MATERIAL AND METHODS
CHAPTER III

3. MATERIAL AND METHODS

This is a comparative study of evaluation of I.C.D.S. (Integrated Child Development Services) Scheme in two Community Development Blocks - one covered by Integrated Child Development Services scheme and the other not covered by it.

3.1 AREA OF STUDY

Chirgaon Community Development Block of district Jhansi in Uttar Pradesh, where Integrated Child Development Services (I.C.D.S.) Scheme was started in 1980-81 was selected as the I.C.D.S. block in this study. This block is also the Field Practice Area of the Department of Social and Preventive Medicine, M.L.B. Medical College, Jhansi (U.P.). The Chirgaon block has got a typical rural setting, representing truely the rural population of Bundelkhand in terms of their culture, beliefs, customs and medical facilities etc.

The Non-I.C.D.S. block in which study was carried out for comparison is Community Development Block, Baragaon. This Block was selected because this is adjacent to Chirgaon Block and as such socio-cultural factors, customs, beliefs etc. are similar to that of Chirgaon area except some additional staff provided under I.C.D.S. Scheme.
Chirgaon is a birthplace of famous national poet Late Sri Mathilisharan Gupta and this block is at a distance of 10 Kms. from Parichha Thermal Power Project. It is situated at a distance of 30 Kms. towards east of Jhansi. The geographical area of Community Development Block Chirgaon is 55255 hectares constituting mainly of padua soil which is suitable for wheat. The average yearly rainfall in the area is about 70 cms.

There are 102 villages in this block. According to 1981 census, the total population is 108561. The density of population is 1.96 / hectare.

There are 94 primary, 27 junior and 4 high schools besides one Intermediate College in this area. The literacy rate is around 29 percent. Agriculture is the main occupation and 75 percent of the total geographical area is under cultivation.

Regarding the health infra-structure, there is three Ayurvedic hospitals and four state dispensaries (allopathic) apart from one Primary Health Centre at Chirgaon. There are three Medical Officers posted at the Centre.

Community Development Block Baragaon is situated at a distance of 15 Kms. east of Jhansi district. The geographical area of Community Development Block Baragaon is about 42660 hectares constituting mainly padua soil.
which is suitable for wheat & pea. The average yearly rainfall in this area is also about 70 cms.

There are 121 villages in this block. According to 1981 census the total population is 103373. The population density is 2.42 / hectare. The main occupation in this area is agriculture and about 80 percent of total geographical area is under cultivation.

At Baragaon there is three Ayurvedic hospitals and four state dispensaries (allopathic) apart from one Primary Health Centre.

There are 72 primary, 17 junior and 6 high schools and one Intermediate College in this area. The literacy rate is around 36 percent.

3.2 STUDY DESIGN

3.2.1 Unit of study

All the children below the age of six years in all the households of the selected villages constituted the unit of study.

3.2.2 Sampling Unit & Frame

Sampling unit in the study was a village. The sampling frame consisted of a list of all the 100 villages in Community Development Block Chirgaon (I.C.D.B.) and all the 121 villages of Community Development Block Baragaon (Non-I.C.D.B.).
3.2.3 **Sample Design**

The main objective of this study was to assess the impact of the I.C.D.S. scheme on the nutritional status of children below 6 years. Average reported prevalence of moderate to severe grades of protein energy malnutrition comes to about 30 percent of the children below six years and this was used to determine the size of the sample required in the two areas.

The formula for minimum sample size required is given as

$$n = \frac{4p}{d^2} \quad \text{where}$$

$p = \text{Percent prevalence expected},$

$q = 100 - p$ and $d$ is allowable percentage deviation in

Assuming $d = 5\% \ (25\% \ of \ 30\%)$ the required sample size comes to

$$n = \frac{4 \times 30 \times 70}{5 \times 5} = 336$$

It was decided that three villages in each block would be adequate to cover this number of children.

The selection of the villages in each block was done by simple random sampling method using table of random numbers *(Fisher & Yates, 1957).*

The villages selected and their random numbers are as follows.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pahari</td>
<td>5</td>
<td>1. Pichhore</td>
<td>17</td>
</tr>
<tr>
<td>2. Maheba</td>
<td>37</td>
<td>2. Gora Machhiya</td>
<td>43</td>
</tr>
<tr>
<td>3. Mirona</td>
<td>62</td>
<td>3. Digara</td>
<td>69</td>
</tr>
</tbody>
</table>

### 3.2.4 Sample size

The sample consisted of all the children below six years of age in the selected villages. Anganwadi workers maintains the family records of their villages in Chirgaon block. Family records of selected villages were verified and made up to date by making necessary alterations and additions. The records were re-verified at the time of study. There were 506 children below six years in the selected villages of Chirgaon and 499 children in Baragaon block. Out of these, 423 (83.60 percent) children in Chirgaon block and 403 (80.76 percent) in Baragaon block could be studied. Village-wise distribution of the children is given in Table 3.1.

