



Complications Arising in Low Birth Weight Preterm Newborns in India

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Introduction

Low birth weight (LBW) and preterm birth are significant public health issues globally, and India is no exception. Babies born with low birth weight (less than 2,500 grams) and those born prematurely (before 37 weeks of gestation) face numerous health challenges. The incidence of these conditions in India is alarmingly high, with severe implications for neonatal morbidity and mortality. This article explores the complications associated with low birth weight preterm babies in India, examining the medical, social, and economic impacts and the strategies to address this pressing issue.

Medical Complications

- 1. Respiratory Distress Syndrome (RDS):** One of the most immediate and serious complications faced by LBW preterm babies is Respiratory Distress Syndrome (RDS). This condition is caused by insufficient surfactant in the lungs, which is crucial for keeping the air sacs open. Preterm babies are often born before their lungs are fully developed, leading to breathing difficulties that can be life-threatening. The lack of advanced neonatal intensive care units (NICUs) in many parts of India exacerbates the challenge of managing RDS.
- 2. Intraventricular Hemorrhage (IVH):** IVH is a type of brain bleed that occurs in premature infants, particularly those born before 30 weeks of gestation. The fragility of the blood vessels in a premature baby's brain makes them susceptible to bleeding, which can lead to long-term neurological impairments or even death. Early diagnosis and intervention are crucial, but the lack of specialized pediatric neurology services in rural areas of India hampers effective management.
- 3. Necrotizing Enterocolitis (NEC):** NEC is a severe gastrointestinal disease that primarily affects preterm infants. It involves inflammation and bacterial invasion of the intestine, leading to the death of intestinal tissue. The condition can result in life-threatening complications and often requires surgical intervention. Factors such as



inadequate breastfeeding practices and poor sanitation can increase the risk of NEC among preterm infants in India.

4. **Retinopathy of Prematurity (ROP):** ROP is an eye disorder caused by abnormal blood vessel growth in the retina of premature infants. It can lead to visual impairment or blindness if not treated promptly. The availability of timely and skilled ophthalmological care is essential to manage ROP, but access to such services is limited in many parts of India, leading to a higher incidence of visual disabilities among LBW preterm babies.
5. **Sepsis and Infections:** Preterm infants have immature immune systems, making them highly susceptible to infections, including sepsis, pneumonia, and meningitis. Infections are a leading cause of mortality among LBW preterm babies. The high prevalence of hospital-acquired infections due to overcrowded and under-resourced neonatal units in India further complicates the situation.

Long-Term Health Complications

1. **Chronic Lung Disease:** Also known as bronchopulmonary dysplasia (BPD), this condition involves long-term respiratory problems resulting from the damage caused by prolonged use of ventilators and oxygen therapy. BPD can lead to persistent breathing difficulties and an increased risk of respiratory infections.
2. **Neurodevelopmental Disabilities:** Preterm infants are at a higher risk of neurodevelopmental disorders, including cerebral palsy, developmental delays, and cognitive impairments. These disabilities can affect their ability to perform daily activities and achieve educational milestones. Early intervention programs and special education services are crucial but often lacking in many parts of India.
3. **Growth and Nutritional Issues:** LBW preterm babies often struggle with growth and nutritional deficiencies. They may have difficulty feeding, leading to inadequate weight gain and growth retardation. Long-term nutritional support and monitoring are essential to ensure proper growth and development.

Social and Economic Impact

1. **Family Stress and Economic Burden:** The birth of a preterm baby often places significant emotional and financial stress on families. The cost of prolonged hospital



stays, medical treatments, and specialized care can be overwhelming. In India, where a large portion of the population lives below the poverty line, the financial burden can be catastrophic, leading to debt and impoverishment.

2. **Healthcare System Strain:** The high incidence of LBW and preterm births places immense pressure on India's healthcare system. Neonatal intensive care units (NICUs) are often overcrowded and under-resourced, leading to suboptimal care and higher mortality rates. The strain on healthcare resources also affects the quality of care provided to other patients.
3. **Workforce Productivity:** Long-term health and developmental issues in LBW preterm babies can affect their future productivity and employability. Disabilities and chronic health problems may limit their ability to contribute to the workforce, impacting the overall economic development of the country.

