

Association of neonatal mortality with quality of care at birth: An observational analysis of nationally representative data on 189143 singleton livebirths, India: 2015–2016

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Abstract

Background: Sustainable Development Goals target to reduce neonatal mortality rate (NMR) to 12 per 1000 livebirths by 2030. Institutional births with skilled birth assistance (IBSBA) is one way to achieve this target in low-resource countries like India, which accounts for one-fourth of global neonatal deaths.

Methods: We used nationally representative data from the 2015-2016 National Family Health Survey round four (NFHS-4) to analyze the association between IBSBA and neonatal mortality. We used logistic regression models adjusting for a comprehensive set of covariates.

Results: Out of 189143 singleton livebirths, 143069 (75.64%) were IBSBA, which accounted for 2390 (69%) of the neonatal deaths. While 46074 (24.36%) livebirths were non-IBSBA, and this group accounted for 1074 (31%) of the neonatal deaths. The unadjusted NMR was significantly higher among livebirths that were non-IBSBA (23.49 vs. 16.33; $P < 0.0001$), mothers that did not deliver in an institution with skilled birth assistant were likely to be poorer (43.74% vs. 17.80%; $P < 0.0001$), not educated (48.86% vs. 22.16%; $P < 0.0001$), received no antenatal care (38.47% vs. 11.46%, $P < 0.0001$), have livebirths that were more likely not to be weighed at birth (65.85% vs. 4.70%; $P < 0.0001$) or less likely to be of an average or more birth weight based on a written card (13.87% vs. 42.60%; $P < 0.0001$), and have livebirths that was more likely to be a preterm delivery (7.71% vs. 6.65%; $P < 0.0001$).

We find that in a univariate model with neonatal mortality as the dependent variable and IBSBA as the only key explanatory variable, the odds ratio of neonatal mortality according to IBSBA was 0.69 (95% CI: 0.63 to 0.75), however, once we adjusted for risk factors such as birth weight and preterm delivery the adjusted odds ratio (aOR) increased to 2.13 (95% CI: 1.87 to 2.43).

Conclusions: We find that quality of care at birth as defined by institutional birth with skilled birth assistant is negatively associated with neonatal mortality. Earlier studies that found a positive association between IBSBA and neonatal mortality had not controlled for risk factors such as birth weight and pre-term delivery. Subsequently when these risk factors are adjusted for, there is an adverse association between IBSBA and neonatal mortality. Our results suggest a selection effect – riskier babies are more

likely to be delivered at home without a skilled birth assistant while relatively less risky babies are delivered in institutions with skilled birth assistant. Therefore, not accounting for these risk factors potentially leads to a positive association between institutional delivery with skilled birth assistant and neonatal mortality.

Speaker Profile

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