INTRODUCTION

Worldwide, the global population comprises of 1.2 billion of adolescents (10-19 years) and around 243 million (20%) of them live in India (UNICEF 2011). Adolescence, the second decade of life, is a transitional period between childhood and adulthood. It is also the most challenging period, in which an individual undergoes major physical, biological and hormonal changes resulting into psychosocial, behavioural and sexual maturation between the age of 10 -19 years. The relatively uniform growth of childhood is suddenly altered by an increase in the velocity of growth during adolescence making them nutritionally vulnerable for several reasons (Sawyer et al 2012).

Adolescents are often thought of as a healthy group and hence are the neglected ones. It is a period when health problems that have serious immediate consequences can occur or when problem behaviours that have serious adverse effects on health during adulthood can be initiated. Hence, adolescence is the window of opportunity to set the stage for a healthy and productive adulthood and to reduce the likelihood of health problems in the years to come (WHO 2012).

With the epidemiological and nutritional transition, coupled with globalization of economies, nutritional problems with industrialized countries become increasingly prevalent in low-and middle income countries, notably malnutrition (over nutrition, under nutrition and micronutrient deficiencies). Many times, among adolescent population, problems of under nutrition and over nutrition coexist along with micronutrient deficiencies, especially anemia, which frequently goes unrecognized where it compromises their capacity to learn, due to reduced cognitive ability, poor school attendance thereby affecting optimal productivity (FAO 2007).

However, contrary to the hypothesis, that over nutrition and under nutrition are the problems of high or low socio economic strata respectively, very few studies globally and in India, have reported the prevalence of double burden of malnutrition among adolescents belonging to middle to high socio economic status (Özgüven et al 2010, Opara et al 2010, Iyer et al 2010). As childhood obesity is considered a threat for the onset of adulthood non communicable diseases (NCDs), central obesity and high blood pressure during childhood are also the concerns as they are also significantly correlated with the NCDs. (Kelishadi et al 2007, McCarthy and Ashwell 2006).

Globally, anaemia affects 1.62 billion people, which corresponds to 24.8% of the population. Similarly, 25.4 % of school aged children globally are anemic (WHO 2008). According to NFHS III report in India, 56% of ever married women between the age of 15-45 years were reported to be anemic (NFHS 2005-2006). Till now, anemia has always been reported among the adolescent girls only from under privileged group (Choudhary and Dhage 2008). However, triple burden of malnutrition (double burden with anemia) along with NCD modifiable risk factors (high waist circumference, hypertension and unhealthy dietary and lifestyle practices) have not been reported among the adolescents, either globally or in India.

The Ottawa Charter for Health Promotion (Ottawa 1986) has had a major influence on school health in the last 20 years. Following on the lines of Baby Friendly Hospitals Initiative, WHO Expert Meeting on Childhood Obesity initiated Nutrition-Friendly Schools Initiative (NFSI) to combat the pandemic of double burden of malnutrition along with micronutrient deficiencies by designing integrated school based programs and interventions (WHO 2006).

Therefore, school nutrition and health promotion programmes can be initiated, as they provide the most effective and efficient way to reach adolescents, by reaching them at any influential stage in their lives during childhood and adolescence when lifelong nutrition patterns are formed and by providing a setting to incorporate nutrition and health education in the curriculum or initiating separate intervention programs. Hence, various school based public health approaches, such as regular nutritional screening, providing micronutrient supplements, ensuring its consumption and nutrition behavior development are the most cost – effective approaches (Gorely et al 2009, Steyn et al 2009). School intervention programs also provide an opportunity for parents participation, as they are the first role models for their children, and help in reinforcing the healthy dietary and lifestyle practices outside the school (Epstein 2011).

Also, of many objectives of the global strategy for the prevention and control of non communicable diseases, promoting interventions to reduce the main shared modifiable risk factors, like unhealthy diets, and physical inactivity, through various settings is considered an appropriate approach to reach many at one time. Hence, school settings have been considered the best buys by WHO to address the NCD risk

factors early in life by initiating nutrition and health promotion programs which will enable them to enter healthy and productive adulthood (WHO 2008).

Hence, the following study was conceptualized with the aim to conduct a situational analysis of the adolescents from two private schools of Vadodara, then based on the results of the situational analysis, a nutrition health promotion program was designed for the adolescents. The broad and specific objectives of the study are as follows:

BROAD OBJECTIVE

To study the impact of a nutrition and health promotion program in adolescents (10-12 years) in a school setting.

SPECIFIC OBJECTIVES

1. To review National Curriculum Framework (NCF, 2005) and Gujarat board curriculum being followed by Central Board of Secondary Education (CBSE) and Gujarat Secondary & Higher Secondary Education Board (GSEB) respectively, with regards to essential topics on health and nutrition.
2. To assess the school ethos and environment with respect to nutrition and health services in the school with the help of Nutrition Friendly School Health Index (NFSHI) adapted from Nutrition Friendly School Initiative (NFSI), and School Health Index (SHI).
3. To assess the canteen services in the school for the nutritional quality of the items being sold in it.
4. To assess the knowledge of the science and physical activity teachers regarding nutrition and health aspects with the help of a pretested questionnaire.
5. To conduct situational analysis of the adolescents with respect to their anthropometric, biophysical, biochemical, dietary and lifestyle practices, and meal pattern with the help of a pretested questionnaire adapted from Global School Health Initiative (GSHI).
6. To create enabling environment in the school, by building capacities of the teachers for tiffin auditing, of parents to provide healthy tiffin and by improving the available nutrition services (canteen) in the school.
7. To improve parents' knowledge attitude and practice, by conducting awareness and capacity building sessions pertaining to understanding various aspects of

adolescents and building their capacity to manage underweight and overweight problems faced by their children.

8. To improve anemia status of adolescents by necessary IFA supplementation (60mg elemental iron+ 0.5 mg folic acid) for 3 months.
9. To improve knowledge, attitude and practices of the adolescents regarding healthy dietary and lifestyle practices by nutrition health education and capacity building sessions.
10. To assess the impact of one and a half year "nutrition health promotion programme" on the anthropometric, biophysical, biochemical, dietary and lifestyle practices of the children by comparing the results with a control school.