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GROWTH PATTERN OF LOW BIRTH WEIGHT (LBW) BABIES

Normal birth weight is the first wealth of a baby. Low Birth Weight (LBW) is a 'hard social indicator' associated with infant mortality, morbidity, physical and developmental retardation and reduced survival and quality of survival. LBW poses a great challenge due to the economic burden on the family. The ultimate growth and intelligence of an individual is the expression of the endowed genetic potential. Nutrition and environment are the two most important factors that influence this. The growth of a baby is genetically programmed. LBW is a consequence of growth failure in the early stage and is likely to result in failure to reach the endowed genetic potential.

Birth weight is the sum total of the intrauterine environment. LBW is <2.5 kg, irrespective of gestational age. Very Low Birth Weight (VLBW) is <1.5 kg and extremely low birth weight (ELBW) is<1 kg. LBW is heterogeneous group consisting of preterm and full-term small-for-gestational-age (SGA) babies. The SGA babies have intrauterine growth retardation. In fact, their malnutrition starts in the womb. Depending upon the gestational age, babies are classified into preterm babies with <37 weeks of gestation and full-term babies with > 37 weeks of gestation. Those with normal organogenesis, but reduced nutrition and placental insufficiency especially in the later period of gestation become malnourished babies. They generally do not have congenital anomalies, and they grow and catch up with the peer group, if appropriate intervention is given

early. Preterm babies without congenital and other problems do extremely well and catch up with the peer group in growth and development by 2 years of age. Hypoplastic babies have reduced weight, height and head circumference and are symmetric in appearance. Malnourished babies have reduced weight but length and head circumference are almost normal and are 'asymmetric' in appearance.

The union of the sperm and the ovum results in a monocellular zygote with tremendous growth potential. At conception, the weight is only 0.005 mg. The weight increases 65 million times to achieve a birth weight of 3 kg. At 2 weeks, the embryo weighs 1 g and measures 2.5cm. At 12 weeks it is 14 g and 7.5 cm in size and at 28 weeks, it is 1 kg and 35 cm. At 40 weeks, or full term gestation, the weight is around 3 kg and the length around 50 cm. The preterm babies have less metabolic and nutritional reserve. Fat stores are less because fat is mostly deposited in the last 6 weeks of gestation ,i.e, after 34 weeks gestation. In a 28 weeks gestation preterm baby weighing 1 kg, the fat is only 1% of body weight; it is around 3.5% at 32 weeks and 16% in full term baby. Glycogen is deposited in the liver only in the last 4 weeks of gestation. At around 32 weeks gestation, glycogen per unit weight of liver tissue is only one-fourth and the total body carbohydrate is only 9 g compared to 34 g in a full term baby. Similarly, protein, calcium, iron, and other stores are also very little in them. Thus the body composition of preterms differ from that of term babies in many ways.

Soon after birth, there is about 10% weight loss in most babies. Then the birth weight is regained by 10-14 days. In a term baby, the initial weight gain may be 10-40g/day. The weight gain during infancy is as follows:

Weight gain in the first 3 months (after regaining birth weight)	200g/week
Weight gain in the next 3 months	150g/week
Weight gain in the next 6 months	100g/week

A normal baby doubles the birth weight by 5 months, triples by 1 year and quadruples by 2 years of age. But, in LBW babies, especially preterm babies and those without congenital anomalies, the growth is even faster.

LBW is associated with physical, developmental, intellectual, behavioural, economic and health problems. Due to the diverse sequelae, LBW can be perceived as the greatest public health problem facing the globe. Good quality antenatal care has failed to reduce the incidence of LBW significantly. This warrants effective new strategies aiming at the girl child, adolescent girl, the prospective mother and the antenatal mother.

Antenatal care is important to insure postconceptional early care and for risk assessment. Overall improvement in socioeconomic status, environmental hygiene, adolescent nutrition, micronutrient supplementation and control and treatment of reproductive tract infections (RTI) and sexually transmitted infections (STI) also deserve special mention. Women empowerment and social and financial stability are also important in reducing LBW. Empowerment of women in child rearing skills and ensuring support system in child rearing are also important, for child survival and quality of survival. These are now collectively called as parenting skills.

In the lifecycle approach to reduce LBW and improve birth weight of babies, it is better to start with adolescent care. There are already a number of programmes for infants and young children and pregnant and lactating mothers.

Nutrition and micronutrient supply to adolescents, rubella vaccination to prevent congenital rubella and hearing defect in offspring's, use of reproductive and child health (RCH) services, use of family life education and adolescent clinics can initiate interventions among adolescents.