

Research Brief: Strengthening Prevention of Low Birth Weight through Rural Primary Health Care in Rajasthan

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Low birth weight (LBW) in rural Rajasthan remains closely linked to modifiable maternal nutrition, rest, tobacco exposure, adverse obstetric history, and psychosocial pressure within households.

Evidence from baseline and post-intervention studies in two primary health centre (PHC) catchment areas in Ahore Block, Jalore district, suggests that community-based behaviour-change communication can improve awareness, but counselling alone is unlikely to reduce LBW unless it is combined with family engagement, early risk identification, nutrition support, and stronger follow-up through the primary health system.

Background and rationale

LBW, defined as birth weight below 2,500 g, is a major contributor to neonatal morbidity, mortality, poor growth, and adverse developmental outcomes. In Rajasthan and other rural settings, maternal diet, antenatal care quality, early marriage, household workload, tobacco exposure, and limited autonomy combine to increase the risk of LBW.

To better understand these determinants in western Rajasthan, an initial study in Gudha Balotan and Bhadrajun PHCs examined social and maternal risk factors associated with LBW among rural mothers in Ahore Block. This baseline work was followed by a community-centred behaviour-change communication intervention in Gudha Balotan PHC, while Bhadrajun PHC continued routine maternal health services, allowing post-intervention assessment of persistent determinants and programme implications.

Major Findings

The baseline study enumerated 1,251 deliveries across the two PHCs and identified 63 LBW births, of which 46 LBW cases and 46 normal-birth-weight comparison cases were included in detailed analysis. LBW was more common in socioeconomically disadvantaged households, among women in nuclear families, and in pregnancies characterised by poor meal frequency, complications during pregnancy, pressure to conceive, and previous miscarriage or abortion.

The post-intervention study included all LBW births recorded during the defined study period in the two PHCs, comprising 15 LBW births and 15 normal-birth-weight comparison births. Even after the behaviour-change intervention, LBW remained associated with prior miscarriage or abortion, tobacco use, low meal frequency, lack of fruit intake, inadequate rest during pregnancy, pregnancy complications, and perceived family pressure to conceive.

Antenatal care contact and awareness were widely reported in the post-intervention phase, but these did not consistently align with improved birth-weight outcomes. This suggests that awareness alone is not sufficient when women remain constrained by poverty, food insecurity, heavy domestic work, and family-level decision-making during pregnancy.

Programme implications

The baseline and endline assessment indicate that LBW in rural Rajasthan is driven by a mix of behavioural, nutritional, reproductive, and social determinants that cannot be addressed through counselling alone. The intervention model appears operationally feasible at PHC and community level, but its effect is likely to remain limited unless health workers are supported to identify high-risk pregnancies early and engage household members who influence diet, rest, care-seeking, and pregnancy-related decisions.

The findings also suggest that routine antenatal services should move beyond counting contacts and place greater emphasis on the quality of follow-up for nutritionally vulnerable women, women with prior adverse obstetric history, and women reporting psychosocial stress or tobacco exposure. PHC teams, ASHAs, ANMs, and Anganwadi workers are well-positioned to deliver this support if the approach is institutionalised within routine maternal and child health services.

Recommended actions

1. Integrate structured counselling on diet, rest, tobacco avoidance, and psychosocial support into routine ANC services at PHC and sub-centre level.
2. Introduce early risk stratification for women with previous miscarriage or abortion, current pregnancy complications, low meal frequency, or other known LBW risk factors, and ensure intensified follow-up.

3. Extend communication efforts beyond pregnant women to husbands, mothers-in-law, and other household decision-makers so that advice on nutrition, rest, and care-seeking can be acted upon within the family.
4. Strengthen convergence between PHCs, ASHAs, ANMs, and Anganwadi centres to support nutrition education, supplementary food uptake, and monitoring of vulnerable pregnancies.
5. Include simple programme indicators in routine review systems, such as number of high-risk pregnancies identified, nutrition and rest counselling delivered, tobacco exposure screened, and LBW outcomes tracked by PHC.
6. Use the PHC platform to align LBW prevention efforts with existing maternal nutrition and antenatal initiatives rather than relying on short-term project-mode activities.

Implementation priorities

In the short term, district and block health teams can adopt a focused package for LBW prevention within existing maternal health services in high-burden rural areas. This package should include frontline-worker orientation, household-level counselling, early identification of high-risk pregnancies, and supportive follow-up through pregnancy and the immediate postnatal period.

At the system level, success should be assessed not only by ANC coverage, but by whether women are able to improve meal frequency, dietary diversity, rest, and timely management of pregnancy complications. Monitoring these practical determinants will help shift attention from service contact alone to the conditions that actually influence birth outcomes.

Closing note

The Rajasthan experience shows that LBW can be addressed through a realistic, PHC-linked public health strategy, but one that must combine behaviour change with social and nutritional support. Embedding this approach within routine rural maternal health systems offers a practical pathway to reduce preventable LBW and improve newborn outcomes in underserved communities.