van Veenendaal et al., 2021). The impact of denying the opportunity to spend time with their infants, particularly in end-of-life situations, can increase grief in parents (Muniraman et al. 2020). Limiting access to fathers into NICUs prohibited early infant-father bonding (Kyno et al., 2021). Strict parental access policies can have long-term consequences on infant health and development or parental bonding, attachment and parenting.

Visiting restrictions have affected feeding practices in NICUs, mainly breastfeeding. Coutts et al. (2022)

examined the feeding practices in South African NICUs during the pandemic. They found changes in the overall feeding practices in NICUs. Although mothers were not allowed during the hard lockdown, even COVID-19-positive mothers were allowed to drop off their breast milk. However, the mothers found it difficult to drop off the milk due to a lack of access. Mothers appreciated the service of some neonatologists who went to the mothers' houses and picked up the milk. Increased maternal stress, poor access to NICUs and skin-to-skin contact affected maternal supplies of breast milk (Celik & Guler, 2021, Cohen & Cassidy, 2021). There was a 11% decrease in the rate of exclusive breastfeeding and a 4% decrease in any breastfeeding during the COVID-19 pandemic period (Wang, 2022). This was reported after following 763 infants born between April 2020 and April 2021 at the University of Southern California in Los Angeles. Milk banks experienced shortages, as several mothers worked from home and fed their babies and did not donate milk due to restrictions on donation due to fear of transmission (Cohen & Cassidy, 2021).

COVID-19 has affected NICUs' capacity to implement FCC. Family-centered care is a healthy approach adopted by many NICUs globally. However, the visiting restrictions affected FCC and involved partners and extended families, including grandparents, impacting their mental health. In Australia, restrictions were placed on parental contact and extended families were excluded to maintain the health and safety of staff, neonates and families (Broom et al., 2022). In their prospective descriptive study utilizing a survey on parental knowledge and understanding, parental role, communication, parental stress (at admission/discharge) and COVID visiting restrictions on a five-point Likert scale, 17/33 (51.5%) parents stated that their NICU experience had been highly stressful, as the rules affected their mental/ emotional health. Similar findings were reported by Ashini et al. (2021) in Libya and by Muniraman et al. (2020) in the UK. These researchers advocated for treating parents as one unit and providing psychological support to families.

However, Vetcho et al. (2022) found higher satisfaction among NICU parents in Thailand. Despite pandemic restrictions, innovative ways were introduced to demonstrate respect, collaboration and support through flexible visiting hours, telephone updates and interdisciplinary family meetings for complex patients with structured communication checklists and documentation templates in daily practice. In an international survey involving 22 countries, it was found that families were restricted in 83% of units and that parents experienced fewer restrictions in single-room NICUs irrespective of the geographical location (Litmanovitz et al., 2020).

Visiting restrictions in NICUs have resulted in mental-health challenges for parents. Several studies reported the responses of parents to the changing policies. NICU mothers globally are anxious about the infant outcome and mothers, in general, were stressed about pregnancy outcomes which existed even without a pandemic (Bembich et al., 2021; Bin-Nun et al., 2021; Gourounti, 2016; Hagen et al., 2019; Lavizzari et al., 2021; Mengesha et al., 2022). During the pandemic, several mental-health concerns were reported. Bembich et al. (2021) described dysphoric emotions and relational suffering among parents and the strategies they used to adapt to change. Sadness, anger and fear/worry were reported as emotions, while separation from partners and newborns was included in relational suffering. Kangaroo care was not allowed in the unit. Adama et al. (2022) reported mental-health issues in fathers who experienced restricted access to their infants in Australia. Parent-infant contact may significantly affect infants' neurobehavioral development and family psychological well-being (Lavizzari et al., 2021). Restriction of partner visiting has caused maternal anxiety, perceived postpartum support and breast-feeding outcome in Italian mothers (Morniroli et al., 2021). Maternal anxiety might have caused breastfeeding difficulties.

