CHAPTER - II

MATERIALS AND METHODS
CHAPTER II
MATERIALS AND METHODS

GEOGRAPHY OF THE AREA:

The present material is derived from Sagar district of Madhya Pradesh. Details regarding study area are as follow:

1. **Madhya Pradesh State**:

   The state of Madhya Pradesh has the largest area in the country and is the sixth largest in population size. It covers 13.8 per cent of the country's population. Its location with respect to other states of the country is shown in the map of India. The 1981 census enumerated 5.2 million population in the state; the profile indicates socio-economic backwardness and high levels of fertility and mortality. The population is young with 41.3 per cent below the age of 15 years.

   The population density of Madhya Pradesh (Per Sq. Km.) is 118 compared to 216 of the country. The sex ratio (females per 1000 males) is 941, slightly higher than that of India (933). This state is one of the backward states of the country. Its literacy rate is 27.9 per cent compared to 36.2 per cent of the country and it occupies the 24th rank out of 31 states and
union Territories in the country. The male literacy rate is 39.5 per cent and that of the females is only 15.5 per cent. About 20 per cent of its population is urban compared to about 23 per cent in the rest of the country.

2. **Study Area**

The Sagar district is in the north central region of Madhya Pradesh. It was spelt as Sagar or Saugar during the British period and is situated between 23° 10' and 24° 27' North latitude between 76° 4' and 79° 81' East longitude. The district is located at the centre of the country.

According to the survey general of India, its territory covers an area of 6,374 Sq. km. and is shaped roughly like a triangle with its vertex in the south and base in North. The total population of the district according to 1981 census is 13,21,318.

The average level of the district is about 1500 - 1750 feet (4572 - 533.4 metres) above the mean sea level but elevations range from 1,160 feet (353.56 meters) in the extreme North (Dhasan river bed) to 2,242 feet (683.26 meters) in the South West (Nahar mau, peak).

The population density of the study indicates (rural parts) 100 person per Sq. kms. About 22 per cent of the population of the study area belongs to schedule castes.
CLIMATE: The climate of this district is generally pleasant and salubrious. The cold season from November to February is followed by hot season from March to the middle of June. The monsoon season is from mid June to the end of September. The winter condition occurs in the month of October.

TEMPERATURE: The meteorological data available from the observatory at Sagar town is taken as representative for nearly all parts of the district but for a slight difference due to local physical environment, e.g., height from the mean sea level; the vegetation, the water bodies and so on. January is the coldest month of the year with average mean monthly temperature of 18.0°C (64.4°F). The monthly temperature reaches the highest point in May when it is 33.4°C (92.1°F). The daily range of temperature is highest. 14.4°C (57.9°F) in the month of April due to the low percentage of humidity in the atmosphere. The lowest temperature is (48.8°F) in the month of August.

MINERAL WEALTH: The district is not endowed with much mineral wealth. It has, however, got abundant construction materials and several small occurrences of lime stone which is used in the manufacture of lime. The Vindhyan sandstone is quarried for building purpose and atta, North of Maithone, Sandstones are split into plank-like sheets. The traps, where they are fresh and free from vesicules, are worked for building stone, road metal and railway ballast. Though some of the terrigenous laterite and some iron-ore in the Bijawar series of the Banda
tahsil to the south and south west of Hirapur, have for long been smelted for iron locally, they are neither rich enough nor are they found in large enough quantities to support a modern iron industry.

FLORA OR BOTANY: The forests as per records of the divisional forest officers in 1958-59 restricted to the hilly areas generally not suitable for permanent cultivation, the total area covered by the Government forest is 1156 sq. miles (2,999.19 sq. kms.) of this forest land 740 sq. miles (1,916.50 sq. kms.) constituted the "reserved" 322 sq. miles (833-97 sq. miles) the protected and the remaining 96 sq. miles (248.64 sq. kms.) "Unclassed" forest. Although the forests cover almost an ideal proportion of the total land surface in the district "Reserved" forest under scientific management form only a part of it.

PRIMATES: These primates occur in Sagar district.

1. The Rhesus or Bengal monkey (Macaca Multa, Linnae) is common and one young is usually born at a time.

2. The langur or Hanuman monkey (Pithecus entellus, Dufrenane) is very common. One young is born at a time.

3. PEOPLE OF THE AREA: The people of the area generally depend on agriculture and agricultural labour. A large section of people are busy in bidi making, the only industry in the district.

