Improving Child Health in India

I was interested to read the editorial by Reddy and van den Hombergh, "Synthesizing evidence for improving child health in India" in the March issue of Indian Pediatrics [1].They mention that high neonatal mortality, diarrheal disorders and pneumonia still remain the chief causes of morbidity and mortality in children, especially those below the age of 5 years, and also that community based newborn care, oral rehydration therapy and early detection and adequate management of acute respiratory infections are not widely used. They emphasize the difficulty of bridging the gap between evidence and policy and that policymakers would "benefit from information that is relevant to decisions highlighted for them and having evidence contextualized to their settings". Whereas it is important to generate, synthesize and communicate relevant evidence, we must understand that the chief constraints in improving child health and welfare include adverse socioeconomic conditions, illiteracy and ignorance, poor sanitation and hygiene, lack of safe water, and vector control.

In most parts of India, rural communities are illiterate and poorly informed about basic health care. If parents understood the benefits of vaccinations and several other measures to prevent common diseases and obtain appropriate treatment for illness, they would make use of available facilities and demand better services. In recent years the Government has launched a number of initiatives, which if properly implemented would have prompt and far reaching benefits. The National Rural Health Mission (NRHM) includes several important components to tackle the existing problems. The appointment of accredited social health activist (ASHA) in villages for health facilitation, and participation of village panchayats in various healthcare activities, improvement of sanitation and several other programs undertaken by the Ministries of Rural development and Panchayati Raj are crucial measures. However, education and empowerment of the underprivileged communities (rural as well as urban), and their participation is of utmost importance without which no program is likely to succeed.

There are wide variations in indices of health status in different States of the country, and between affluent segments and underprivileged urban and rural communities. Morbidity and mortality patterns among the latter are highest and need to be investigated and analyzed separately and addressed appropriately. Generating new, relevant information on child health is clearly necessary, but enough information is already available for application of effective control measures.

I have also noted that efforts at bridging the gap between evidence and policy for child health programs in India and the series of systematic reviews are a result of partnership between Public Health Foundation of India and UNICEF. The Indian Academy of Pediatrics (IAP) has vast experience over several decades in various fields of child health and child welfare. Their expertise would be very useful in making recommendations for intervention and action in these areas.

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Growth of VLBW Infants

Few issues need clarification, with reference to the recent article by Saluja, *et al.* [1].

First, the authors have observed maternal hypertension in 52 subjects (54%). A subgroup analysis of growth in these infants would have made the study more interesting. Similarly, maternal characteristics like socioeconomic status, parity, level of antenatal care, maternal weight gain/ nutrition etc did not find a place in the report. These

epidemiological factors are important as they could have modified the *in-utero* growth and hence the resultant postnatal growth assessment.

Secondly, the authors have not reported the type of SGA in the study subjects (whether symmetric or asymmetric) as the postnatal growth pattern would have been different in each of this group. Moreover, it's unclear how gestation was assessed in subjects where the estimates of last menstrual period were unreliable and early ultrasonography was not available. Situations like these are very common in our country and this needs clarification.

Thirdly, even though the authors have mentioned that calories were targeted at 80 kcal/100mL with an additional protein intake of 0.6 g/kg/day, they have not mentioned in how many they were able to achieve this target; how long it took for them to achieve full enteral feeds; and what were their target total calorie and protein requirements. Moreover, information regarding total parenteral nutrition (TPN) like how many received TPN and growth patterns in those infants who received TPN before they were transitioned to enteral feeds needs more elaboration.

Fourthly, only 9 out of the 97 (9%) were extremely low birth weight (ELBW) infants. Hence, a growth trajectory for ELBW infants with such small number is prone to be erroneous. The authors have observed a decrease of 1*Z* score in all parameters from birth to discharge. Surprisingly, this decrease has been observed with head growth too which may not be really good information. However, this reinforces the need for an aggressive postnatal nutrition policy which includes utilization of TPN to tide over the transition period from intravenous fluids to enteral feeds [2].

Finally, the authors have not mentioned how many subjects had major morbidities like necrotizing enterocolitis and bronchopulmonary dysplasia, as these morbidities can significantly compromise the postnatal growth [3].

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REPLY

We appreciate the readers' keen interest in our article and their critical comments. It has been rightly pointed out that epidemiological and maternal characteristics have an impact on fetal and post natal growth. However, our primary objective was to evaluate postnatal growth pattern of VLBW infants, rather than impact of demographic predictors on their growth *per se*. Further, relatively small sample size of our study precluded statistical analysis of these predictors on postnatal growth with adequate power.

Even though we did not report type of SGA in our manuscript, majority of SGA infants in our cohort were asymmetric and in most of them the reason for growth restriction was gestational hypertension or placental dysfunction. More than half (53.6%) of pregnancies with VLBW infants were associated with hypertension. Assessment of gestational age was done (in that order) by 1st trimester USG, LMP, if reliable, or by new Ballard score. In the settings where this study was performed, majority of pregnancies are booked and more than 80% pregnancy had first trimester ultrasound available for gestational age assessment.

We followed an aggressive policy on enteral feeds. Infants were initiated on enteral feeds at a mean age of 2.81 ± 2.33 days and time taken to reach full feeds was 10.99 ± 7.67 days. Infants who were not likely to be on full enteral feeds or developed feed intolerance were initiated on parenteral nutrition (PN) on first day with 1g/kg of amino acids and lipids and gradually increased to a total of 3g/kg/day. Forty four (45.4%) of infants in our cohort received PN during NICU stay and the target for calorie intake were 90 cal/kg/d on PN and 120-130 cal/kg/d on enteral nutrition. We achieved calorie density of enteral formula to 80 cal/100 mL by adding human milk fortifier once infant reached 100mL/kg/day. If human milk was not available, preterm/LBW milk formula with a calorie and protein content of 80 cal/100 mL and 1.83g/100mL, respectively.

As the readers have commented, growth pattern of ELBW infants in our study might not be truly representative due to small number of infants and a large data is needed to demonstrate growth pattern of this