

Assessment of Very Low Birth Weight Neonatal Tracking and a High-Risk Approach to Minimize Neonatal Mortality in Bihar, India

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Abstract : In the absence of adequate well-equipped neonatal-care facilities serving rural Bihar, India, the practice of essential home-based newborn-care remains critically important for reduction of neonatal and infant mortality, especially among pre-term and small-for-gestational-age (Low-birth-weight) newborns. To improve the child health parameters in Bihar, 'Very-Low-Birth-Weight (vLBW) Tracking' intervention is being conducted by CARE India, since 2015, targeting public facility-delivered newborns weighing $\leq 2000\text{g}$ at birth, to improve their identification and provision of immediate post-natal care. To assess the effectiveness of the intervention, 200 public health facilities were randomly selected from all functional public-sector delivery points in Bihar and various outcomes were tracked among the neonates born there. Thus far, one pre-intervention (Feb-Apr'2015-born neonates) and three post-intervention (for Sep-Oct'2015, Sep-Oct'2016 and Sep-Oct'2017-born children) follow-up studies were conducted. In each round, interviews were conducted with the mothers/caregivers of successfully-tracked children to understand outcome, service-coverage and care-seeking during the neonatal period. Data from 171 matched facilities common across all rounds were analyzed using SAS-9.4. Identification of neonates with birth-weight $\leq 2000\text{g}$ improved from 2% at baseline to 3.3%-4% during post-intervention. All indicators pertaining to post-natal home-visits by frontline-workers (FLWs) improved. Significant improvements between baseline and post-intervention rounds were also noted regarding mothers being informed about 'weak' child - at the facility (R1 = 25 to R4 = 50%) and at home by FLW (R1 = 19%, to R4 = 30%). Practice of 'Kangaroo-Mother-Care (KMC)' - an important component of essential newborn care - showed significant improvement in postintervention period compared to baseline in both facility (R1 = 15% to R4 = 31%) and home (R1 = 10% to R4=29%). Increasing trend was noted regarding detection and birth weight-recording of the extremely low-birth-weight newborns ($< 1500\text{g}$) showed an increasing trend. Moreover, there was a downward trend in mortality across rounds, in each birth-weight strata ($< 1500\text{g}$, $1500\text{-}1799\text{g}$ and $\geq 1800\text{g}$). After adjustment for the differential distribution of birth-weights, mortality was found to decline significantly from R1 (22.11%) to R4 (11.87%). Significantly declining trend was also observed for both early and late neonatal mortality and morbidities. Multiple regression analysis identified - birth during immediate post-intervention phase as well as that during the maintenance phase, birth weight $> 1500\text{g}$, children of low-parity mothers, receiving visit from FLW in the first week and/or receiving advice on extra care from FLW as predictors of survival during neonatal period among vLBW newborns. vLBW tracking was found to be a successful and sustainable intervention and has already been handed over to the Government.

Keywords : weak newborn tracking, very low birth weight babies, newborn care, community response

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