

Mitigating the Impact of Climate Change on Neonatal Health

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Abstract

Maintenance of neonatal health is a crucial event in public health owing to its significant impact on the child's survival and lifelong well-being. Climate change has been acknowledged as one of the most significant global public health challenges of the current century, which tends to affect the physical, mental, and social well-being. Multiple climate-induced diseases and consequences have been reported among neonates. Considering the impact of climate change on neonatal health in multiple ways, and the fact that most of these are preventable, there is an immense need to adopt targeted public health interventions. In conclusion, climate change tends to affect neonatal health in multiple ways and this calls for the need to adopt a multipronged approach involving different stakeholders, including global leaders to work collectively in the direction of minimizing the potential impact.

Keywords: Climate change, health, neonates

INTRODUCTION

Maintenance of neonatal health is a crucial event in public health owing to its significant impact on the child's survival and lifelong well-being.^[1] In this vital period, neonates are extremely susceptible to infections and complications during childbirth, as evidenced by the fact that 2.3 million newborns lost their lives in 2022 alone globally.^[1] We must not ignore that suboptimal neonatal health can result in long-term developmental and health concerns, justifying the need for the provision of holistic care.^[2] Moreover, because healthy newborns are the foundation for better societies in the future, there is an indispensable need to invest in neonatal health.^[3]

CLIMATE CHANGE: A GLOBAL HEALTH CHALLENGE

Climate change has been acknowledged as one of the most significant global public health challenges of the current century which tends to affect the physical, mental, and social well-being of the general population.^[4] The combination of these reported changes (viz., rising global temperatures, dynamic weather patterns, and extreme weather events) has disrupted the ecosystem and human livelihood through direct and indirect mechanisms.^[4] Moreover, these climate change

events augment the existing health disparities, especially in developing nations, and this predominantly affects vulnerable population groups, namely the children, the elderly, pregnant women, and socioeconomically disadvantaged communities.^[5] The need of the hour is to adopt concerted efforts to mitigate the impact of climate changes on health, adapt healthcare delivery systems to these changes, and encourage resilience.^[4,6]

IMPACT OF CLIMATE CHANGE ON NEONATAL HEALTH

Prolonged exposure to high temperature leads to maternal heat stress, dehydration, and cardiovascular development which can impair placental function and development of fetus.^[7] There is a

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simultaneous risk of the onset of preterm labor, leading to low birth weight and other associated neonatal complications.^[7,8] A sudden change in temperature or heatwave can influence neonatal thermoregulation, increasing the risks of hypothermia.^[8] Climate change can result in rising levels of air pollutants (viz., particulate matter and ozone), resulting in augmenting the risk of stillbirth, poor lung development, and a higher risk of asthma and respiratory infection among neonates.^[9] As climate change also has the potential to disrupt farming practices leading to food scarcity, it can impact maternal nutrition and increase the probability of low birth weight, neonatal malnutrition, and developmental delays among neonates.^[10]

Along similar lines, limited access to clean water during delivery impacts maternal hygiene during delivery and postnatal care, which significantly increases the risk of neonatal infections (such as sepsis and diarrhea).^[11] Climate change has also aided in expanding the range of mosquitoes that can transmit diseases such as malaria, dengue, and Zika virus infection, which can harm both mother and baby.^[12] The occurrence of climate-related natural disasters can impair the mental health condition of the mother, which has a direct impact on fetal growth, increased the risk of preterm labor, and multiple neonatal complications.^[13] In continuation, these events also limit access to healthcare services and simultaneously expose neonates to poor sanitation, malnutrition, and mental health stressors.^[14] In flood settings, there is a significantly higher risk of exposure of mothers and newborns to waterborne diseases.^[11,14]

PUBLIC HEALTH INTERVENTIONS

Considering the impact of climate change on neonatal health in multiple ways, and the fact that most of these are preventable, there is an immense need to adopt targeted public health interventions.^[4,8,11,15-20] The primary intervention is to ensure that healthcare facilities are developed in such a way that they are climate-resistant, with the provision of backup power, access to clean water, promoting use of renewable sources of energy, and cooling systems to ensure the delivery of uninterrupted care during varied weather events.^[15] This should be equally supported by integrating climate components into the existing maternal and child health programs at the policy level, wherein due consideration should be given to providing antenatal care in areas prone to climate-linked health risks.^[16] Further, the needs of maternal and neonatal care must be incorporated in disaster preparedness plans, as this will ensure that even during climate crises, they have access to emergency medical supplies.^[16,17]

On the technological front, it is vital to develop sound early warning systems that can predict heatwaves, floods, and disease outbreaks, allowing the general population to prepare and safeguard pregnant women and neonates from adverse impacts.^[18] As community members play a crucial role in minimizing the impact of various climate events, they must be educated about different climate-related health risks, safe delivery practices, and neonatal care in dynamic environments to enhance their preparedness.^[19] To reduce exposure to air

pollutants in pregnant women, there is an immense need to implement stringent policies to reduce emissions from industries and automobile sectors.^[9] In continuation, healthcare providers as well as community members should be encouraged to adopt eco-friendly practices (such as using renewable sources of energy and minimizing the generation of waste), as this will minimize their share of climate change.^[15,19] In addition, healthcare professionals must be trained in recognizing and managing climate-induced maternal and neonatal health conditions (viz., heat stress and vector-borne diseases).^[11]

The existing maternal and neonatal nutritional programs must be expanded to deal with the potential threat of food insecurity resulting from climate-induced disruptions in farming practices.^[10] In continuation, due investment must be made to improve infrastructure for water purification and sanitation in areas that are prone to droughts and flooding, and accordingly minimize the risk of neonatal infections.^[11] Further, vaccination programs targeting women and neonates must be expanded to prevent infections that can occur because of climate change like cholera and malaria.^[20] In addition, there is a definite need to conduct research work to understand the varied impacts of climate change on neonatal health and identify effective interventions, especially in high-risk settings.^[4,7,8] Finally, we must seek collaboration from international welfare agencies and donors to not only fund various climate initiatives but even reduce the emission of greenhouse gases and ensure prioritization of neonatal health in global climate policies.^[1,11,16,17]

CONCLUSION

Climate change tends to affect neonatal health in multiple ways and this calls for the need to adopt a multipronged approach involving different stakeholders, including global leaders to work collectively in the direction of minimizing the potential impact.

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Conflicts of interest

There are no conflicts of interest.

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