1- Introduction

Adolescence is generally defined in reference to a period of years. W.H.O has defined adolescence as a period between the age group of 10-19 years. Adolescence may be apparently defined as period of physical, psychological and social maturity from childhood to adulthood i.e. the period extending from puberty to the attainment of full reproductive maturity. It is a bridge between childhood and adulthood and a period of rapid changes in almost all developmental dimensions of growing to sexual maturity, discovering one’s real self, defining personality values and finding one’s vocational and social directions. It is also a time of testing of pushing against ones capabilities and limitations as posed by adults (Clifford 1993). However, defining the age of adolescence varies from one social-cultural setting to another. A young person attending the school may be considered an adolescent at one place while another person of the same age group at another place may be married and as such be defined as an adult. The age of puberty has shifted gradually to earlier years and a lengthened period of education and dependence has served to expand the life of adolescence (Garg 2002). During this period of life the stress of rapid growth becomes evident and are manifest both in Physical and mental changes and in sexual maturation of the individual. If there is no acceptance of adolescent role as an individual or a male or a female, there is opt to develop a defiant loneliness, feeling of rejection, and an unbearable resentment or even hatred of oneself or of one or both parents that may transfer to all members of a particular sex or social group or to society as a whole with disastrous consequences (Bhattacharya 1985)

Out of this turmoil there may develop panoply of special medical and social problems. Some are related to genetic factors and some to physiological changes within the individual where as others develop from the search for identity and purpose with concomitant rebellion against a real or apparent restraining society not infrequently the causes interrelated and mutual reinforcing such as defiance of parents, drinking alcohol, drugs, pregnancy and venereal diseases (Harkin 1997; O N S 1997). Demographically the adolescent population is rising faster than that of other age groups. Between 1960 and 1980, while the world population increased by 46 per cent, the population of adolescents increased by 66 per cent. Today 84 per cent of the adolescent population live in the developing world, despite the fact that as many as 1/5th of India’s population comprises adolescents aged between 10-19 years. The percentage of adolescent’s
population in Jammu and Kashmir State is nearly 27 per cent (Garg 2002; Statistical Digest 2003-2004). Several specific biological changes occur during adolescence. Differences between sexes and between individuals of the same sex become more pronounced during this age span. Hormones drive growth spurt begins between age 10 ½ years and 11 years for females with the peak in the rate of growth at around 12. For boys growth spurt begins between 12 ½ and 13 years and peak at around age 14. This spurt or period of maximal growth lasts about 2 years. The first phase of adolescent growth is linear. Average boys grow 8 inches and girls 6 inches at puberty. A typical girl achieves about 95 per cent of her adult height by menarche. Growth rates are closely related to sexual maturation. The second phase of adolescent is lateral. A typical healthy girl will gain 35 pounds during adolescence; a typical boy gains about 45 pounds (Virginia 1980).

The timing of change in the body varies between individuals and between sexes. Girls have fewer variations than boys. The total span of time from the onset of puberty to maturity is shorter and there are fewer differences between late and early maturing girls. The first visible change is development of breast between the ages of 7-12 years. In boys the first sign is the increase in the size of testes. This occurs at the age of 11 years, the range may be between 9-15 years. Sex differences become marked with the onset of puberty. Girls become taller by 10 years but after 13 years boys surpass girls and attain greater ultimate height. On an average, by 18 years males become 13 cm taller and 12 kgs heavier than girls.

Increased production of adrenal steroids is believed to be the first indication of approaching puberty and occurs in both sexes at approximately 7 years of age. Progress towards puberty is then faster in girls both in appearance of secondary sex characteristics and in acceleration of growth (Roche 1976; Virginia 1980; Suiter 1984).

