

Impact of COVID-19 Pandemic on the Health of Preterm Infants in Iran

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ABSTRACT

Background: Coronavirus disease 2019 (COVID-19) directly increases the risk of preterm delivery. Furthermore, the COVID-19 pandemic may indirectly affect the health status of preterm infants. In the present study, several views have been mentioned regarding the negative effects of this viral disease on postnatal health that require much consideration.

Methods: A related brief study was conducted in 2020. Previously published works have revealed several adverse effects of the COVID-19 pandemic on the health of preterm neonates.

Results: Literature review has demonstrated that several policies have been implemented to protect newborns from the risk of infection in the neonatal intensive care units (NICU). Some of these policies are isolation of COVID-19 positive mothers, mother-infant separation, interruption in skin-to-skin contact and breastfeeding, restrictions associated with the presence of parents in the NICUs. Moreover, postponement of follow-up consultations and deficiency in healthcare services are other critical issues.

Conclusion: Urgent measures seem to be implemented to protect preterm neonates and their parents from severe consequences. Some beneficial recommendations are providing adequate professional human resources in the NICUs, improving virtual communication for involving parents in NICU admissions and postnatal follow-up appointments, promoting exclusive breastfeeding for subjects without any contraindications, reminding vaccination schedule by calling or texting, reducing the family financial instability by governmental support, and improving mother-infant bonding with hand and respiratory hygienes.

Keywords: Adverse effect, COVID-19, Infant, Preterm

Introduction

Coronavirus disease 2019 (COVID-19) directly increases the risk of preterm delivery (1). A systematic study and meta-analysis revealed a high incidence rate of 41% of preterm births among COVID-19 infected mothers (2). Furthermore, the COVID-19 pandemic may indirectly affect the health status of preterm infants admitted to neonatal intensive care units (NICUs) (3). In the present study, several views were noted regarding the negative effects of this viral disease on postnatal health that require much consideration.

Methods

A related brief study was conducted in the

Maternal, Fetal, and Neonatal Research Center, Tehran University of Medical Sciences, Tehran, Iran in 2020. Detailed English published researches during 2019-2020 on MEDLINE, Pub Med, and Google Scholar, and Cochrane Library were analyzed to evaluate the negative effects of COVID-19 on the health status of preterm infants. The search process was performed using the following keywords: adverse effect, Coronavirus, COVID-19, indirect effect, infant, negative effects, neonate, premature, preterm.

Discussion and Results

In the present study, several views will be examined regarding the negative effects of this

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viral disease on postnatal health that require much consideration.

Skin-to-skin contact in mother-preterm infant interaction

Published evidence demonstrated the positive effects of early/long-term kangaroo care and skin-to-skin contact on mother-preterm infant interaction, mood and sleep quality of parents, as well as physiological, psychomotor, perceptual-cognitive, and mental developments (4-7). Several policies were recommended and implemented like isolation of mothers, temporary mother-infant separation, interruption of prolonged skin-to-skin contact, or use of gowns, gloves, and masks to protect newborns from the risk of infection in the COVID-19 pandemic (8-11). Contrarily, the World Health Organization recommended immediate skin-to-skin contact, kangaroo care, mother-infant bonding, and practice of rooming-in with a particular emphasis on respiratory and hand hygienes. Mother-infant bonding and its advantages are well known in reducing the risks of COVID-19 transmission during the coronavirus pandemic (8, 12).

Parental engagement

Preterm neonates are more susceptible to sepsis due to their immature respiratory and weak immune systems. Therefore, healthcare professionals and parents should be well aware of the potential risks associated with transmitting this viral disease to neonates (13). Unnecessary and frequent close contact of neonates with physicians, staff, and parents has recently been avoided in the NICUs; however, this protocol may influence routine neonatal nursing care. Additionally, restrictions on the presence of parents particularly in symptomatic cases may interfere with policies adopted by NICUs such as family-centered care and collaborative relationships between the neonates' parents and the health care providers (14). This restricted parent-infant relationship may cause physiological/psychological disadvantages in the future leading to secondary unintended consequences for both infants and their parents (15).

