



CHAPTER 1

INTRODUCTION

"Man's existence is 'given'. But what man makes of it is up to him. It is his responsibility to give shape to the kind of person he is to become and to live a meaningful life."

(Narayan rao 1987)

And adolescence is a window of opportunity to set off to achieve the kind of life, which is healthy and productive. It is the most remarkable phenomenon in human life when physiological, psychological and sociological changes occur. The physiological and physical changes are the most rapid -

- Skeletal muscle mass increases from 25 % of the body weight during infancy to 42.5 % of adult skeletal muscle mass,
- Body weight forms 35 % of adult size
- Blood volume is increased from 2.5 to 3.5 litres and
- Attainment of sexual maturity, crucial hormone alterations and metabolic changes take place (Narsingrao 1985)

The psychological changes relate to - a propensity to explore, enhancement of self esteem, a search for role models and acquisition of capability for abstract thought and hypothetical planning. The sociological changes include development of identity, independence and formation of peer group. These aspects collectively are highly formative for behaviour patterns and activities relevant to health with reference to future citizens and upcoming generations.

Adolescents comprise more than one fifth of the global population (United Nations Children Fund (UNICEF) 2000). About 85 % of the world's adolescents live in developing countries. However, this segment has occupied a low priority in national

policy and programmes of our country and only in recent years, have adolescents become an important target group. In India, adolescents from the poor sections show a high prevalence of various nutrition and health disorders. In general nutritional status of girls is reported to be comparatively poorer than that of boys.

1.1 The Gender Perspective

“Gender” presages social status. Gender is an important factor in the allocation of roles, status and power. A woman is confined mostly to the domestic sphere, playing a supportive role which yields them a subordinate status. Authority, power and role of major provider and protector of a family are delegated to the man (Kanhare 1989). Accordingly, a boy and a girl are socialized in a family. Translation of socially defined roles in cultural - traditional practices has led to poor health status of the female in all stages of life. In some developing countries like Bangladesh, Pakistan, Cameroon, Niger and Burundi, mortality rate among girls is higher than boys (Kurz and Johnson – Welch 1997). According to National Family Health Survey (1993), fewer girls than boys received health care at a medical facility. Exclusive breast feeding is practiced in a manner beneficial to boys. For example in rural parts of Pune, girls were exclusively breastfed for a shorter duration than boys leading to higher prevalence of under nutrition (Rao and Kanade 1992). In contrast, in China girls were breast fed for a longer duration, well beyond the age of complementary feeding causing under nutrition in girls. In some studies, it was found that nutrient intake favoured boys in India and Bangladesh (Pebley and Amin 1991, Chen Huq and D’souza 1981). Pebley (1984) in her study reported that being a girl and having poor economic status were two major determinants of nutritional status of a girl. Further, Henry et al (1993) observed that improvement in income and mother’s education benefited boys more than girls, as indicated by a higher percentage of reduction in mortality rate in boys compared with girls (45 % vs. 7 %). Comparative gender disaggregated data on adolescent boys and girls are scarce.

1.2 Prevalence of Under Nutrition in Adolescent Boys and Girls

Several cross sectional and longitudinal studies have demonstrated a secular trend in growth among affluent adolescents of the developing countries but in poor sections, no striking change is observed (Gopalan 1994). International Centre for Research on Women (1994) stated that in several developing countries including India, under nutrition is widely prevalent. Stunting was more common in the poor segment of the population (Kurz and Johnson – Welch 1994). Some of the Indian studies demonstrated that the mean height of younger adolescents from affluent and poor sections were comparable but in later part of the adolescence the difference in height emerged, that is, affluent adolescents were slightly taller than their poor counterparts (Kanani and Zararia 1996, Chatterjee and Mandal 1991, Gopaldas & Capoor 1981). Overall increment in height among poor boys was much below the norms developed by National Centre for Health Statistics (Kanani and Zararia 1996, Rao 1996, Vijayaraghavan 1971). Although peak height velocity (PHV) is known to occur one year later in poor boys compared with affluent boys, a distinct trend could not be discerned from the studies reviewed (Sing et al 1996, Vijayaraghavan 1971, Shamssain 1989, Gopaldas and Capoor 1981).