There is a great diversity in the population of Sagar District in respect to morphological features. Both fair skin
and dark skin, tall stature and short stature people having thin lips and thick lips are found here. The hair colour also varies from dark black to medium brown. These morphological features are limited to the physical characters only but can be found in their traits too. This diversity in the population tells us the story that various ethnic strains have contributed to the present diversified physical forms of the population. There must have been successive waves of migrations of different ethnic stocks, which must have interbred with the native population and thus we have the ethnic diversity of the area.

The population under study area is multi-religious, multicastrate and multi-linguistic in character. The Hindu population is stratified into several endogamous caste groups. A overwhelming majority of the people of the region under study are Hindus.

The Hindus are stratified into four main hierarchical caste groups. According to Ghurye (1950), caste in India is the Brahmanic child of the Indo-Aryan culture. Castes are arranged in a hierarchical order, and each group is endogamous in character. Endogamy and consanguinity are two very important features which affect the genetic composition of the population.

Caste is characterized by endogamy, social distance on the basis of ideas of ritual purity, hierarchical stature, functional specialization and economic and social interdependence of different communities. Caste relations in the region are similar to those prevalent in other parts of the
country. The family type in this area is patrilineal and a majority of the population is moving towards a medium size family.

The present study is concerned with an examination of flexion creases of Brahman individuals (unrelated). The important features of the Brahmin castes are:

4. Brahman Caste: The well-known priestly caste of India and the first of the four traditional castes of the Hindu scriptures. In 1911 the Brahmans numbered about 450,000 persons in the central provinces and Berar or nearly 3 per cent of the population. This is less than the average strength for India as a whole, which is about 4.5 per cent. The caste is spread over the whole province, but is in its greatest numbers in proportion to the population in Saugar and Jabalpore, and weakest in the feudatory states.

Origin:

The name Brahman or brahma is said to be from the root brih or vrih, to increase. The god Brahma is considered as the spirit and soul of the universe, the divine essence and source of all being. Brahma, the masculine nominative singular, originally denoted one who prays, a worshipper or the composer or reciter of a hymn. It is the common term used in the Vedas for the officiating priest.

"The best modern opinion seems disposed to find the germ of the Brahman caste in the bards, ministers and family priests
who were attached to the kings household in vedic times.

Different stages of this institution may be observed. In the earliest ages the head of every Aryan household was his own priest, and even a king would himself perform the sacrifices which were appropriate to his rank. By degrees families or guilds of priestly singers arose, who sought service under the kings, and were rewarded by rich presents for the hymns of praise and prayer recited and sacrifices offered by them on behalf of their masters. As time went on the sacrifices became more numerous and more elaborate, and the mass of ritual grew to such an extent that the king could no longer cope with it unaided. The employment of purhitis or family priests, formerly optional, now became a sacred duty, if the sacrifices were not to fall into disuse. The Brâman obtained a monopoly of priestly functions, and a race of sacerdotal specialists arose which tended continually to close its ranks against the intrusion of outsiders.

Caste Sub-divisions:

1. Ashvasi
2. Jijhotia
3. Kanaujia, Kanykubja
4. Maharashtra, Maratha
5. Khedawal
6. Maithil
7. Malwi
8. Nagar
9. Namdeo
10. Banadhya, Banaurhis
11. Barvaria
12. Utkal.
MARRIAGE:

The prohibition of marriage within the gotra or exogamous section bars the union of persons related solely through males. According to Hindu Law a Brahman must not marry a girl of his mother's or maternal grandfather's gotra, or one who is a sapinda of his father or maternal grandfather. Mr. Joshi states that sapindas are persons related through being particles of the same body. It is also understood that two persons are said to be sapindas when they can offer pindas or funeral cakes to the same ancestor. The rule barring the marriage of sapindas is that two persons can not marry if they are both as near as fourth in descent from a common ancestor, and the relationship is derived through the father of either party. If either is more remote than fourth in descent they apparently could marry. If the relationship of the couple is through their mothers in each case, if they are third in descent from the same ancestor then they cannot marry, but may do so in the fourth or subsequent generations.

RELIGIONS:

The religions of the Brahmans is Hinduism of which they are the priests and exponents. Formerly the Brahman considered himself as a part of Brahma, and hence a god. This belief has decayed, but the gods are still believed to reside in the body; Siva in the crown of the head, Vishnu in the chest, Brahma in the navel, Indra in the genitals and Ganesh in the rectum. Most Brahmans belong to a sect worshipping especially Siva or Vishnu,
or Rama and Krishna, the incarnations of the latter god, or sakti, the female principle of energy of Siva. But as a rule Brahmanas, whether of the Sivite or Vishnuite sects, abstain from flesh meat and are averse to the killing of any living things.

