

# *INTRODUCTION*

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# I.INTRODUCTION

The word 'adolescent' has its origin in the Latin word "adolescere" which means "to grow" or "grow to maturity". WHO (2003) defines adolescence both in terms of age spanning between 10 to 19 years and in terms of phase of life marked by special attributes, which include physical growth and development.

Out of every five people, one in the world is in adolescent stage (Schmid, 2001). Of the 1.2 billion adolescent's world wide, about 85 percent live in developing countries and the remaining live in industrialized world ([www.ac.uk/guideline htm](http://www.ac.uk/guideline.htm)). Adolescent population is expected to reach 1.13 billion by the year 2025. As per 1991 census, India had 174 million young people and the number has swollen to 230 million in 2001 comprising 23 percent of the total population (Yadav, 2002).

Approximately, 13.3 million of India's population is between the age of 15 and 25 years. About 40 percent of adolescent girls get married before the age of 20 and become pregnant before attaining 20 years of age (UNICEF, 2002). During this period adolescents gain more than 20 percent of their adult height, 50 percent of their adult weight and 50 percent of their skeletal mass ([www.who.int/nut/ado.htm](http://www.who.int/nut/ado.htm)). Nutritional adequacy is one of the key determinants of the quality of human resources. At this stage adolescents require large amount of nutrients to support their growth. Sub optimum intake will affect the growth rate which will lead to poor performance in their later life.

Adolescents exhibit peculiar food habits. They search for independence and have concern over appearance that result in missing meals, eating away from home, increased consumption of wrong food, imbibing of bad habits and non- traditional food habits (Devadas, 2001). These wrong food habits lead to malnutrition and deficiency of iron, vitamin A and iodine. Life styles of the adolescents influence their intake of nutrients and affect their food habits as well as their physiological requirements of nutrients. Adolescent nutritional problems are common throughout the world (Eisenstein, 1997;

Measham and Chatterjee, 2000 and Frank, 2003). Some teenagers lack adequate food and others make poor food choice (Meredith, 1997).

Today, the death of the family meal has coincided with the explosion of fast food restaurants and smart marketing of junk foods to children. Fun foods like fries, burgers and colas are now a daily staple among youngsters leading to high salt and sugar consumption (The New Sunday Express, 2004). Television gets a bad rap, getting blamed for every thing from violence to obesity (Sophia, 2003). It is hard not to hold television responsible for faulty eating habits of adolescents.

Concerns about the quality of adolescent's diet are numerous, because of rapid growth and development total nutrient needs are higher in adolescents than any other time in the life cycle (Neumark and Hannan, 2001). Despite the percentage of healthy eating, adolescent studies have consistently shown that adolescent as group have poor eating habits that do not meet current dietary recommendations (Shry and Neumark, 2001). Adolescents consume excessive amount of fat (particularly saturated fat), sugar, salt and inadequate amount of fruits, vegetables, whole grains. In addition, these dietary patterns are often coupled with inadequate physical activity. These energy imbalance leads to development of chronic diseases.

Despite the rapid progress that has been made in the technology of food production and processing, global malnutrition continues to be a major area of concern for public health. The problems of malnutrition in developing countries encompasses a spectrum of deficiency of which the most devastating is under nutrition and deficiency of one or more of the three micro nutrients like iron, vitamin and iodine (Prabhakaran, 2003). These nutritional problems are associated with health hazards (Ninth Five Year Plan, Anonymous, 1997).

About one in every five persons in the developing world is chronically under nourished, while 192 million children suffer from protein energy malnutrition and over 200 million experience micronutrient deficiencies (Latham, 1997). Together they

contribute to a great deal of morbidity, ill health, growth retardation, reduction in physical and developmental activity among adolescents.

Adolescents have lower mortality rate among the different age groups and have therefore received low priority. Studies by Vasanthi et al., (1994) and Chaturvedi et al., (1999) revealed that the prevalence of malnutrition and anaemia is high in the adolescent group.

Three billion people are affected by micronutrient deficiencies world wide; the most prevalent of which is iron deficiency (Viteri, 2003). Approximately 250 million adolescents in the world are affected by anaemia. International Center for Research on Women Studies has documented that 55 percent Indian adolescents are anaemic (Matrinaz et al., 2004). In 1961, the prevalence of anaemia in Tamil Nadu, India was as high as 97.9 percent (Rao et al., 1961) and it declined to about 81 percent in 1989 (Murthy et al., 1989) and to about 61.7 percent in 1993 (Chadrsekhar et al., 1995) and further declined to about 51.7 percent in 2007 (Vijayaraghavan, 2007). About 50 percent of the adolescent girls in Coimbatore district, Tamil Nadu were anaemic (Yegammai, and Swarnalatha, 2006).

Iron deficiency anaemia consistently and linearly reduces maximum aerobic capacity and physical endurance (West, 2000). It is associated with poor mental and motor development (Grantham, 2000). Five to seven percent of adolescents have vitamin A deficiency in the selected geographic area. Fifty three percent adolescents are deficient in iron and nine percent have goiter (Kapil and Bhavana, 2002).

To combat the micro and macro nutrient deficiencies, several intervention programmes have been initiated. The entire intervention strategy comes under four major categories namely diversification, supplementation, food fortification and public health measures. Strategies selected should be appropriate to the need, the existing delivery mechanism and available technologies.

A food based approach appears to be the most practical solution in addressing the root causes of the deficiencies in providing immediate relief. If the deficiency is wide spread supplementation may be designed to cover the entire population. If not it will be targeted at vulnerable groups based on age, gender and geographic condition.

Among the processed form of oilseeds meal, deoiled coconut meal is found to have the highest iron content. Being locally available, this technology based food is also available at a cheaper cost. In spite of high nutrient qualities, there is no studies available pertaining to the formulation, estimation, supplementation and evaluation of deoiled coconut meal based iron rich foods among anaemic adolescents. It is high time that we shift our attention towards the promotion of health and nutritional status as these adolescents who form a major percentage of our population.

In this direction, the present study “Impact of Nutritious Supplement on Selected Anaemic Adolescents in Coimbatore City, Tamil Nadu” was envisaged to overcome the iron deficiency anaemia among the selected anaemic adolescents. In this research a nutrient rich supplement was formulated using deoiled coconut meal, rice flakes and defatted soya flour as the major ingredients for supplementation. The present study focuses on the following objectives. TO

- A. assess the nutritional status of selected adolescent boys and girls
- B. develop a nutritious supplement to improve the nutritional status of the selected adolescents
- C. supplement and evaluate the impact on the selected underweight anaemic adolescents and
- D. impart Health Oriented Education Programme (HOEP) and assess its impact on knowledge, attitude and practices (KAP) of the selected adolescents.

With these objectives two hypothesis were set for the study

- Hypothesis I -** Supplementation of the deoiled coconut meal incorporated supplement will improve the nutritional status of the selected underweight anaemic adolescents.
- Hypothesis II -** Health Oriented Education Programme (HOEP) will improve the knowledge, attitude and practices (KAP) of the selected adolescents.