Alterations in relationships and maternal roles increased stress and loneliness, while poor coping impacted the psychological well-being of Israeli and Norwegian mothers (Bin-Nun et al., 2021; Kyno et al., 2021). In this comparative study of well-baby and NICU parents, the researchers noted that worry about infecting their babies and helplessness are higher in NICU mothers. These mothers used less coping strategies and had less appreciation for humor. Thus, parental mental health was affected globally during the pandemic. Mengesha et al. (2022) found psychological problems, like anxiety, stress, worry, hopelessness and a state of confusion among NICU parents in Ethiopia. Emotions identified included anger, crying, sadness, frustration, dissatisfaction, regret, disappointment, feeling bad, self-blaming, nervousness, disturbance and lack of self-

control, causing significant emotional problems (Magnesha et al., 2022). The inability to experience parenthood together has resulted in emotional loneliness, poor paternal competency to care for the sick/pre-term infant and delayed attachment (Kyno et al., 2021). Yahya et al. (2021) observed that Malaysian mothers of pre-term infants were at a higher risk for postpartum depression (PPD); they found an association between socio-demographic factors and breastfeeding attitudes, while PPD was reported in other countries. Yahya et al. (2021) found a higher incidence of PPD among Malaysian NICU mothers during the pandemic. Thus, we can see that parents in NICUs worldwide were affected in multiple ways.

Restrictions potentially affect infant outcomes later in life. Byrne et al. (2022) described delays in milestones at one year reported by parents who had infants in Irish NICUs. For example, parents said that social communication development was delayed compared to a similar cohort prior to the pandemic. Such findings validate the need for parental involvement in care for infant health and neuro-developmental outcome (Bembich et al., 2021). The infants born during the pandemic need intentional follow-up to evaluate their social and communication development.

Visiting restrictions and increased nurses' workload contributed to the burdens of care. Coutts et al. (2022) found that this has affected nurses' mental health and performance. It is known that pre-term infants need warmth, feeding support and physiological attention and the pandemic created an environment in which competent nurses in South Africa could not provide adequate care due to lower number of nurses, insufficient time and overwhelming workload (Mahwasane et al., 2020). Challenges to providing optimum care were present in NICUs even before the pandemic and the situation of overcapacity, understaffing and limited resources worsened these challenges during the pandemic (Coutts et al., 2022). Celik and Guler (2021) reported that nurses felt that the pandemic restricted giving care by them and by parents. They identified concerns about not providing skin-to-skin contact, because infant feeding in the incubator prevents eye contact, which limits developmental and holistic care. The personal protective equipment (PPE) also acted as a barrier to touching the baby, leading to an emotional workload for nurses. The restrictions also limited the number of sitters or cuddlers, which added to nurses' physical and emotional workload.

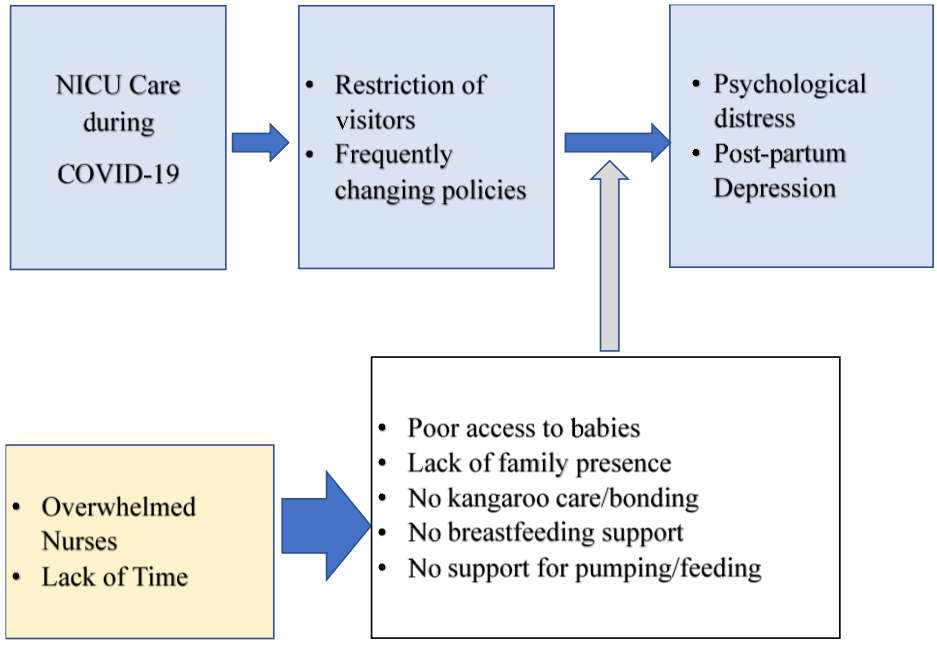

Figure 2. Effect of visiting restrictions during COVID-19 pandemic

Communication between nurses and parents suffered during COVID-19. Research from Chinese NICUs revealed that parents found it challenging to obtain information about their infants (Fan et al., 2020). This has affected the mental health of parents who had no transportation or had to work to meet their financial

