

I. INTRODUCTION

Children are the living messages we send to a time we will not see. The vision of any country depends on the well-being of its children. Children constitute one-third of India's population and form the major determinants of the future. Only healthy children can help build a strong future. Health of a population is influenced by the economic growth of a country.

In India, there has been tremendous growth, with increased stride made in the economic front. This economic progress, with India being the eleventh largest economy, has enabled better technological development. Development in technology has brought in the comforts of urbanization and increased standards of living. The fruits of development directly reach the target group of urban children as they reap the benefits of improved standards of living and economic progress. Rapid economic growth has improved the socio-economic and health status of Indians. These benefits are bestowed profoundly on children, who are considered the future of the country.

In addition to socio-economic and nutritional transitions, behavioral transitions of children significantly contribute to rapid changes in the health status. Nongkynrih et al. (2004) attribute industrialization, socio-economic development, urbanization and changing lifestyles in India as factors leading to the burden of non-communicable diseases. It is, therefore, mandatory to provide a healthy environment to enable a better progress of children.

A healthy environment for children encompasses the physical environment – home, school and community as well as the social environment – lifestyles and behavior aspects (WHO, 2011) which determine the health status of children. Health of children is pivotal in helping them attain their goals of growth and maturity as well as cognitive development.

A formidable change in the health and well-being of children would ultimately target the entire population. This change could best be envisaged in school age which is a dynamic period of growth and development as children undergo physical, mental, emotional and social changes during this stage.

During the period of school age, children are exposed to varied food consumption patterns as affected by improved socio-economic condition, improved purchasing capacity and modified lifestyles.

Not only is there an increase in the rate of consumption of food, but traditional foods have been replaced with improperly planned, so-called, Western diets with resulting consequences in the form of compromised health status of children. Couch et al. (2000) have pointed out that several countries in transition to a Western diet (eg, Korea, Thailand and India) are reporting rapid increases in coronary artery disease and higher prevalence rates of hypercholesterolemia.

In addition to dietary changes, it is envisaged that lifestyle habits of the children has become more sedentary, with decreased physical activity at home and school and increased faulty leisure time activities which are more on the sedentary side rather than involving physical activity

Any form of physical exercise is shunned by children, citing reasons like lack of time or non-availability of resources. Today physical exercise is regarded as a pass-time activity of the elderly, rather than that of children. As pointed out by Trost et al. (2003) children tend to participate in sedentary or low-intensity activities over more active forms of play.

More time is spent on watching television and browsing the Internet, which pose added threat for increased sedentary lifestyle and the associated ill-effects.

Singh et al. (2007) foresees that the lack of physical activity among children could lead to overweight and obesity.

Sidik and Ahmad (2004) caution that imitating westernized lifestyles (urbanization, western type of foods and increased sedentary lives) could lead to increased obesity and associated health problems.

Children who remain preoccupied in front of screen rather than sweat out in playgrounds have a tendency towards reduced physical abilities and deteriorated mental vigor. It has been endorsed by Giammattei et al. (2003) that children who spend more time watching television had a higher Body Mass Index and a higher per cent body fat and were less physically active.

Factors like over emphasis on academic excellence, unscientific urban planning and ever- increasing automated transport interplayed with television viewing, computer games and the Internet further increased the likelihood of sedentary lifestyle among children.

Thinking as a symbol of privilege and prestige, most children in urban societies undertake motorized form of transport to school, which again eliminates the possibility of obtaining exercise through walking to school. McMillan (2007) observed that walking and bicycling to school have decreased and have gone out of sight, while private vehicle travel has increased.

These behavioral transitions, coupled with changes in dietary and lifestyle habits would possibly contribute significantly to rapidly rising prevalence of overweight and obesity and associated lifestyle disorders among children.

Segal and Sanchez (2001) define overweight and obesity as complex, multi-factorial and chronic conditions resulting from interplay between environment and genetics.

There has been an increase in the prevalence of overweight and obesity among children as pointed out by Laxmaiah et al. (2007) who bring out the prevalence of overweight among adolescents in Hyderabad, India as 7.2 per cent. According to them, the proportion of overweight was higher among girls (8.2%) than among boys (6.1%).

A similar study conducted by Kaur et al. (2005) in Chennai, South India, showed that the prevalence of overweight was 17 per cent and of obesity was three per cent among children.

With the population explosion, the per-capita availability decreases, encouraging the rich and the higher socio-economic strata who grab all the available resources like food leaving very little for the poor and lower socio-economic. This, in turn, contributes to increased overweight and obesity on one end, while there is underweight and deficiency on the other. As the World Bank report (2011) points out, the prevalence of underweight children in India is among the highest in the world and is nearly double that of Sub-Saharan Africa. This points out to the already existing pathetic condition of child under nutrition and deficiency diseases in the country.

