

Early Prediction of Birth weight Based on Maternal Factors

Introduction:

According to a definition adopted by WHO in 1950, a human birth weight less than 2,500 gms. is termed as Low Birth Weight (LBW). The term LBW includes pre-term babies (those born before 37th week of pregnancy), as well as full term babies who are small for date due to intra-uterine growth retardation (IUGR). While pre term birth, till date, is a phenomenon of largely unknown aetiology, IUGR is caused due to various abnormal foetal conditions, or poor maternal conditions – anthropometric, physical, and clinical or socio economic.

In our country, the current estimate of incidence of LBW is approximately 30%.

The LBW phenomenon has been identified the world over as a public health problem of the first rank, because of a good many hazards associated with this as indicated below.

Neonatal mortality and infant mortality rates are significantly higher among LBW babies than their normal birth weight (NBW) counterparts (e.g., 1, 4, and 5). Moreover, LBW survivors as a group are subject to a good many long-term problems such as morbidity and development disorders like higher incidence of cerebral palsy (e.g., 4). Cognitive and neuropsychological problems are also evident as reflected in the LBW group recording significantly lower IQ scores, conduct disorders, hyperactivity and attentional weaknesses, shyness, \unassertiveness and withdrawn behavior syndrome, as also learning problems, poor academic performance etc. These apart, LBW children, the world over, have been found to experience higher incidence of asthma, repeated upper and lower respiratory infection and ear infection and epilepsy, as also to develop malnutrition and weakened immunity (e.g.,9). In addition, LBW phenomenon has a compounding effect in that women who were LBW babies themselves, are more prone to give birth to LBW babies.

In view of the above, the LBW phenomenon has emerged as a scientific problem of immense Interest in recent years, and a good many studies across the globe on identifications of correlates of LBW prediction of LBW at an early stage of pregnancy etc have been reported, However, most of these studies are either not suitable under Indian conditions or require sophisticated instruments for assessment of maternal factors, often not suitable to be used by community health workers.

The objective of this project is:

1. To identify a set of correlates of LBW that can be assessed by even community level health workers with a little training for taking measurements on BMI, mid-arm circumference, head circumference, abdominal girth and fundal height.
2. Based on these correlates, to develop suitable tools for classifying pregnant women into two classes - prospective LBW mothers and NBW mothers, at the 28th week of pregnancy.
3. Finally validating the developed formula using different measures.

The motivation:

once a case turns out to be a prospective LBW, the mother is brought under intensive medical care so that she does not eventually give birth to an LBW baby. It may be mentioned here that the present study is a part of a bigger project aiming to develop screening tools to be applicable during 12th, 20th and 28th week of pregnancy based on sequentially available data, to facilitate progressive monitoring of the cases.

Data history:

The data in the study are those collected from two reputed NGOs – Child in Need Institute in South 24 Parganas and Nivedita Community Care Centre in Hooghly, West Bengal.

Longitudinal data have been collected from pregnant women through home visits during 12th week, 20th week and 28th week of pregnancy and immediately after child-birth. Mothers who came to respective health centres for antenatal care during a specific period have been chosen as potential candidates for this study. Data for 651 cases complete in all respects have been used.

Based on the findings in the previous studies, we started with the probable correlates of LBW phenomenon among maternal factors listed below:

Physical Measurement: Height, Weight, Body Mass Index, (BMI)

(BMI= (Weight in Kg)/ (Height in metre) ²), mid arm circumference, head circumference, abdominal girth, fundal height (at 20th week & 28th week of pregnancy)

Information on current pregnancy: Age at pregnancy, Order of gravida (parity), Age at marriage.

Socio – economic factors and Habits: Religion, No of members in the family, No of adult women (aged >-18) in the family, Educational level (Illiterate, Primary education, High school & above), Economic level (from selected surrogates (e.g. absence of own latrine, own tube well, radio/television, bicycle/scooter/moped, pucca house etc.)

Occupation, Food Habits (how many times Protein, Carbohydrate, Vitamins etc. consumed on weekly basis), Tobacco consumption habit, Habit of taking rest after lunch for two hours.

Current Illness: Presence of anaemia, infection, blurring vision, BP (Systolic and Diastolic), asthma, nagging headache, convulsion.

Delivery Reports: Birth weight(s): single, twin or triplet: delivery at home or institutional: sex of the baby (babies).