Comparing boys and girls, the prevalence of height deficits was similar in both adolescent boys and girls in developing countries except in India where twice as many as girls were stunted (Kurz and Johnson – Welch 1994). Other Indian studies have reported as many as 80 % undernourished adolescent boys and girls (Chiplonkar et al 1992, Kanani and Zararia 1996). Sing et al (1996) observed that in rural Rajasthan 33 % of the adolescent boys and 22 % of adolescent girls were stunted.

Weight deficits are reported to be more common than height deficits in both adolescent boys and girls. Data are scarce on adolescent boys. Research shows that mean weight values of poor Indian adolescents were much below the mean values of Indian affluent adolescents (Kanani et al 1998, Kanani and Poojara 1997, Kanani and Zararia 1996, Vijayaraghavan 1971). Potdar et al (1994) reported that weight deficits were seen in 69

% of the adolescents and height deficits in 20 %. Further, weight deficits were much higher in boys than in girls especially among older age group. As adolescent growth progressed, percentage of under weight boys and girls increased (Kanani and Zararia 1996, Kanani et al 1998).

With regard to increment in body mass index (BMI), arm circumference (AC) and skin fold thickness (SFT) during adolescence, relatively limited number of studies have been reported. These studies too signified that economic condition influenced body mass index (BMI), arm circumference (AC) and skin fold thickness (SFT) indices in adolescents. Affluence improved the mean values of these indices among adolescents across all the age groups. Mean MUAC, SFT and BMI values of affluent adolescent boys and girls were slightly higher compared with their poor counterparts (Kanani and Zararia 1996, Rao et al 1993, Agarwal et al 1992, Gopaldas and Capoor 1981, Vijayaraghavan et al 1974). However, most of the research reported is on girls or boys, (on boys very scanty data exist). Comparative gender studies are scarce.

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1.3 Iron Deficiency Anaemia in Adolescent Boys and Girls

Adolescence is also considered a vulnerable period for iron deficiency anaemia (IDA). The global prevalence of IDA in adolescents is 26 % in developing countries and 6 % in developed countries at 12 g/dl cut off levels (DeMaeyer and Adiels - Tegman 1985). However, in India IDA prevalence in adolescents has varied but is consistently high (above 50 %). International Centre for Research on Women (1994) reported a prevalence figure of 55 % among 11 - 15 year old adolescents using a cut off level of 12.0 g/dl for boys and 11.5 g/dl for girls. Potdar (1994) too presented a similar prevalence among adolescent boys in Mumbai. It was much lower (28 %) in urban poor boys of Vadodara city (Kanani and Zararia 1996).

Among poor adolescent girls, IDA is reported to be high in different parts of the country. In rural parts of Delhi, UP, Rajasthan and Jabalpur using 12g/dl as cut off levels about 90 % had IDA (Malhotra et al 2000, Dubey et al 2000). In contrast, the prevalence was comparatively low (61 %) in rural parts of Gujarat (Seshadri and Gandhi 1998). At 11

g/dl cut off levels, a few studies demonstrated that more than three fourths of girls had IDA (Kanani and Ghanekar 1995, Kanani and Poojara 1997, Kanani and Mutreja 1998). Though over all fewer affluent girls have IDA, age wise data showed that 71 % of younger affluent girls suffered from anaemia – a period when velocity of growth is the highest in girls (Kanani and Bhargava 1992). To sum up, IDA affects both adolescent boys and girls, but magnitude is very high in girls.