Strategies to Address the Issue

1. **Improving Maternal Health:** Addressing maternal health is critical to preventing preterm births and low birth weight. Ensuring that women receive adequate nutrition, prenatal care, and education about healthy pregnancy practices can significantly reduce the incidence of these conditions. Special focus should be given to educating and supporting women in rural and economically disadvantaged areas.
2. **Strengthening Neonatal Care:** Expanding and upgrading neonatal care facilities, especially in rural and underserved regions, is essential. This includes increasing the number of NICUs, providing advanced medical equipment, and training healthcare professionals in neonatal care. Improving access to specialized care can significantly improve outcomes for LBW preterm babies.
3. **Promoting Breastfeeding:** Encouraging and supporting breastfeeding can have a profound impact on the health of LBW preterm babies. Breast milk provides essential nutrients and antibodies that boost the baby's immune system and promote healthy growth. Public health campaigns and community health workers can play a crucial role in promoting breastfeeding practices.
4. **Early Intervention Programs:** Implementing early intervention programs that provide developmental support, physical therapy, and educational services can help mitigate the long-term effects of preterm birth and low birth weight. These programs should be accessible to all families, regardless of their socio-economic status.



5. **Public Health Policies:** Strong public health policies and programs are needed to address the root causes of preterm births and low birth weight. This includes addressing socio-economic disparities, improving access to quality healthcare, and ensuring adequate maternal and child health services. Government initiatives and partnerships with non-governmental organizations can play a vital role in this effort.
6. **Research and Data Collection:** Investing in research to understand the causes, risk factors, and best practices for managing LBW preterm babies is essential. Comprehensive data collection and analysis can inform public health strategies and policies, leading to more effective interventions and improved outcomes.

Conclusion

The complications of low birth weight preterm babies in India are multifaceted, involving medical, social, and economic dimensions. Addressing this issue requires a holistic approach that includes improving maternal health, strengthening neonatal care, promoting breastfeeding, implementing early intervention programs, and enacting robust public health policies. By investing in these strategies, India can reduce the incidence of preterm births and low birth weight, improve the survival and health outcomes of affected babies, and alleviate the long-term social and economic burdens associated with these conditions.

Reference

1. Low birth weight: Case definition & guidelines for data collection, analysis, and presentation of maternal immunization safety data. Cutland CL, Lackritz EM, Mallett-Moore T, et al. *Vaccine*. 2017;35:6492–6500.
2. All-cause mortality of low birthweight infants in infancy, childhood, and adolescence: Population study of England and Wales. Watkins WJ, Kotecha SJ, Kotecha S. *PLoS Med*. 2016;13:0,
3. Relation of fetal and infant growth to plasma fibrinogen and factor VII concentrations in adult life. Barker DJ, Meade TW, Fall CH, Lee A, Osmond C, Phipps K, Stirling Y. *BMJ*. 1992;304:148–152.
4. Indicator metadata registry details: Low-birth-weight newborns (%) [Feb; 2023]. 2023. <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/76>



5. World Health Organization. ICD-10 : International Statistical Classification of Diseases and Related Health Problems : Tenth revision. Vol. 21. Geneva, Switzerland: World Health Organization; [Feb; 2023]. 1970. World Health Organization. ICD-10: International Statistical Classification of Diseases and Related Health Problems: Tenth revision; p. 2023.
6. Distribution and determinants of low birth weight in developing countries. Mahumud RA, Sultana M, Sarker AR. J Prev Med Public Health. 2017;50:18–28.
7. Prevalence of low birth weight and its associated factor at birth in Sub-Saharan Africa: A generalized linear mixed model. Tessema ZT, Tamirat KS, Teshale AB, Tesema GA. PLoS One. 2021;16:0.
8. National, regional, and worldwide estimates of low birthweight in 2015, with trends from 2000: a systematic analysis. Blencowe H, Krusevec J, de Onis M, et al. Lancet Glob Health. 2019;7:0–60.
9. International Institute for Population Sciences (IIPS) and ICF. National Family Health Survey (NFHS-4), 2015-16: India. Vol. 17. Mumbai: IIPS; 2017. Determinants of very low birth weight in India: The National Family Health Survey - 4.
10. Global Nutrition Targets 2025: Low Birth Weight Policy Brief. [Feb; 2023]. 2014. <https://www.who.int/publications/i/item/WHO-NMH-NHD-14.5>
11. Determinants of low birth weight: Methodological assessment and meta-analysis. Kramer MS. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2491072/> Bull World Health Organ. 1987;65:663–737.
12. Maternal risk factors for low birth weight neonates: A hospital based case-control study in rural area of Western Maharashtra, India. Deshpande JD, Phalke DB, Bangal VB, Peeyuusha D, Bhatt S. <https://njcmindia.com/index.php/file/article/view/1930> Natl J Community Med. 2011;2:10.
13. Risk factors for low birth weight in Bale zone hospitals, South-East Ethiopia: A case-control study. Demelash H, Motbainor A, Nigatu D, Gashaw K, Melese A. BMC Pregnancy Childbirth. 2015;15:264.
14. The preterm birth syndrome: A prototype phenotypic classification. Villar J, Papageorgiou AT, Knight HE, et al. Am J Obstet Gynecol. 2012;206:119–123. [PubMed] [Google Scholar]