Sex differences in body contours proportions and composition becomes more pronounced during adolescence. As a result of greater production of androgens primarily testosterone males develop wider shoulders and greater muscle mass. Females with higher estrogen secretion develop wider hips and more adipose tissue. Males have longer legs and shorter sitting height in relation to total height than females. These changes in combination with the development of secondary sex characteristics constitute to increasing difference in physical size and appearance between males and females (Hamill 1977).
Much attention has not been given to the health of the adolescents because morbidity rates are less to this age group and because problems are seen in pregnancy and in early childhood. Objective is not only reduction in morbidity but also improvement in health and quality of life. As they are less likely to consider health risks realistically, adolescents represent a high-risk population. Other major health problems of adolescents such as cancer and heart diseases are overshadowed by intestinal injuries, homicide and suicide. However, during this period the young people develop habits that have importance for health in later years. Life style patterns related to nutrition, physical fitness, exercise, and cigarette smoking, drug use, safety in sexual conduct emerge during this period. This behavior helps to determine the rate of future chronic illness in cohort of population as it ages. Even though the percentage of those who smoke has declined from 48 percent in 1965 to 27 percent in 1990, yet alcohol consumption is a major contributor to accidents and violence is linked to chronic disability, unwanted pregnancies and sexually transmitted disease. Present health risk in the population is 84 percent of all teenage mothers who did not finish school have higher unemployment rates and have low birth weight infants (Harkin 1997; O N S 1997; foster 1997; Health United States 2000). Adolescent’s health problems may be considered to fall into certain categories in relation to origin severity and behaviorism about which parents, physicians, health agencies, schools and society should be aware. One such category is the extensive group of congenital conditions, some genetic and some acquired. Included are metabolic conditions, such as diabetes, certain enzymatic disorders anatomic condition, such as cardiac and alimentary canal malformation, physiologic conditions, such as phenylketoneuria and certain anemia, psychiatric or neurological conditions, such as Huntington’s Chorea and schizophrenia and finally certain infections that may be acquired congenitally of which syphilis is a well known example (Park 1990). The emerging sexuality of the adolescents presents both opportunities and problems. Girls mature earlier than boys. Both develop sex roles based on the models and examples established by their parents, their relationship with their peers and external influences such as magazine, T.V. and most importantly their school experience. The prevalence of teen aged girls who had experienced sexual intercourse increased during 1970 so that in 1976, 55 per cent of those who had never been married had intercourse by the age of 19 (Furstenberg 1987).

Problems associated with poor nutrition
Good nutrition is fundamental for optimal health and growth. Through its effect on health and cognitive development it is also vital for academic performance and productivity, and therefore for healthy economies and socioeconomic development.

**Health effects of malnutrition**

The consequences of malnutrition could hardly be more serious: around 45% of child deaths in 2011 were due to malnutrition (including fetal growth restriction, suboptimal breast feeding, stunting, wasting, and deficiencies of vitamin A and zinc). In 2013 the growth of around 161 million children aged under 5 was stunted by chronic under nutrition, leading to hampered cognitive and physical development, poor health, and an increased risk of degenerative diseases.3 In the same year 51 million children were wasted (having low weight for height) because of acute under nutrition; severe wasting increases the risk of morbidity, particularly from infectious diseases such as diarrhea, pneumonia, and measles, and is responsible for as many as two million deaths a year.4 Meanwhile, deficiencies of vitamin A and zinc cause many deaths (157 000 and 116 000 child deaths, respectively, in 2011),5 and iodine and iron deficiencies, along with stunting, contribute to children not achieving their full potential. Iron and calcium deficiencies increase the risks associated with pregnancy, particularly maternal mortality.5 At the same time overweight and obesity in children and adults have been increasing rapidly in all regions of the world, and half a billion adults were affected by obesity in 2010. Dietary risk factors, together with inadequate physical activity, were responsible for 10% of the global burden of disease and disability in 2010

**Nutritional Needs during Adolescence:**

Dietary recommendations during adolescence must take into account the social and attitudinal characteristics of the individual as well as the timing and the rate of growth. Greater independence from family supervision and guidance is associated with increased peer conformity and influences of mass media. Rapid changes in body create alterations in body image and individual reactions to those changes. Emotional instability may cause intermittent stress. Physical activity may be higher among individuals who participate in competitive sports but very low in those with sedentary pursuit’s time schedule may lead to the omissions of some meals or to greater frequency of eating may be consumed more often away from home and may commonly be bought in franchised food outlets. Interest of nontraditional eating pattern may
increase. Nutrient needs during adolescence are dictated by the rate of growth. Requirement increases at the outset of growth. Spirit reaches their maximum at the time of peak growth and gradually approach adult levels as growth subsides (Srilakshmi 2002).

**Energy:** Calorie needs increases with the metabolic demands of growth and energy expenditure. Although individual needs vary, girls consume fewer kilocalories than boys. Boys need 2500-2800 kilocalories a day.

