Chapter-2

Scope and context

Scope of the study

The present study dealing with growth and development of Soliga boys among Scheduled tribe populations of Karnataka in India was undertaken in the background of the earlier works and it was concisely reviewed by the separate context as Growth and development, effect of economic condition on growth and development and nutritional status of the population.

1.0 Growth and development

The growth and development is a complex process and it was common to all living organisms, intimately linked in time but practically independent. Growth proceeds uneven and differential in individual development by spurts with various parts of body developing at different rates, Garn [1952] stated that growth refers to changes in magnitude, increments in the size of organs increase, in the thickness of tissue or changes in size of individual as a whole. Watson & Lowery [1954] defined the development as functional maturation and the progressive changes that occur during an organism’s life history. Development may also result from constant differences in growth rates. So, that one tissue or organs increase faster than the other [Garn, 1952]. In this sense, growth forms part of the development of the organs in the earlier stages of life, since it tends to virtually cease for most of the organs after maturity.
reached but development may continue and this limits of growth set by hereditary and environmental modification. Tanner et al [1968] stated that, 'the urge for growth are inherent at the time of conception and are determined by the genes, the carrier of hereditary but without a favourable environment normal growth cannot occur.

The quantitative studies on human growth began very late in the history of natural science (Scammon, 1930). The credit for the first and complete study goes to the Belgian astronomer A. J. Quetelet, who coined the term "anthropometry" and published data on height and weight in 1835. Significant contributions in the field of growth and to the understanding of such processes as adolescent spurt, parent child similarities in body build with secular trends and pattern of growth were made subsequently by Boas (1932), Schultz (1956), Meredith (1939, 1955, 1960 & 1969), Garn (1952), Tanner (1960 & 1962) and Falkner (1966) etc.,

Scammon's (1927) study on relative growth had shown that in the new born, the length of the head is approximately one fourth of the total length of the body of the adult, it is only one eighth conversely, the legs are comparatively much shorter in the baby than in the adult. The proportions of the adult human are established in the way that the head grows relatively slower and the legs faster than the rest of the body. Thus, the ratio of
growth rates of various parts of the body, lead to changes in proportion and represent important morphogenetic factors.

The studies of Davenport (1932), Meredith (1939), Tanner (1962) and Marshall (1977) demonstrate differential growth rates by different maturity gradient. The study of Lesli Brainerd Arey (1966) explains growth in living organisms does not proceed at the same rate or in all directions at once, the differential rate of growth operating during development of organisms in their various regions in definite direction with relatively constant to growth rate of body growth pattern.

as well as Indian investigators have been reporting their works on tribal children of Karnataka are limited to height, weight, head and face measurements (Holland, 1901; Gray, 1903; Thurston, 1909; Schmidt et al, 1910; Karve, 1954; Adhikari et al, 1987; Sirajuddin et al, 1992; Gangadar, 1999; Keshava, 2000 and others).

The present study is an attempt to assess the growth pattern as well as their maturational sequences by their maturational gradients. Apart from this, the study also has compared the data on the Soliga with some of the other scheduled tribe population of Karnataka such as Jenukuruba, Kadukuruba and Yerava (Keshava 2004) in order to find out its mean characters difference in body proportion among them.

1.1 Economic condition

Children belonging to higher income group in any developed or developing country are taller and heavier than their age, sex and ethnic counterparts of the lower income group. Higher income always correlated with the level of social condition of the people. Nation wide sample of British National Child development Survey revealed that children of professional and managerial class are taller by 3.3 cms when compared to the children of unskilled manual workers of 9-year's age (Goldstein, 1971; Davie et al, 1972; and Topp et al, 1970). As that many studies like Miller et al, (1972); Villarejos et al, (1971);
Jaimae Arizamacias et al., (1973); Habicht et al., (1974); Neyzi et al, (1975); Lindgren,(1976); Bielicki, (1986); Lindgren, et al, (1992); Martuzzi et al, (1994); Kromayer et.(1997) & Prebeg (1998), and studies done in Indian like Udani (1963); Banik et al, (1970), (1970a), and (1970b); Sharma et al., (1970); prasad et al, (1971); Sikre, (1972); Bharathi et al, (1990) and Badaruddoza et al, (1998), Khongsdier, (1999), and others also have shown that children from lower income group exhibit vary in maturity age, diminished height, weight, lean mass including muscle mass than their counter parts of medium or upper income group.