challenges (Fan et al., 2020). At the same time, several units tried strategies to mitigate the problem by using telemedicine/video systems or by developing online parent-support groups. These are of course not substitutes for parental presence. Despite the restrictions, single-room NICUs could maintain a family presence (Mahoney et al., 200). Future NICU design can be single rooms to foster this. Also, it is essential for staff to support the parents for their emotional well-being. Inability to attend a call from parents to update them might have been due to a lack of time for nurses, resulting from a nursing shortage. Magnesha et al. (2022) found that mothers reported a lack of commitment, discipline, cooperation and support by NICU nurses during the pandemic. These findings in Ethiopia may be due to limited resources, including nurses who, in turn, received no help.

A summary of findings on the effect of visiting restrictions in NICUs is given in Figure 2. The effect of changing visiting policy during the pandemic was reported from multiple countries. However, their problems are similar. Not all these countries have English as their primary language. Non-English-speaking families in English-speaking countries might have experienced a different set of challenges. Lack of ability to communicate their needs or feelings will be traumatizing to mothers. Unique support for those with limited English proficiency in English-speaking countries during the pandemic is not found in the literature.

Strategies to Combat Consequences of Visiting Restrictions

Nurses in NICUs used several strategies to mitigate the effect of evolving guidelines in relation to the pandemic. Proximity technology, although being present in several NICUs since early 2000, was increasingly used during the pandemic. Asynchronous video messaging, phone calls (Broom et al., 2022; Kirolos et al., 2021) and FaceTime were used in different NICUs. Remote viewing of infants has existed for more than two decades; communication with nurses/providers while seeing the baby also will enhance the experience. The effects of a dose response to these strategies are not available or measured. Murray and Sanson (2020) stated that web-based video-conferencing using FaceTime and Skype and commercially available camera systems, such as Angel Eye and NIC-View or any video-conferencing technology, have demonstrated benefits to parents. Parents and extended families from anywhere in the world could watch/see the babies, which will increase support to parents and parent satisfaction (Kalanti et al., 2021). Such technology, where parents can see, hear and talk to their babies, will decrease the stress levels in parents. While the effect of maternal voice on neonatal outcome is known, using the recorded voice of parents will help mitigate some effects of lack of physical proximity with parents (Kreuger, 2010). Online or Internet support groups also benefit parents. Mental-health social workers and pastoral-or religious-care personnel can offer support to NICU families. Since the pandemic disrupted FCC, Bainter et al. (2020) warned practitioners to integrate family involvement during future events similar to COVID-19. Single-use infant kits, psychological support and virtual support by march of dimes were used by some units to help parents cope (Kelleher et al., 2022). Additionally, those who have limited English proficiency must be given due consideration for translation and interpreting services. Having information and awareness of such technology and strategies will help clinicians and families facilitate better interactions with families during future similar events.

Implications for Nursing

Family-centered care must be re-established in NICUs if there is a break in the process during the pandemic. Appropriate services, such as Telemedicine, FaceTime or frequent calls, must be made available to families for future occurrences similar to the pandemic. Increasing the nurse-patient ratio will alleviate nurse and family frustration and increase family satisfaction. Administrative support must be provided to nurses to provide holistic care, considering the cultural, environmental, social, psychological, economic and spiritual aspects. Including parents and national and/or international parent organizations in the decision-making process to develop and implement standards of care for hospitalized infants during similar crises will be beneficial.

Nursing faculty and nursing students must learn from the experiences of nurses and families to equip themselves to face future challenges. Besides, academic-practice collaboration must be strengthened, so that nursing students will be an integral part of

support to nurses during future emerging situations. Research involving families and NICU nurses must be conducted to understand barriers and facilitators of optimum care in NICUs and the trauma experienced by NICU nurses and families.

Conclusion

Restrictions on visiting hours during COVID-19 pandemic had a ripple effect on NICU nurses and families. Restrictions occurred at multiple levels, such as partner restrictions or extended-family restrictions. Breastfeeding, bonding and provider-family communications were affected during the pandemic, resulting in psychological distress, including postpartum depression in mothers. While some NICUs used FaceTime, Zoom or remote video adlib for parents, not every NICU followed this pattern. Nurses also were traumatized due to frequently changing policies, lack of time, inability to support parents or lack of resources. Lessons learned during this pandemic must prepare providers for future similar events in providing family-centered care (FCC).

Conflict of Interest

The author has no conflict of interest to declare.

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