Mortality Risk among Term and Preterm Small for Gestational Age Infants

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Low-birthweight (LBW) infants have long been known to have higher mortality than those born 2,500 g or heavier [1]. Most LBW arises from being born preterm or growth restriction in utero, or both conditions. These conditions and their severity (how preterm or how growth restricted), rather than birthweight per se, will impact mortality risk, and the timing and causes of death. Small for gestational age (SGA) infants are considered to have higher mortality risk than appropriate for gestational age (AGA) infants. However, the mortality risk, timing and causes of death have not been well studied in low- and middle-income countries (LMICs). Furthermore, the mortality risks may be quite different for term and preterm SGA infants, and recent studies suggest there are a significant number of infants born SGA but not LBW whose mortality risks have not been well characterized [2, 3].

About 32.4 million SGA infants were born in 138 LMICs in 2010 [4]. 89% of these were term and the remainder preterm. In an analysis that examined data from 22 population-based cohorts of over 2 million live births, studies from South Asia had the highest prevalence of SGA, and Latin America the lowest [2]. Over half of SGA infants were born with birthweights ≥2,500 g, and there was a much higher proportionate burden of preterm in Latin America.

Neonatal mortality risk was lowest among term SGA infants in all three regions, higher in preterm AGA infants, and highest among those born both preterm and SGA (fig. 1). Patterns of mortality risk varied with timing of death among SGA/preterm infants compared to those born term AGA (fig. 2). Mortality risk was comparable for term SGA infants in the early, late and postneonatal periods, with a 3-fold higher mortality than among term AGA infants. For those who were preterm but not SGA, mortality risk declined from the early through late through postneonatal periods, but was still significant in the postneonatal period. For infants
who were both preterm and SGA, mortality risk was comparable in the early and late neonatal periods but declined in the postneonatal period.

Since the prevalence of term SGA infants whose birthweight was ≥2,500 g was high, we estimated mortality risk ratios for these infants separately from term SGA LBW infants. Term SGA LBW infants had higher mortality risk relative to term AGA infants in both the neonatal and post-neonatal periods compared with term SGA infants not born LBW. However, term SGA, not LBW infants, still had a significantly higher mortality risk (2-fold) compared with term AGA infants in the neonatal period, and 50% higher risk in the postneonatal period.

A total of 1.3 million (26%) of the 5 million infant deaths in LMICs in 2011 were attributable to SGA [3]. Of these, ~817,000 neonatal and ~418,000 postneonatal deaths were attributable to SGA.

Infants born SGA have higher neonatal and postneonatal mortality risk compared with infants born term and AGA. SGA infants born preterm are at higher mortality risk than term SGA ones. Over half of SGA infants are not LBW, but have higher neonatal mortality risk than term AGA infants. Hence, clinicians and public health professionals need to

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**Fig. 1.** Risk ratios for neonatal mortality by SGA and/or preterm in 22 studies in Asia, Sub-Saharan Africa and Latin America [2].

![Risk ratios for neonatal mortality by SGA and/or preterm in 22 studies in Asia, Sub-Saharan Africa and Latin America [2].](image-url)
pay attention to such infants, even though they may be at lower risk than term LBW SGA infants. SGA is a significant underlying cause of neonatal and infant mortality, contributing to 29 and 26% of these deaths, respectively. These data suggest that interventions to prevent SGA could have a major impact on neonatal and infant survival in resource-limited settings.

References