

# The problem of iron-deficiency anemia in india

Parts of the World, Asia



## **Significance of Iron-Deficiency Anemia**

Iron-deficiency anemia (IDA) poses a significant public health problem globally, as it affects 30% of the world's population. Two billion people suffer from IDA, making it the most prevalent nutrition-related disorder in the world. In India, the prevalence is particularly high; about 55% of India's female population has IDA. IDA is caused by insufficient iron in the body, which produces a host of widespread clinical effects. Individuals fatigue easily and experience shortness of breath, headaches, decreased appetite, and weakness; each leads to reduction of work capacity and productivity.

In fact, India experiences an annual loss of 1.25% of gross domestic product directly related to lost worker productivity caused by IDA. Decreased appetite causes IDA to be exacerbated, further diminishing the quality of life of millions of people. In children, IDA not only causes these physical ailments, but also causes developmental problems such as reduced cognitive functioning, impaired memory, reduced attention, and decreased scholastic performance. IDA increases risk for low birth weight and preterm births and maternal and perinatal deaths.

What has been done? Since IDA is such an extensive problem in India, several interventions have already been implemented. Some involve health education emphasizing dietary modification strategies. Consumption of red meats and dark, leafy vegetables were stressed, as in a MotherCare study in India, which resulted in increased hemoglobin IDA-related knowledge. Additionally, iron supplementation projects have been attempted, but while

this may improve iron status temporarily, continuous interventions are necessary to sustain status.

## **Target Population**

According to the WHO, almost 100% of the population of Coimbatore, Tamil Nadu is iron-deficient, meaning this district has the highest prevalence of disease in India. We target adolescent girls aged 15 to 19 living in Coimbatore, because out of the 140, 000 adolescent girls living there. 93% have IDA, and one-third of these are severely anemic. Adolescent girls are especially susceptible to IDA because they are experiencing periods of rapid growth; tissues have increased demands on iron uptake, so their diet may not supply enough iron to satisfy their proper development.

During adolescence, girls menstruate, which causes increased losses of iron via monthly loss of blood. Also, in Coimbatore, where nearly 86% of adolescent girls are married, many become pregnant, and there is a direct correlation between an infant's iron status and maternal iron stores. It is therefore important to target these girls to ensure that infants receive adequate amounts of iron to reduce cognitive and psychomotor complications.

Additionally, because of IDA's impact on cognitive function, adolescent girls, the majority of whom are in school, may have disproportionately worse school performance. Other demographic factors also indicate why the adolescent girls of Coimbatore are so important to target. 90% of these girls are Hindu, which is an important determinant of a vegetarian diet. The south Indian diet in Tamil Nadu is comprised of mostly cereals, roots and tubers,

and fruit, none of which have high iron content. In examining the caste level in Coimbatore, about 22% of adolescent girls are classified as the lowest level of society (SC/ST).

Membership in a caste reflects measures of socioeconomic status such as job type, parental education, family size, and land ownership; low SES heavily impacts IDA. We will focus on the population of adolescent girls as our direct and primary targets because during this age interval they are typically enrolled in school and have greater access to media and health information than they will have later in life. These girls will soon be responsible for the health of their children and families, our intervention's indirect secondary targets. This means they will have the greatest capacity to incorporate healthful nutritive information into their daily food choices, rendering them very influential. Also important to note is the traditional role of Indian women, who are viewed as subordinate, and who are primarily homemakers. They value the good of the family over themselves as individuals, and may not have the self-efficacy to place importance on their own health.

## **Needs Assessment**

During the needs assessment process we collected and analyzed data from a variety of sources. We conducted an exhaustive literature search to review the significance of IDA as a global public health concern and focused on data collected by credible organizations such as the WHO and Nutrition Foundation of India to examine how IDA has affected India and how programs have aimed to reduce IDA. To better understand our target population in Coimbatore, we reviewed data collected by the Census of India

and performed a literature search on the people of Coimbatore. Pertinent information such as their culture, economy, fertility rates, and literacy rates allowed us to perform a social indicator analysis on our target population. While providing useful and germane information, these data sources could not address all of our assessment questions, so we conducted key informant interviews.

We interviewed Renu Thomas, M. A., who worked as a public health professional in India, to obtain a broader understanding of social norms and health systems in India, and to gain insight about types of interventions that may be most appropriate for our target population. We also interviewed UCLA Professor Osman Galal, an expert in nutritional health in developing countries to develop and clarify our intervention's objectives. Ideally, with more time and funding, we would improve our needs assessment by conducting a focus group with Coimbatore girls to obtain firsthand perceptions of IDA as a health threat so we could consider prevailing attitudes and knowledge. We would also interview the director of India's National Programme for Control and Prevention of Nutritional Anaemia to learn what IDA interventions have been effective.