4.1 SOURCE OF DATA

In the present study sample were collected from the tribal community in Udaipur district. The study was conducted on a total number of 1001 tribals (481 males and 520 females) including Bhil, Meena, Damors, Sahariyas, Gaduliya lohars, Garsias of the Udaipur region.

- Anthropometric measurements like hand length, hand breadth, Middle finger (digit length, proximal, middle and distal phalangeal length), foot length, foot breadth of the both sides of an individual tribal was measured and recorded and along with age, weight and height of the individual was also taken.

- The study was conducted in nearby tribal villages. The objectives and methods of study were explained to the sample population, informed consents have been taken on a consent format by according to their literacy status. All measurements were made by me for the ensurement of the uniformity of the measurements.

4.2. INSTRUMENTS USED

- Sliding vernier calipers was used for the measurements of hands and feet.
- Staturometer was used for vertical height measurement.

4.3. INCLUSION CRITERIA

- Tribal males and females of age group 18-32 years, and who were born & brought up in the tribal community of the Udaipur region.
4.4. EXCLUSION CRITERIA

- Males and females having physical deformity, injury, disease, fracture, amputation or record of any surgical procedures affecting stature, hands and feet were excluded from the study.
- Nutrition and socioeconomic status were not assessed.

4.5 STATISTICAL ANALYSIS

The data obtained was subjected to statistical analysis to derive the mean, standard deviation, correlation coefficient, regression coefficient. For testing the level of significance t test was applied.

The following dimensions were measured based on the specific anatomical landmarks and the values were measured in millimeters.

4.6 LANDMARKS FOR THE ANTHROPOMETRIC PARAMETERS

4.6.1 Stature

It is the vertical distance between the highest point on vertex and the floor. The subject was made to stand barefoot on the foot place of the stature meter in an erect posture with the hands hanging down on the sides with the palm facing the thighs. Subject was asked to maintain upright posture and the movable piece was kept on the vertex and the height was recorded in millimeter.
4.6.2 Hand Length

It is the projected distance between midpoint of line joining styloid process of radius and ulna to the tip of middle finger with the forearm and hand straight in position and metacarpophalangeal joints and interphalangeal joints are fully extended.

4.6.3 Hand Breadth

It is the distance between radial side of second metacarpophalangeal joint to ulnar side of fifth metacarpophalangeal joint.

4.6.4 Digit Length (Middle finger)

It is the distance on the palmar surface of the hand from the midpoint of the proximal finger crease to the tip of the middle finger.

4.6.5 Proximal Phalangeal Length

Distance from middle of metacarpophalangeal crease to proximal phalangeal crease.

4.6.6 Middle Phalangeal Length

Distance from middle of proximal phalangeal crease to middle of distal phalangeal crease.

4.6.7 Distal Phalangeal Length

Distance from middle of distal phalangeal crease to the tip of the digit.
4.6.8 Foot Length

It is the distance between the most backward and prominent part of heel and most distal part of longest toe of the foot, when the foot was fully stretched.

4.6.9 Foot Breadth

It is the distance from medial placed point on the head of first metatarsal to the most laterally placed point, located on the head of fifth metatarsal, when the foot was fully stretched.

4.7 METHODOLOGY

The study design of the current study is Cross-sectional descriptive type.

4.8 ETHICAL CLEARENCE

- Ethical clearance obtained from the ethical committee.
- Ref: GU/UEC/EC/2013/312

4.9 STATISTICAL METHODS

Random sample of population was taken for the study. It is that kind of a sample which is selected in a manner that each individual in the population has an equal chance of being selected, and the selection of every individual is independent of the rejection of the other. Sample size was calculated for the study population. The data were subjected to statistical analysis using statistical package for social sciences (SPSS).

4.9.1 AVERAGES

It becomes necessary to reduce the mass data into summaries for making worthwhile use of them. This is done through statistical analysis. One method is to
draw frequency distributions and histograms related to the variables. Here the method was to estimate a figure which can represent the other individual figures, which is known as the average. Three kinds of averages are generally used.

4.9.2 ARITHMETIC MEAN:

It is the most commonly used estimate of average. It is calculated by adding up all the values of a variable and dividing the sum by the number of values.

4.9.3 THE MEDIAN:

It is the middle value of a distribution. It is determined by locating the value of the middle item of the total items arranged in an array.

4.9.4 THE MODE:

It is the most frequently occurring value in the data of a given sample.

4.9.5 VARIATIONS OF DISPERSION

The following measures of variation are mostly employed.

4.9.5.1 RANGE:

It denotes the difference between the highest and the lowest values.
4.9.5.2 STANDARD DEVIATION:

It is the most important measure of variation. It is calculated by finding the square root of the mean of the deviation from mean squared. When the number of subjects in the sample is too big, the frequency method is found more suitable.

4.9.5.3 COEFFICIENT OF VARIATION

It measures the degree or percent of variability in the character relative to the average of the group. It is used for comparing the variability of two or more set of values.

4.9.5.4 STANDARD ERRORS OF ESTIMATE

They indicate the magnitude of sampling error. The size of the sampling error varies with the sample size and its variation as well as the statistics involved. Standard errors for means, standard deviations and coefficient of variation, are necessary for limiting the approximation involved. Standard error thus indicates the amount of difference that will be anticipated in the statistical constants, if a new sample is drawn from the same population.

4.9.6 TESTS OF SIGNIFICANCE

This was applied to find the statistical significance of differences bilaterally and also for the two sexes. It is required to examine if two populations are alike in regard to certain variables. These tests are termed as tests of significance. t test was used in the study for measuring difference between two means. This test of
significance is usually found convenient in examining the metric data in physical anthropology.

Two tests useful in Anthropological studies are as follows:

1. Tests for measuring between two means: This test of significance is usually found convenient in examining the metric data in physical anthropology.

2. Chi-square test this test of significance is found useful in computing the difference in regard to non-metric data.

4.9.7 CORRELATION

Correlation gives the degree and direction of relationship between two variables. Correlation between the stature of individual and various study parameters was observed and correlation coefficients calculated. The relationship or association between two quantitatively measured or continuous variables is called correlation (Mahajan BK, 2010). The extent or degree of relationship between two sets of figures is measured in terms of another parameter called correlation co-efficient. It is mathematically estimated by a formula and is denoted as Pearson's Correlation 'r'. The Pearson Correlation Co-efficient is calculated by the formula 'r'= P/ (S.D of x)*S.D of Y)

If r = +1 there is perfect positive correlation

If r = -1 there is perfect negative correlation

If r = 0, there is no correlation

If 0 > r > -1 then it is moderately negative correlation

If 0 < r < 1 then it is moderately positive correlation
4.9.8 REGRESSION

The word Regression means prediction. It is a method to estimate or predict the value of one character (variable) from the knowledge of other character (variable). This is possible when the two characters are linearly correlated. The variable to be estimated is called dependant variable and the variable which is known is called independent variable. This is done by finding another constant called regression co-efficient. This co-efficient gives an amount of change in the dependant variable, for every unit change in the independent variable. The mathematical equation from which the dependant variable can be predicted is called the Regression Equation. Regression equations were calculated for various combinations to reach the best possible estimate of stature.