**Proteins:** For most adolescents eating to satisfy appetite offers a reasonably sensitive indicator of energy needs. Protein needs represent 12-14 per cent of energy needs. Protein intakes usually exceed 1 gm/kg body weight. This meets growth needs and for the pubertal changes in both sexes and for the developing muscle mass in boys. The protein needs for both boys and girls are the same up to the age of 10 years.

**Lipids:** No allowances have been established for fat intake. The range from minimum to maximum intakes during adolescent was 27-47 per cent for males and 24-51 per cent for females.

**Carbohydrates:** Since carbohydrates can be made in the body from same amino acids and from glycerol of fat. No recommended allowances have been established.

**Vitamins:** The need for thiamin, riboflavin and niacin increased directly with increased calorie intake. Folic acid and B12 are essential for Deoxyribonucleic Acid (DNA) and Ribonucleic Acid (RNA) synthesis and needed in higher amounts when tissue synthesis is occurring rapidly.

**Minerals:** Calcium and iron are particularly needed during adolescence. Bone growth demands calcium. About 150 mg of calcium must be retained each day to allow for the increase in bone mass. Iron needed for hemoglobin synthesis is necessitated by considerable expansion of blood volume and for the myoglobin needed for muscle growth.

**Phosphorus:** The dietary study shows that ratio of calcium and phosphorus is 1:1. The calcium and phosphorus ratio in the CRC study was 0.8: to 0.85 in males between 10 and 17 years in females by 18 years.

**Nutritional Issues during Adolescence**
With his / her often-busy schedule, an adolescent may rush off to school without eating breakfast. In the evening rather than waiting for dinner he may grab or snack so he can spend the evening with friends, or get to baseball practice in time. Consequently he eats fewer meals at home where parents can provide him with nutritious foods. When away from home an adolescent often eats meals that are readily available, inexpensive and acceptable to his peer groups. This may mean snacks in the form of ‘fast foods’. Fast foods and ready to eat foods obtained from vending machines or from the grocery store are frequently referred as junk foods. To most people junk food means food that is very salty, sugary or has a high fat content e.g. chips and candy bars. However, other foods sometimes classified as ‘junk’ such as pizza, hamburgers and french-fries do supply needed nutrients. In fact some studies have shown that adolescent often obtain many of the nutrients they need from the ‘fast’ food they consume. Eating low nutrient density food in moderation does not pose a serious threat to the nutritional status of an adolescent whose basic food habits are nutritionally sound. However, when carried to extremes, as when practiced by the adolescent who does not and or has not have good food habits, these practices may compromise growth and maintenance of body functions. Looking at the adolescent, intake of specific nutrients as well as comparing his food intake to the basic food gives an indication of the diets adequacy. Nutrients to be checked include iron, Vitamin A, C, B1, B2 and calcium. Parents can encourage open discussion on nutrition and food habits and make constructive suggestion rather than criticize ways to promote sound eating habits including setting a good example keeping nourishing ready to eat foods or involving a teen in meal planning and making nutrition information available. The adolescent needs the opportunity to apply nutrition knowledge himself. He is more likely to respond positively when allowed to make his own decisions than when told what to do (Adamson 1996; Drummond 1996; Gregory).

**Health Problems in Adolescence**

**Obesity:** Obesity in the adolescent is more complex than at other ages in the life span. The healthy individual approximately doubles body weight during adolescence. The body weight tends to have a temporary increase in the body fat measurement in early puberty and then becomes leaner.
**Anemia:** There does seem to be a trend towards a decrease in the age at menarche over the decade both in the rural and urban situation not only in the upper strata but also among the poor strata of urban and rural communities and making adolescent girl to susceptible to anemia.

**Infections:** Social contact of the adolescent with the peers and strangers is notably increased. This exposure to potentially infected individuals and environment makes them more prone to contact infections. The stress of physical growth also increases their susceptibility to infections.

**Goiter:** Thyroid enlargement is not unusual during puberty especially in girls. Etiology is uncertain. The thyroid is firm in consistency and may be asymmetric and nodular. On histological examination shows the follicle size is variable, Colloid is dense and epithelium is flattened.

**Acne Vulgaris:** Complexion problems acne often is a source of embarrassment for the teenager. Acne occurs on the face-chest and back due to inflammation of the sebaceous glands. Its cause is believed to be related to the change in hormonal secretion. The most effective treatment is skin care involving cleaness.