Ulijaszek (1994), stated that in Western countries, the cause of growth failure are usually genetic or congenital rather than environmental, the pattern of growth in any population can be represented by the centile distribution of stature by age. A number of developed countries have indigenous healthy population centile charts according to percentile charts developed by Galton (1885) eg: for the Britain, Tanner, White house and Takishi 1966, for the United States National Center for Health Statistics 1977, for the Nether lands Roede and Van wieringon 1985 and for the Belgium Wachholder and Hauspie 1986.

The various studies have shown that growth pattern of individual children are more like to be cyclical measured height, oscillating about a centile line rather than tracking it (Tanner, 1989; Bultler et al, 1989; Hermannussen et al, 1988 and Cole, 1993). However, catch up growth can occur after a period of restricted growth in uterus. Hence,
catch up- and catch down growth usually take place in the first two-year of life. During this time children may cross, the centile lines upward or down ward rather than tracking along them (Ulijaszek, 1994).

India, as a developing country it endures growth retardation among children of poor socio-economic background rather than genetic or congenital. Therefore, representation of growth pattern in contrast to economic background of population is mandatory in conscious of catch up and catch down growth. Hence, the present study enlightens the growth pattern besides plot percentile distribution curves to get acquainted with of growth effects on economic background of the Soliga population, a tribe inhabiting Karnataka.

1.2 The nutritional – status

The growth of children is considered a good indicator of health and nutritional status of a community [Eveleth and Tanner 1990]. According to Brown [1984], nutritional status is the “physical expression of the relationship between an individual’s dietary intakes, the bioavailability of these ingested nutrients and his or her physical requirements”. In developed countries, the prevalence of overweight or obesity is common [Ivan pawson, 1991], the prevalence rates of under nutrition have been found to be high among the adults of poor income groups in countries like India [Visweswara Rao, 1988]. In developing countries of South-East Asia, about 10% of the children under the age of five suffer from severe undernutrition, 15% are normal and rest suffer from mild to moderate forms of undernutrition.
In adoption to chronic malnutrition and illness, a child simply grows slowly and adolescence with fusion of the long bones preventing further growth in stature delayed. It generally agreed that the mild and moderate forms of undernutrition manifest themselves in varying degrees of growth retardation. Since, these forms of undernutrition are not easy to diagnose, the use of anthropometrics is very useful and anthropometrics is widely recognized as one of the most useful methods for the assessment of nutritional status [Jelliffe, 1966; WHO, 1986; Rao, et al, 1986].

Acute malnutrition results in early in obvious weight loss, mainly from depletion of subcutaneous fat and muscle or at least in a failure to put on weight. This leads to anthropometrics disproportion, especially between weight and height that is low weight for height [Jelliffe, 1966; Visweswara Rao and Singh, 1970; Seone and Latham, 1971; Gurney, Jelliffe and Neil 1972 and Visweswara Rao and Rao 1975].

Height and weight / height² and height and weight for height (%)are found to have more or less same power discrimination between normal and clinical PCM or normal and undernourished children or undernourished and clinical PCM children. Additional measurements like arm circumference, calf circumference, chest circumference, head circumference or arm length could not improve the efficiency of these combinations for differentiation in studies on infants and preschool children [Bal Krishna, 1993; Visweswara Rao
et al, 1991]. The combination of measurements- height, weight and weight for height could not be better in detecting the differences between all clinical groups than that of height with weight / height$^2$ or weight for height (%). As height is less influenced by age and weight / height$^2$ as well as weight for height (%) are independent of age and sex and closely associated with growth and development classification with height and weight / height$^2$ (or weight for height (%)) will help for accurate assessment of the nutritional status [Visweswara Rao, 1995]. This has been followed in many recent studies from last decades to explain nutritional status of population (Sharma and Mukherjee 1995, Bhattacharya, 1995 and Haque and Samantha, 1996; Singh 2002, Rajan gour and Parul Sharma, 2003). Hence, the Soliga boys from irrespective of economic backgrounds are subjected to weight / height$^2$ for acquainted with nutritional status of the community as a whole.
AIMS

This study aims at to contribute towards further understanding of growth and development as well as it's maturation sequence in the economic back ground of the population and so forth to add informative data on physical growth on South Indian tribal population who is hitherto unstudied from this point of view.

Objectives

1. To delineate the Socio-economic status of the Soliga community at a broader perspective.

2. To record growth acquired among 8 to 18 years age group boys.

3. To ascertain the nutritional status of children who come under the study.

4. The compare the present data with available data on growth pattern to draw differences, if any.

5. To observe relationship between growth pattern and economic status of community.