#### Table 3.1. Village-wise distribution of population studied.

**Chirgaon Block -**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of village</th>
<th>Total population</th>
<th>Total children below 6 years.</th>
<th>Total children studied</th>
<th>Percentage of children studied</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pahari</td>
<td>1701</td>
<td>285</td>
<td>232</td>
<td>81.40</td>
</tr>
<tr>
<td>2.</td>
<td>Maheba</td>
<td>458</td>
<td>63</td>
<td>56</td>
<td>88.88</td>
</tr>
<tr>
<td>3.</td>
<td>Mirona</td>
<td>929</td>
<td>158</td>
<td>135</td>
<td>85.44</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>3088</strong></td>
<td><strong>506</strong></td>
<td><strong>423</strong></td>
<td><strong>83.60</strong></td>
</tr>
</tbody>
</table>
Haragaon Block -

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of village</th>
<th>Total population</th>
<th>Total children below 6 years</th>
<th>Total children of children studied</th>
<th>Percentage studied</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pichhore</td>
<td>820</td>
<td>225</td>
<td>204</td>
<td>90.66</td>
</tr>
<tr>
<td>2.</td>
<td>Gora Machhiya</td>
<td>662</td>
<td>113</td>
<td>93</td>
<td>74.26</td>
</tr>
<tr>
<td>3.</td>
<td>Digara</td>
<td>1050</td>
<td>156</td>
<td>101</td>
<td>64.74</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2532</td>
<td>499</td>
<td>403</td>
<td>80.76</td>
</tr>
</tbody>
</table>

Remaining children could not be studied because of non-availability of the children or non-cooperation from the parents despite best efforts of the Investigator.

3.3 PERIOD OF STUDY

The study was started on November 1, 1987 and continued till April 30, 1988.

3.4 METHODOLOGY

The study was carried out by door to door visit to every house in selected villages of I.C.D.S. and Non-I.C.D.S. area. All the children below the age of six years were studied with the help of a schedule designed to collect basic informations pertaining to bio-social characteristics, environmental conditions, antenatal care, type and place of delivery, birth attendant, feeding practices, growth and development, immunization status, past and present illness. Preferably the parents of the children were
interviewed. If neither of the parents was available, some other adult member of the family was interviewed and a re-visit made to verify the facts. The informations were recorded on an interview schedule which had earlier been tested on a similar population.

3.4.1 Determination of age

Actual age of the child was recorded in years and months. Since the study population was only upto 6 years, there was not much difficulty in determination of age in years. Determination of age to nearest month posed some problems. Stated age was verified indirectly by asking about the month of birth according to the local calender, proximity to some festival or important event or horoscopes, if available. Relative ages of the mother and other children were also taken into account during verification of age.

3.4.2 Anthropometric measurement

3.4.2.1 Measurement of weight -

A DETECTO weighing machine provided by UNICEF was used for recording the weight of children. Its accuracy was checked daily with standard weights through inferior to beam type scale. This machine was used because of (a) it is easy to carry in the field and (b) for uniformity of observations when children had to be weighed with their mothers.
Children were weighed to the nearest 0.1 kg with only light or no garments. Weighing of smaller or sick children was a difficult task. They were weighed along with their mothers and then the mother's weight was deducted to know the weight of the child. The children were weighed preferably before meals and asked to empty their bladders before weighing.

3.4.2.2 Measurement of Height —

For older children who were able to stand, were asked to stand with bare feet on a flat floor against a wall with feet parallel and with heels, buttocks, shoulders and back of the head touching the wall. The head was held comfortably erect and a mark made on the wall with the help of a scale, touching the top of the head horizontally with its vertical edge flat against the wall. Height was then measured by using a good steel measuring tape to the nearest 0.5 cm.

For infants and other children who were not able to stand, height or rather length was measured by laying the child on a wooden board which was itself on a flat surface. The head was positioned firmly against the board, the knees extended by applying firm pressure and feet were flexed at right angles to the lower legs. A wooden scale was put vertically in firm contact with the head and the length read to the nearest 0.5 cm.
3.4.3 Clinical examination

After recording anthropometric measurements, every child was subjected to a complete general and systemic examination. The objective was to discover any illness or any sign of malnutrition as enumerated by WHO (1976).

3.4.4 Laboratory Investigations

Blood samples were collected for haemoglobin estimation which was carried out on the spot by Sahli's acid haematin method.

Stool specimens were also collected for detection of ova and cysts of parasites in the faeces. For collection of stool samples serially numbered small boxes were distributed to the parents after clinical examination and sample collected next morning. Examination of faeces was done by preparing fresh saline and iodine smears and viewing them under the high power of a microscope.

3.4.5 Compilation, Tabulation and Interpretation of Collected Data

Data so obtained from the study was subjected to critical statistical analysis which consisted of examining possible associations of health status of the children studied with various socio-economic and other factors. Differences between I.C.D.S. and Non-I.C.D.S. blocks were examined statistically. For this, Chi square test and tests for difference between percentages have been applied.
3.5 LIMITATION OF STUDY

This study had been carried out in partial fulfilment of the requirements of M.D. (Social and Preventive Medicine) Examination and therefore suffers from limitations of time and resources. Many of the information sought are based on the capacity to recall, the limitations of which do not need any emphasis.

The reluctance on the part of parents in giving the blood and stool samples of the children proved a great difficulty in the course of study. Inspite of the best efforts made, such samples of all children could not be obtained.

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