CHAPTER - X
CONCLUSION

The ethnically homogeneous population of Digamber Jains of Jabalpur living under similar socio-ecological conditions have been appropriated for the present study. Jains are a religious community, it is an endogamous group and retains homogeneity to a certain extent. The samples utilized include girls ranging between the ages of 8 and 18 year. The total number of samples were 550; out of these samples the exclusive investigation was undertaken with regard to onset of menarche.

The above material was collected between 1988 and 1991 from various municipal wards of Jabalpur city. Care was taken to cross-sectional study on random samples of pre-adolescent, adolescent and post-adolescent, normal healthy, school going Digamber Jain girls were treated to assess the problem of physical growth and maturation.

The majority of Jains are engaged in business and a few families subsist on agricultural economy. The socio-economic level is evenly represented by the samples under the study. A very small segment of the population is represented by lower and higher economic strata.

The nutritional background and dietary habits of the present population does not show wide differences, because Jains are strictly a vegetarian community. It could therefore be assumed that nutritional and dietary habits are uniformly represented by our samples.
The body measurements chosen are those, which have convincing association with developmental parameters. The study has been presented in two parts viz. Part I deals exclusively with the problem of growth and Part II investigates the various causes of developmental problem of the maturing Jain girls.

The measured values were obtained by calculating the score represented by arithmetical means and standard deviations. Growth velocities (annual growth increments) of several anthropometric measurements were considered.

The present investigation reveals the trend of growth among the Jain girls with special reference to growth rhythm and growth spurt. The problem of physical growth involves the maximum increment of growth for weight, stature, sitting height and various girth measurements of girls ranging between the ages of 8 and 18 years.

A logistic growth curve was fitted for measurements. The findings revealed that there was a progressive increase in all these growth characteristics studied during adolescence. The mean value and rate of growth for different age groups shows continuous increase in weight from 8 to 18 years. The minimum increment (0.40 Kg) was exhibited by 16 to 17 years of age within one year. The peak velocity occurred at age group 10 to 11 years.
Stature is the principal linear measurement and provides a best index to study the velocity of growth. The distance curve for height of the present sample shows a steady pattern of growth, up to 15 years, then there is a stationary pattern of curve up to 18 years. The Jain girl shows a maximum gain in height (8.35 cm) between the age groups 9 and 10 years, and the minimum increment (0.08 cm) was exhibited by 15 to 16 years of ages.

Beside stature, sitting height is another important variable which defines the torus length. The maximum increase in sitting height among the Jain girls is also exhibited by 10 to 11 years.

The age-wise increment of bidactylion breadth among the Jain girl shows a maximum gain between age group 9 and 10 years.

The age-wise increment of width measurements among the Jain girls has been treated under biacromial breadth, biilliac breadth and sacropelvic depth. The maximum age-wise increment of these measurements range between 9 and 10 years. The antero-posterior increase of the pelvic girdle is most prominent among the 15, 17 and 18 years of ages. It has been observed that biilliac breadth and sacropelvic depth shows differential mode of growth. It has been found that dimensional increase of sacropelvic depth is strikingly greater as compared to biilliac breadth.
The maximum annual increment for circumferences of chest, buttock, upper and lower limbs showed peak gain at 10 to 11 years of age. While head and neck circumference shows maximum peak in 9 to 10 years of age group. Only elbow circumference exhibits peak in 16 and 17 year old girls.

Measurements of skinfold, triceps and sub-scapular increments are highest in pre-adolescent age groups as compared to those of adolescent and post-adolescent girls.

The inter-relationship of the selected measurements are useful indices for the study of growth. Correlation is one of the appropriate statistical tool for discovering and measuring the existing relationship between variables. The study shows that height and weight are related to the rest of the measurements and express age-wise increments. The present study aims was to find out the relative implication of growth exhibited by pre-adolescent and adolescent girls. The study also deals with the relative growth of body build. The tendency of high correlation is indicated by pre-adolescent and adolescent age groups while post-adolescent girls do not show higher trend of correlation of relative growth. In case of body build the correlation is less reliable for purpose of growth but its utility in finding out of the nutritional status is significant.
Investigating problems of growth, the element of differential rate of growth is also treated for evaluating differential trends. The present study observed that different body segment shows different rate of increase at different ages.

The study of onset of menarche among 143 girls ranging between 11 and 16 years of age has been dealt within Part II of this thesis. The relationship of the above samples have further been investigated for secondary sex charaters i.e. the development of breasts, presence of pubic and axillary hairs. The study also deals with nutrition, environment, anthropometric measurements in relation to menarcheal status among the growing girls.

Growth and development are distinct terms and convey different meanings. "Growth" implies an increase in overall size and shape. The term "development" refers to functional complexity, a state of maturity of an individual i.e. a progress towards adulthood. The developmental complexity, includes all round performances, i.e. psychosomatic, ossification of epiphisis, menarche, dental erruption appearance of secondary sexual characters. The adolescent spurt comprising bodily growth, growth of reproductive organs and secondary sex characters have been considered in chapter 7.
Since the attainment of menarche holds the endpoint of reproductive maturity in the female. To illustrate the secular trend of sexual development in girls, it is a well defined parameter for evaluation of developmental problems. Age-wise distribution of menarche among Jain girl shows a very high incidence of onset of menarche among 14 year age. The mean menarcheal age is indicated by 13.38 year.

It is a known fact that breasts develop almost concurrently with pubic hairs growth in girls. In our samples the initiation of the-larche ($B_2$) stage of breast development has been noticed that girls belonging to age group of 10 year shows predominantly increase of $B_2$ stage. The $B_3$ stage is rare while other stages are not represented by our samples. A similar trend is maintained by 11 year old girls with a little increase $B_3$ stage. Only 4.00% of them represent $B_4$ stage and $B_5$ stage is not represented by our data.

According to the developmental trend, the various secondary sex characters i.e. development of breast, appearance of pubic and axillary hair is fully associated with age. The association between onset of menarche and various secondary sex characters show differential mode among different age groups. In early ages, the percentage falls closer to $B_2$, $B_3$; $Ph_2$ $Ph_3$ and $Ah_1$, $Ah_2$ stages while in adolescent period the association of menarche is closer to $B_4$, $B_5$; $Ph_4$, $Ph_5$; $Ah_1$ and $Ah_2$ stages. The secondary sex characters and menarche are closely inter-related.
Nutritional status has a significant role in menarche. Nutrition and environment have a direct bearing on each other. Jain girls of Jabalpur show adequate nutritional standard. Malnutrition and under nutrition are comparatively less. The role of nutrition and health is predominant. The impact of seasons on age at menarche is of a convincing nature, while heretability of the trait shows the least convincing results.

The relationship between menarcheal age and various body dimensions have also been calculated. As compared to other age groups, the 11 year old girl shows low correlation between menarcheal age and body measurements, while initiation of the growth has been at a low ebb. 12 and 15 year old girls exhibit significant correlation in almost all the body measurements. The menarcheal age do not have direct relationship with various body circumferences and skinfold thickness, nevertheless certain age groups show consistency in expressing the significant values.