Feeding preterm infants

There are limited scientific evidence and substantial ambiguity about breastfeeding in COVID-19 positive mothers. Factors that may negatively affect the promotion of exclusive breastfeeding are the fear of secretion and

viability of the virus in the breast milk, lack of knowledge about the timing of COVID-19 and its presence in breast milk or production and transmission of antibodies through breast milk, the inability of an unhealthy mother to breastfeed, lack of breast milk due to the severity of illness, taking multiple medications with breastfeeding contraindication, or the possible effects of breastfeeding on the health status of a mother with COVID-19. As a result, ignoring the importance of breastfeeding affects the nutritional and immunological status of the neonate, emotional and psychological relationships between mother and child, as well as the economic situation of the family for initiating formula feeding. However, it should be also noticed that the benefits of breastfeeding should be weighed against its disadvantages in mothers with COVID-19 (16-19).

Vaccination of preterm infants

Vaccination of preterm neonates born during the COVID-19 pandemic requires an essential consideration. Symptomatic/asymptomatic infants with laboratory confirmation of COVID-19 infection or infants of infected mothers should be received extra attention. Several reasons may delay or stop neonatal immunization schedules during the pandemic. Preference of families to stay at home during quarantine, disruption of family's daily life, fear of taking neonates to immunization services, or temporary disruption in their services may discontinue vaccination recommendations. Parents should be aware of their children's vital need for vaccination to prevent the spread of other infectious diseases (20-22).

Follow-ups of preterm infants

All preterm infants need regular neurological, nutritional, growth/developmental, hearing, visual, and post-discharge rehabilitation follow-up consultations. For instance, the American Academy of Pediatrics recommended performing screening programs to reduce the range of adverse outcomes from visual impairment to permanent blindness associated with Retinopathy of prematurity. On the other hand, parents could not feel secure in taking their infants to health services or readmission during the COVID-19 pandemic (23-25). Follow-up protocols for infected neonates or symptomatic mothers are more crucial than others. High-risk neonates also require repeating COVID-19 negative test, chest X-Ray, and other associated

medical examinations after NICU discharge (18). Implementing telemedicine and e-health are introduced as useful and supportive follow-up tools for reducing the risk of virus exposure. These facilities have some practical limitations and are not accessible to all families, especially in rural areas. The above-mentioned reasons may influence families in missing the follow-up visits (23).

Healthcare providers for preterm neonates

Preterm infants admitted to the NICU require the highest level of healthcare out of the entire patient population (26). Maintaining essential health services is important during the outbreak of COVID 19; however, the number and the effectiveness of NICU healthcare providers may be strongly affected by this viral disease (11). In addition to increasing the number of confirmed or suspected cases with COVID-19 which may lead to increased mortality rate among NICU professionals, other important factors such as prolonged isolation, overwork, physical, emotional, and psychological distress, long-term use of masks can negatively affect the occupation of NICU staff (27, 28). Such difficult working situations associated with the quantity and quality of healthcare providers can indirectly affect the outcomes of preterm infants who receive health care in NICUs.

Conclusion

In the present study, it was indicated that the COVID-19 pandemic negatively impacted the health status of preterm infants. Therefore, urgent measures must be implemented to protect preterm neonates and their parents against severe consequences. Providing adequate and professional human resources in the NICUs, improving virtual communication for involving parents in the NICU admission and postnatal follow-up appointments, promoting exclusive breastfeeding for subjects without any contraindications, reminding vaccination schedule by calling or texting, reducing the family financial instability by governmental support, improving mother-infant bonding with respiratory and hand hygienes are some beneficial recommendations.

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Conflict of interests

The author declares that there is no conflict of interest.

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