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Maternal pre-pregnancy nutritional status, pregnancy weight gain and Incidence of Low Birth Weight in Nepal

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Intrauterine growth restriction predisposes to immunological and metabolic adaptations⁽¹⁾ and manifests as low birth weight (LBW) with implications for child survival. Lacks of access to antenatal services and poor maternal nutrition during pregnancy⁽²⁾ have been associated with high rates of LBW in Nepal. Recently, attempts have been made to increase accessibility to antenatal services and mitigate the problem⁽³⁾. The objective of this study was to assess incidence of LBW in rural and urban Nepal.

A sample of 400 pregnant women were recruited from rural ($n = 200$) and urban ($n = 200$) areas of Nepal. A cross-sectional retrospective and prospective approach was employed to obtain pre-pregnancy information including usual food intake (via FFQ), and pre-pregnancy maternal weight and height. Repeat 24 hr recall, tracking of weight gain and antenatal clinic attendance were recorded. Relationships between maternal weight and outcome of pregnancy were compared using correlation co-efficient and significance tested using independent t-test or Mann-Whitney U test and Chi Square test for non-parametric data.

Table 1. Newborns with low birth weight (LBW) in a cohort study of pregnant women in rural and urban Nepal ($n = 376$)

	Birth weight <2.5 kg	Birth weight >2.5 kg
Urban	40 (21.2%)	149 (78.8%)
Rural	65 (34.8%)	122 (65.2%)
Total	105 (27.9%)	317 (72.1%)
χ^2 (p -value)	<0.05	

Total LBW incidence was 27.9%, higher than previously reported in this population. The incidence was higher in rural (34.8%) compared to urban (21.2%) areas (χ^2 , $p < 0.05$). Mean pregnancy weight gain from first trimester was 8.11 (± 2.04) kg (median = 8 kg) ranging from 4 kg to 16 kg and a rural:urban difference of Mean = 7.85 ± 1.69 kg v. Mean = 8.36 ± 2.32 kg ($p < 0.05$). Subjects showed wide variations in energy and protein intake. Mean energy intake was 8.04 MJ/d (SD, 1.77; median, 7.85 MJ/d); mean protein intake was low (48.5 g/d; SD 14.45 g; median, 46.2 g/d). Birth weight was associated with energy ($r = 0.61$, $p < 0.001$) and protein ($r = 0.501$, $p < 0.001$) intake.

Pre-pregnancy maternal stunting and dietary intake during pregnancy were major contributory factors in the progress and outcome of pregnancy despite improved access to antenatal services with rural dwellers experiencing the worst outcome.

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