Urbanization brings with it the possibility of environmental pollution which in turn affects the health of children. There is also poor city planning in urban areas contributing to highly unsuitable conditions of living for people who thrive in slums, resulting in poor hygiene. The World Bank (2011) presents a picture of

urbanization with slums accounting for 1/4 of all urban housing in India. The combined factors of food deprivation, poor socio-economic condition and unhygienic atmosphere leave the urban downtrodden to high risks of obesity and deficiency diseases. Non-availability of vital nutrients, especially micro nutrients, causes deficiency diseases which in turn lead to under-nutrition. On the other side, children from high socio-economic groups are exposed to increased availability of food, sedentary leisure activities and relaxed lifestyle with comforts leading to obesity and overweight.

Thus differences bound to exist between different demographic conditions in lifestyles and in the rate of prevalence of health problems among children.

Eiben et al. (2005) point out significant differences, in all age groups, between urban and rural boys and girls in terms of height and weight, with greater percentage of children in rural areas being underweight compared to urban children. This has been affirmed by Davis et al. (2008) in their study who found lower BMI percentile for children from rural schools compared to urban school children.

Though underweight is still prevalent in rural areas, there is also an increasing trend of obesity found among children from rural areas (Raj et al. 2007). The major finding of Lutfiyya et al. (2007) is that children living in rural areas are about 25 per cent more likely to be overweight or obese than their metropolitan counterparts and rural residency was found to be an independent childhood risk factor for being overweight or obese.

The status of children in urban and rural areas of India projects a dismal picture of 'dual burden' of both overweight and obesity on one hand, leading to lifestyle disorders and presence of underweight and deficiency diseases, being vicious cycles, on the other hand, necessitating the need to analyze the differences between urban and rural children in terms of their health status and lifestyle practices, to find out the contributing factors and to plan remedial measures.

According to the WHO health report (2006) many low and middle income countries are now facing a "double burden" of disease: while they continue to deal with the problems of infectious disease and under-nutrition, they also experience a rapid upsurge in chronic, non-infectious disease risk factors

particularly in urban settings. It is not uncommon to find under-nutrition and obesity existing side-by-side within the same country, the same community and even within the same household. This double burden is caused by inadequate pre-natal, infant and young child nutrition followed by exposure to high-fat, energy-dense, micronutrient-poor foods and lack of physical activity.

WHO (2011) recommends the identification of children who are overweight for interventions to promote modifications in diet and increased physical exercise. This would ensure prevention of future morbidity such as heart disease or diabetes and to improve health, well-being and long term survival. Measures such as weight and height could be taken in pediatric clinics and school health programmes to continuously monitor the health status of children. Similarly monitoring the growth of children diagnosed with malnutrition or growth faltering, for carrying out growth promoting interventions has been stressed. The revised CDC reference for Body Mass Index which corrects the major technical defects of the NCHS/WHO reference can be used for special purposes for proper comparison of data across age, or for research purposes.

Children are also exposed to increased stress and augmented pressure to improve their school performance. The stress factor, combined with unhealthy eating patterns, has contributed to the prevalence of lifestyle disorders, termed as NCD (Non-communicable diseases) more commonly among children. Juvenile diabetes is already present in children. In addition to that, the prevalence of NIDDM has increased with greater percentage of children showing symptoms at early ages.

Overweight children and adolescents are at increased risk for several health complications. They are more likely to exhibit risk factors for cardiovascular disease including high blood pressure, high cholesterol, dyslipidemia and type 2 diabetes mellitus compared with normal weight children. Overweight children and adolescents are more likely to become obese adults (Bellows and Roach (2011).

Tai-Seale and Chandler (2003) indicate that obese children suffer more psychosocial dysfunction, hypertension, abnormal cholesterol metabolism, glucose intolerance and orthopedic conditions like hip problems. Excess weight on an adolescent tends to be carried into adulthood, facilitating the early beginning of atherosclerosis or buildup of fatty tissue in the arteries. For both men and women

who were overweight as adolescents, the rates of atherosclerosis, diabetes, coronary heart disease, hip fractures and gout are increased.

Besides the role of external factors contributing to the prevalence of overweight and obesity and their complications, inherent birth factors like nature of birth and feeding habits during infancy play a crucial role in determining the health status of children.

The World Health Organization (2010) points out the role of pre-term birth being associated with increased morbidity among infants, which extends to later life resulting in enormous physical, psychological and economic costs.

Wall (2001) observed that breastfeeding has an impact on the weight of children, with breastfed infants having lower risk of being overweight during older childhood and adolescence.

As children grow older and step into school age, they are exposed to the school environment and peer influence which determine the types of foods consumed by them as well as govern their dislikes. Next to the home environment, children are exposed to school, where they spend most of their time.