**Table - 2.1**

**PLACE-WISE DISTRIBUTION OF THE SAMPLES**

<table>
<thead>
<tr>
<th>Name of the City</th>
<th>Name of the locality visited</th>
<th>Data examined Ab.</th>
<th>Pc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sagar</td>
<td>Shanichari &amp; Shukrawari</td>
<td>98</td>
<td>19.6</td>
</tr>
<tr>
<td></td>
<td>Itwari</td>
<td>95</td>
<td>19.0</td>
</tr>
<tr>
<td></td>
<td>Bada Bazar</td>
<td>89</td>
<td>17.8</td>
</tr>
<tr>
<td></td>
<td>Civil Lines</td>
<td>92</td>
<td>18.4</td>
</tr>
<tr>
<td></td>
<td>Macronia</td>
<td>43</td>
<td>8.6</td>
</tr>
<tr>
<td></td>
<td>Parkota</td>
<td>83</td>
<td>16.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>500</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

**MATERIALS:**

The present study was conducted in the Sagar City. The data was collected among Brahman boys.

The data was collected randomly of 500 male individuals. The present sample was collected from the unrelated individuals of Brahman caste.
The data collection and collecting information for the present study was done from '66 to June '87, 500 male individuals were examined for the present investigation.

**METHODS:**

The technique of taking prints followed is after Cummins and Midlo (1961). Complete and decipherable ink prints of the subjects were obtained carefully. As a matter of routine, every print recorded was checked for possible technical defects. The imperfect prints were replaced.

The equipment needed for this study is simple and inexpensive. The material and equipments necessary for taking prints are as follows:

- Duplicating ink, recording paper, inking slab, cotton pad, palmar pad, soap, water and kerosene oil.

Some amount of ink was taken on a glass slab. Spread, smeared into a smooth thin film by pad. The pad was then rubbed smoothly on the glass slab till the ink leaves out, ink was applied on the subject's palm using light pressure to avoid forcing of the ink into the furrows. The following area requires special care. The flexion creases, where the fingers join the palm and the central hollow area of the palm, sole and phalanges.

Necessary cleaning of hands, soles and phalanges should be done. A good quality paper with a glazed surface was selected for taking prints. Proper care was taken during the course of printing and special emphasis was laid on minimising the effect
of dragging across the paper. The area between the thumb and first finger was carefully inked so that the clear picture of the creases in relation to their origin could be obtained. The proximal part of the hand was brought into contact with the paper first and then the distal position of the palm. This helps in recording the creases of the carpel origin situated proximally.

The prints were carefully checked and in doubtful cases the process was repeated, till acceptable results were obtained. All the prints were numbered at the time of print-taking and were properly filed.

Pattern proposed by the formulation and analysis of the data was done on the Bali and Ghube (1971), and Bali (1979). The plantar crease formulation has been adopted after Bali & Mishra (1979). For the study of crease attributes, the technique of Bali and Hawat (1981) has been employed, and for the study of crease morphogenesis, a precise and accurate technique was followed as described by Sharma (1981).

**CREASE MORPHOGENESIS**

For the study of crease morphogenesis, a precise and accurate technique for measuring crease length, crease breadth, crease length formula, and crease surface area was employed as described below:

The absolute crease length was measured by an instrument called measurer (Fig. 1). This length can also be measured by
Fig. 1: Showing the measurer

Fig. 2: Showing the Planimeter
steel tape, wire or planimeter. The maximum breadth of the crease was measured directly with a scale.

The crease length formula indicates the relative absolute length of three primary creases, i.e., radial longitudinal crease, distal transverse crease and proximal transverse crease.

Crease surface area represents the core of a crease between two terminal areas of the crease and its borders. This feature of crease can be interpreted in terms of sq. centimeter area. The instrument used for measuring the crease surface area is the planimeter (Fig. 2).

Statistics Applied:

The data thus analysed was further subjected to statistical treatment. The values in the present study are qualitative. Every possible care was taken in the statistical analysis of the present data. The chi-square tests were applied to test the significance of the results. The formula for the computation of chi-square ($X^2$) is:

$$X^2 = \sum \frac{(\text{Observed} - \text{expected})^2}{\text{expected}}$$

This test is useful for determining the association of a variable between two or more groups of population.
REFERENCES


