

EDITORIAL**NEWBORN HEALTH – A CALL FOR ACTION**

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A newborn or neonate is an infant from age 0 to 28 days. WHO defines the term "live birth" for any human that once wholly extracted from the mother showed any sign of life such as voluntary movement, heartbeat, or pulsation of the umbilical cord. (1) This definition applies for any gestational age and however brief the time is. (1) The WHO recommends a declaration of birth, dead or alive, from 22 weeks post-menstrual age. A stillbirth is "a baby who dies after 28 weeks of pregnancy, but before or during birth". (2) Within the stillbirth's group, intrapartum-related stillbirths or "fresh stillbirth" are "neonates that show no signs of life at delivery and weigh more than 500 g or are greater than 22 weeks of gestation with intact skin and no signs of disintegration in utero". (3) Their death is assumed to have occurred within 12 hours before delivery, likely from a hypoxic event. These latter deaths alone are estimated at 1.3 million. (4) However, the precise post-menstrual age is an information many low- and middle-income countries (LMIC) lack. Although this definition appears clear in theory, in practice, multiple factors and recall bias lead to uncertainty in LMIC.

The newborn age group suffers more than infants and older children from under-developed immune system (infections with normal flora), conditions associated to maternal, and obstetric risk factors and conditions related to immaturity of vital organs such as the lungs. As a result, newborn health is characterized by health problems related to :

- maternal health such as hypertension, diabetes, malnutrition
- complications of pregnancy, childbirth, and delivery, for example, pre-eclampsia and eclampsia, asphyxia etc.
- complications of prematurity (prematurity is defined as those born before 37 completed weeks of gestation) such as immature lungs presenting as respiratory distress syndrome

Most of the underlying causes of neonatal deaths are the same for stillbirths i.e., related to maternal health, complications of pregnancy, labour, and delivery.

Epidemiology

Worldwide, newborn health problems are over-whelming. While rich countries have reduced neonatal mortality by a factor of 10 (5), the poorest regions and conflict zones suffer the highest neonatal mortality. Today, these figures are expected to have worsened with the recent COVID-19

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pandemics bringing a shortage of basic care (6) and equipment, as well as twice as likely pre-term delivery of infected pregnant women. (7-8)

Today, from the 130 million live births globally, an estimated 2.4 million neonates died in 2020 (9). Nearly the same number of babies die in utero i.e., before delivery (referred as stillbirths). There were nearly 2 million stillbirths in 2019 globally. Notwithstanding the efforts of the past 20 years with the Millennium Development Goals and Sustainable Development Goals, the neonatal period remains the most likely period for a child to die. Global neonatal mortality accounts for nearly half of the under-5-year mortality and occurs for 98% in LMIC. (5) In addition, due to the very high immediate postnatal mortality, the risk of underreporting remains major [10], [11]; many newborns die indeed before being given a name and registered, recorded at best as stillbirths. Accounting for both stillbirths and neonatal deaths is estimated to double the 2.5 million deaths. [12][13] The newborn period of life is the most vulnerable time of a child's survival. Children face the highest risk of dying in their first month of life. In Ethiopia, the neonatal mortality rate for 2019 was 33 per 1000 livebirths (EMDHS) and it has not been decreasing in the previous 3 years (MOH HSTP II). (14)

Neonatal diseases are associated with long term complications and the societal cost of underestimating and neglecting neonatal disease carries large disability and chronic disease burden over into adulthood. Neglected neonatal disorders are the leading cause of DALY in children globally. (15)

Causes of neonatal deaths and risk factors

Many of neonatal deaths (75%) occurs during the first week of life, and about 1 million newborns die within the first 24 hours. Prematurity, birth asphyxia, infections and birth defects cause most neonatal deaths in 2017. (16)

Prematurity has been described as one entity among causes of under-five mortality or neonatal mortality. However, preterm neonatal deaths could be related to prematurity (also referred as preterm related complications) that are specific to the fact that the neonate is born prematurely, or the deaths could be due to other conditions such as congenital abnormalities that may cause death in the full-term infant or even beyond the neonatal period. The prematurity specific conditions include respiratory distress syndrome (RDS) or previously referred as hyaline membrane disease, necrotizing enterocolitis (NEC), and intraventricular hemorrhage (IVH). (17) A large multi-center Ethiopian study (SIP project) showed that RDS contributes to 45%, Infections to 30 and asphyxia to 14% of all preterm deaths. (17)

Important risk factors to increased neonatal mortality include inadequate and absent prenatal care, presence of complications during pregnancy, congenital malformation in the assessed pregnancy, Apgar < 7 at the fifth minute, low and very low birth weight, gestational age ≤ 37 weeks, and caesarean delivery mortality, absence of partner, maternal age ≥ 35 years, male gender, multiple gestation. (18)

Interventions for prevention and care

Preventive interventions need to bridge the continuum of care from pregnancy, through childbirth and the neonatal period, and beyond. Lack of positive health-related behaviour, education, and poverty is an underlying cause of many neonatal deaths, either through increasing the prevalence of risk factors such as maternal infection, or through reducing access to effective care.

Pregnant women need to attend antenatal check-up regularly to identify any complications and take immediate measures. Pregnant women need to take immunizations such as for rubella, Hepatitis B and tetanus. In settings where HIV is prevalent, they need to be supported with prevention programs against HIV as well as other sexually transmitted diseases, prevention and treatment of substance use and smoking cessation.