1.4 Environmental Determinants of Nutritional Status in Adolescent Boys and Girls

Health of families is influenced by the environment they live in. An important proximal factor affecting nutritional health status of adolescents is food and nutrient intake. Along with growth retardation, food and nutrient intake among adolescents is observed to be inadequate. Diets of poor adolescents lack both quality and quantity while that of affluent adolescents is comparatively better. For example, urban poor adolescents consumed small amount of milk only in the form of tea (Agarwal and Kanani 1998, Kanani and Zararia 1996). In contrast, affluent adolescents consumed milk as such (Kanani and Bhargava 1992, Kanani and Sanghani 1992). Generally, either pulses or vegetables are consumed in meals among the poor sections. Calorie intake among affluent adolescents is found to be more than recommended daily allowance (RDA) but in poor adolescents, about 40 % calorie deficits were observed. Protein intake exhibited a similar trend among poor and affluent adolescents. Iron intake remained much below the RDA and vitamin A intake was still lower – barely meeting one fifth of RDA. Vitamin C requirements of boys were fulfilled but in girls, it fell short of about 25 % RDA (Kanani and Shah 2001, Kanani and Sen 2001, Kanani and Ghanekar 1995, Gopaldas and Capoor 1981). Thus, nutrient intake among poor adolescents is grossly inadequate restricting their growth potential.

As important as food and nutrient intake of adolescents is, intra – household food distribution (IHFD). The process of food distribution occurring within a family before its consumption and after its preparation is termed as IHFD. IHFD causing malnutrition in young children has been explored and the findings are varied : A study carried out in

Philippines revealed that in a family female adolescent received the least amount of food and the father – as a head of the family got the highest proportion of food (Valenzuela et al 1979). Another study conducted in tribal parts of Gujarat illustrated that of 13 – 18 years old adolescents obtained better share of food compared to elders (> 55 years old), children (below 12 years old) pregnant and lactating mothers.. But the study did not demonstrated whether any significant difference existed within various age groups (Gopaldas 1983). Though a few IHFD studies have been done on women and young children, with regard to adolescents there is paucity of data.

Living conditions and income, education, occupation of parents are examples of distal factors which might affect nutritional status. While some research data are reported on association between distal factors and nutritional status of children, data on adolescents are scarce. A study on 5 – 10 years school going children in Mumbai demonstrated a significantly positive correlation between growth and scholastic performance with these variables (Singhania et al 1987). Mukhopadhyay et al (1993) reported a higher prevalence of morbidity among slum dwellers of Kolkatta. Another study stated that height for age and weight for age was significantly correlated with education and occupational status of mother, that is, the education of mother and better the occupation (income earned), better was the height and weight of the girls (Agarwal and Kanani 1998, Aurelius et al 1996).

1.6 Perceptions of Adolescent Boys and Girls Regarding Nutrition and Health

To a large extent, perceptions about nutrition and health influence behaviour that determines nutrition health status of an individual. Studies have shown that adolescents enter into parenthood with insufficient knowledge regarding adequate nutrition, correct food practices, pregnancy, lactation, family life, mother and child care (Gopalan 1984). In a number of studies carried out in this department over the last decade, perceptions of adolescent girls and boys regarding the above mentioned areas were studied. Many boys and girls believed that they were healthy while their anthropometric assessments revealed under nutrition. Knowledge about balanced diet; causes, consequences and

prevention of anaemia and vitamin A deficiency was poor (Kanani and Thakore 1989). The responses of poor and affluent girls showed differences which could be due to their mother's education, income, or access to information. According to poor girls, appropriate age for introducing top foods was 9 –12 months of age. In contrast, affluent girls expressed that complementary foods should be initiated when child is 4 – 6 months old. Though affluent girls were aware of importance of vaccination in children, they lacked knowledge of immunization schedule and types of vaccines child is required to take (Kanani and Bhargava 1992, Kanani and Sanghani 1992, Kanani and Thakore 1989).

Thus it is evident that adolescents are a vulnerable group and only recently, have national and state level policies and programs given attention to this important segment of the population. Further, most research has focused on adolescent girls. Comparative data which is gender sensitive, and includes both boys and girls from the same environment is scanty. The next chapter elaborates on the available research on nutrition status of adolescent boys and girls and its determinants.