

## Calcium and Vitamin D supplementation for prevention of stunting

In recent years, there have been several Indian studies highlighting the fact that, though they are presumably exposed to plentiful sunlight, healthy Indian adults do, in fact, show low vitamin D status and low 25-hydroxy-D concentrations<sup>1-6</sup>. Skin pigmentation and the inadequate exposure to sunlight are possibly responsible for the reported widespread presence of vitamin D deficiency in Indian adult populations. There are also studies indicating vitamin D deficiency in seemingly healthy school children<sup>7</sup>.

Several studies have documented low vitamin D levels in women in the reproductive age group. Poor maternal nutritional status with respect to vitamin D and calcium has been shown to result in an intra-uterine environment that leads to poor bone mass in the newborn<sup>8,9</sup>. It is well known that the vitamin D content in breast milk is low<sup>10</sup>; it is possible that the Vit D levels of breast milk in Indian women with poor calcium and Vitamin D status may be particularly low. Hypo-calcaemia and vitamin D deficiency in exclusively breast-fed infants of mothers who had received inadequate exposure to sunlight have been reported in India<sup>11</sup>. It is possible that sub-clinical deficiency may be even more common and may be one of the factors responsible for the observed stunting in children.

In view of the existing data about the prevalence of these deficiencies, and given that stunting in young children continues to pose a problem in India and in other countries of the region, NFI had initiated an investigation into the effect of supplementation with vitamin D and calcium on linear growth in children in the critically important first two years of life. The study is currently ongoing. The results from the study can provide useful leads for public health strategies for prevention of stunting in children from low-income families.

### Objectives

The objective of the study is to investigate the effect of daily supplementation of calcium and vitamin D (250mg of calcium and 250 IU of Vitamin D) from the first month upto 24 months) on height at 24 months in children from low-income groups.

### Study design

The study was designed as a randomized, double-blind, placebo-controlled trial. The code distinguishing the supplement from the placebo is known only to the manufacturing unit and to the DSMB chairman. Anganwadi centres from selected ICDS blocks were to be chosen, taking into account that they

- are within about 10 km of NFI,
- have a relatively stable population (not having high proportions of migrant population groups), and
- have committed staff and a community that is able and willing to participate in this long-term follow-up study .

## PROJECT IMPLEMENTATION PHASES

### Step 1 Identify Anganwadi centres and prepare a database

- within approximately five Km from NFI, having a relatively stable population
- in which the staff and the members of the community are able and willing to participate in this long-term follow-up study
- conduct a survey of all the households that are covered by the anganwadi



### Step 2 Identify pregnant women in the third trimester of pregnancy

- obtain informed consent to participate in the study
- follow up till delivery
- try to obtain information on birth weight of infants



### Step 3 Enroll apparently healthy infants with no major congenital malformations

- randomly allocate to study and control groups
- record weight and length on day 15
- initiate supplementation/placebo from fifteenth day.



### Step 4 Follow-up schedule

#### Throughout the period of supplementation

- daily supervised administration of the supplement / placebo by a field worker living in the locality
- once a fortnight by the research staff to assess compliance with the supplementation programme and record morbidity due to infections

#### In the first year

- once a month during the first year to obtain information on infant feeding practices, immunization and other nutrition and health interventions, and to measure weights and lengths of the infants