Other specific strategies include:

Before pregnancy: prevention of too early, unwanted, or rapid successive pregnancies and adequate nutrition, including iron and folic acid supplementation, and treatment of anaemia

During pregnancy: management of pregnancy complications and in malaria settings, intermittent preventive therapy for malaria.

During childbirth: monitoring of progress of labour, maternal and foetal wellbeing with partograph, immediate newborn care and antibiotics for pre-term premature rupture of membranes (pPROM)

In the newborn period: promotion of exclusive Breastfeeding, immunizations (BCG, HepB, rotavirus, pentavalent vaccines), thermal care, hygienic cord care and in high HIV settings PMTCT.

In Ethiopia, these services are given in packages of essential newborn care such as the community-based newborn care (CNBC) package consisting of:

- Antenatal care
- Thermal care: Drying, warming, skin-to skin, promotion of skin-to-skin contact (also called Kangaroo Mother Care), delayed bathing

- Early initiation and exclusive breastfeeding-,
- Infection control: clean birth practices, hand washing, clean cord, and skin care.
- Management of possible serious bacterial infections
- Management of preterm and/or low birth weight neonates
- Feeding support, growth monitoring (measuring weight, length of neonates and plotting against a standard curve to detect and treat malnutrition
- Early postnatal home visits, counselling and identification and care of sick neonates.

The Integrated management of childhood illness strategy is adopted and is being implemented in Ethiopia. The component on care of sick newborns provides detailed guidance on how to manage the sick newborn for severe signs, infections, respiratory distress syndrome in addition to the essential newborn care package.

Challenges

All countries and all stakeholders, acting in collaborative partnership, committed to the 17 Sustainable Development Goals (SDGs) and 169 targets to meet by 2030. (19) SDG 3 is specific to health and SDG 3.2 targets child health. SDG 3.2 states:

- By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 livebirths and under-5 mortality to at least as low as 25 per 1,000 livebirths

Over the past decade, substantial progress has been made in newborn health and in preventing stillbirths, including in countries with the highest burdens of mortality. More mothers and their babies can now access effective health care, during and after pregnancy. Yet we are far from our goal of ending preventable newborn deaths and stillbirths by 2030. Half of all under-5 deaths still occur in the first month of life, and 2 million stillbirths occur every year. While the global neonatal mortality is declining to meet the SDG 3.2, it is not declining in many LMIC.

Challenges in addressing newborn health care to meet SDG 3.2 include:

- Human resource: shortage of staff, mix of skills of staff
- Low service utilization
- Poor quality of service

- Lack of or inadequate resource- infrastructure such as space, and supplies such as medicines
- community barriers: several context-based community engagement approach by
- partners, national and regional community sensitization, Newborn health month
- Most supportive supervisory visits to health posts covered antenatal care and promotion of facility delivery but very few addressed newborn and sick young infant care.
- The referral practice including universal offer of referral, use of referral slips, and providing pre-referral treatment according to the national guideline needed support

Coverage of the known interventions to tackle newborn health issues has been low in many LMIC. In Ethiopia, in a survey of 98 health facilities only 27% of health facilities had a heat source in their delivery room, about 12% of health facilities did not assess the babies breathing at birth. ONLY 66% had basic equipment for neonatal resuscitation. (20) The coverage of such interventions, including antibiotics for sepsis and resuscitation at birth, need to be scaled up along with improvement in supportive infrastructure and general newborn care including capacity building of nursing staff and clinicians, as well as optimal breastfeeding and parenteral nutrition. (21). RDS was responsible for 45% of preterm mortality in the SIP study. (17) Interventions specific to RDS such as continuous positive airway pressure (CPAP), and blended oxygen need to be available to have an impact on the high neonatal mortality observed in Ethiopia as well as the long-term complications such as blindness due to retinopathy of prematurity.

Call for action

Neonatal health should be considered beyond survival and treated as a high priority. The enormous number of deaths hides an even more significant number of children who develop impairment.

Tackling the leading overlapping causes of neonatal mortality need further understanding of the underlying predispositions and pathologies, and therefore focused research on causes and cost-effective interventions is needed. Implementation research on education and training is key to facilitate scale up of interventions and sustainability.

More visibility, more efforts, and more funding are urgently needed to reduce the millions of preventable newborn deaths and ensure that all children reach their full potential. Reducing neonatal mortality and morbidity is much more than investing in neonates; it is constructing and

perpetuating a stable society and a thriving economy. Clearly interdependent with maternal and child health, but with specific needs and intervention strategies, neonatal health merits its own specific global healthcare target. The time has come to address the human rights of the most vulnerable, the newborn.

There is a need for policy change to invest in interventions targeting the major causes of neonatal mortality to meet the SDG target of reducing neonatal mortality rate to below 12 per 1000 (19). Further research is required to develop effective and affordable interventions to meet SDG 3.2 target.

- To strengthen the supportive infrastructure and high impact low-cost interventions including skin-to-skin thermal care (KMC), early and exclusive breastfeeding, parenteral nutrition, blended oxygen for preterms and expand /strengthen warm chain system
- To improve capacity of health professionals to provide adequate and advanced inpatient quality newborn care
- To strengthen and improve treatment of the common causes of preterm neonatal deaths by ensuring access to CPAP, effective antibiotics (by monitoring antimicrobial susceptibility regularly) and prompt and effective resuscitation
- To Strengthen the community based newborn care approach and community engagement
- To enhance the infection prevention and control activities
- To support all activities across the continuum of care
- To strengthen the political commitment for the neonatal mortality reduction to the level
- best
- Using the existing Health Extension platform, to strengthen the social mobilization activities

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