School plays a crucial role in the lives of children not only in shaping them mentally, but also nurturing them physically. Lunch, which contributes to one-third of a day's calories, is consumed at school. The consumption of appropriate foods for lunch is vital in improving the health status of children. There is greater stress on a diet that primarily relies on fruits and vegetables, whole grains, low-fat and nonfat dairy products, beans, fish, and lean meat. These general recommendations echo guidelines in emphasizing low intakes of saturated and trans-fat, cholesterol and added sugar and salt; energy intake and physical activity appropriate for the maintenance of a normal weight for height and adequate intake of micronutrients for children (Gidding et al. 2005). However, the diets of most Indian children do not meet these recommendations. Recent trend points out high energy intake through consumption of foods rich in empty calories.

According to the Health Promotion Board (2009) food preferences are generally acquired during childhood. The school environment plays an important role in nurturing and sustaining good eating habits.

However, in the school environment, children are exposed to more outside foods and peer influence in food choices which modify eating habits. Children spend their 'pocket money' indiscriminately on purchasing foods available in their nearest environment, namely school food service outlets and other available street foods.

The most popular foods in the school food service and street foods are junk foods and fast foods which are nowadays accessible to children. They have become an alternative to other healthy vegetables and fruits. The junk foods are available in ready-to-consume forms which are more appealing. School food services have stocks of such fast and junk foods, without much concern for the health of children. Donelan et al. (2006) opine that many schools have negotiated exclusive contracts with fast food and beverage companies to provide their products to students with a portion of the revenues going to the schools. According to Bowman et al. (2004), fast food consumption has tremendously increased in many parts of the world resulting in adverse effects on dietary qualities, the chief among them being the risk of obesity in children.

With declining consumption of healthy foods and increase in consumption of junk, fast and fatty foods, due to advertisement in media, peer influence and increased availability, children and adolescents experience deterioration in health status. Several dietary factors inherent to fast foods such as massive portion size, high energy density, palatability (appealing to primordial taste preferences for fats, sugar and salt), high content of saturated and trans fat, high glycemic load and low content of fiber (Ebbeling, 2002 and Paeratakul, 2003) cause ill effects on health. Such effects pose a high risk situation for children as laid out in the National Nutrition policy (2012) namely potential retardation of physical growth, reduced intellectual capacity and delayed sexual maturation, as rapid physical growth creates an increased demand for energy and nutrients.

Foods consumed in school food services, outside eateries and at home play pivotal roles in influencing the health.

Not only the types of foods, but sanitation and hygiene of the environment in which food is served and consumed are important in determining a wholesome meal. Croner (2011) brings forth that not only the nature of foods, but also the mode of preparation as well as the hygiene and sanitation of the surroundings in

the school canteens affect the children and adolescents. Hygiene of the personnel and sanitation of the environment are crucial concepts to ensure good food safety norms.

The impact of food consumed at school and the activities involved by the children go a long way in determining their health and well-being.

The prevalence of overweight, obesity and underweight among school children has multi-factorial causative factors and hence requires a multi-pronged approach in tackling the problems. One of the preventive steps could involve counseling the target group on the necessity for change in dietary and lifestyle practices. Modification of the existing dietary and lifestyle habits could be done through effective counseling techniques targeting not only the children, but also the immediate environment comprising parents, teachers and food service personnel in schools.

Waling et al. (2010) have recommended that creating awareness among children on different themes regarding food and physical activity was found to be effective and have brought out measurable benefits in energy intake and pattern of physical activity in the intervention group compared to the control group which had no such intervention.

Direct personal counseling plays a major role in bringing about dietary and lifestyle modifications in the target group. Various methods of counseling have been suggested by scientists the world over. Contento et al. (2010) and Sarkar et al. (2010) say that the method best suited for the target group could be selected to yield better results. Methods such as oral counseling, posters, group lectures and demonstrations could be adapted to provide information on nutrition, food habits, sanitation and hygiene among children, parents, teachers and school food service personnel.

It is essential at the moment that the health status of children is assessed and problems located so that changes required to modify the immediate environment in which the children thrive could be attained. Guiding children for appropriate food choices, modifying their leisure time and physical activities and improving their overall lifestyle are the need of the hour. Nutritionists have a major role in determining the way in which the dietary aspects and lifestyle factors of children are changing, to bring about a positive outcome in the health status.

There is a need to explore the existing health status of children to instill appropriate action. Therefore the present study was conceived to assess the factors influencing the health status of children living in different demographic patterns. The objectives of the study are:

- A. Determine the demographic pattern, socio economic profile and lifestyle practices of school children from urban and rural schools of Coimbatore.
- B. Study the influence of child rearing practices on the health status.
- C. Assess the health status of the children in terms of anthropometry, clinical, biochemical and dietary parameters.
- D. Analyze the impact of food service outlets in schools on the health status of children.
- E. Create awareness among students, teachers, parents and food service personnel on nutrition facts, healthy lifestyle and best sanitation and hygienic practices and evaluate the same.