Methodology
**3. METHODOLOGY**

Based on the objectives, the methodology for the present study was designed and discussed under the following headings:

3.1 Aim of the study

3.2 Specific objectives of the study.

3.3 Research Design

3.4 Sampling design

3.5 Selection of the area.

3.6 Selection of the sample

3.7 Variables

3.8 Description of Tools used for the study

3.8.1 Tool used to assess the care practices of mothers.

3.8.2 Tool used to assess the nutritional status of infants.

3.8.3 Tool used to assess the mental and motor development of infants

3.9 Pilot study

3.10 Main Study

3.11 Processing and analysis of data.

**3.1. AIM OF THE STUDY:**

The aim of the present research is to assess the care giving practices of mothers and to study its impact on the nutritional status, mental and motor development of infants (0-12 months).
3.2. SPECIFIC OBJECTIVES OF THE STUDY:

1. To study the care giving practices of mothers of infants (0-12months) with special reference to the age of the mother, her educational qualification, breastfeeding and weaning practices, immunization, feeding practices, hygiene, home health care and psychosocial support given to the infant.

2. To assess the nutritional status of infants (0-12months) as assessed by height and weight.

3. To study the mental and motor development of infants (0-12months) as assessed by DASII.

4. To study the relationship between care giving practices of the mothers and the nutritional status of their infants (0-12months).

5. To study the relationship between care giving practices of the mothers and the mental and motor development of their infants (0-12months).

3.3. RESEARCH DESIGN:

The research design selected was the Ex-post facto method. In this method, the researchers attempt to discover causes of certain events even when they cannot control the variable.

3.4. SAMPLING DESIGN:

The selection of the subjects for the study was done by Non Probability Convenient Sampling method. The subjects for the study were selected based on certain criteria.
Inclusion criteria

a) Age of the infants between 0-12 months.
b) Income (Low socio economic status).
c) Willingness to participate in the research study.
d) The infant should be healthy and free from any kind of illness at the time of the study.

3.5. SELECTION OF AREA:

The study was conducted at the outpatient department of Kilpauk Medical College and Hospital, Chennai. This Government Hospital was chosen for the study for the following reasons:

1) The paediatric outpatient department of the hospital caters to the treatment of a large number of infants.

2) The hospital caters to the needs of the population belonging to low socio economic status.

3) The paediatric outpatient department receives a large number of infants for immunization.

4) The options for the selection of subjects of different age groups was vast.

5) The mothers availability in the hospital, since they waited long hours to get their infants immunized. This was convenient for the researcher to conduct the study.

3.6. SELECTION OF SAMPLE:

The samples for the present study were selected by the purposive random sampling method. Infants in the age group of 0-12 months were chosen for the study. 100 infants from each month as one month old, two months old, three months old up to twelve months of age were chosen (50
boys and 50 girls). Thus a total of 1200 samples were chosen, for the study from the Kilpauk Medical College and Hospital, Chennai (Table-1).

**TABLE - 1**

**THE DISTRIBUTION OF MALE AND FEMALE INFANTS ACCORDING TO THEIR AGE**

<table>
<thead>
<tr>
<th>Age in months</th>
<th>Gender</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>1</td>
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<td>2</td>
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<td>11</td>
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<td>50</td>
</tr>
<tr>
<td>12</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Grand Total</td>
<td>600</td>
<td>600</td>
</tr>
</tbody>
</table>

**Exclusion criteria**

1. Twins, infants born with a cognitive problem and sick infants were excluded from the study.

2. High socioeconomic status

3. Unwillingness to participate in the study.
3.7. VARIABLES

**Independent Variables**

- Mother’s care giving practices assessed by the interview schedule.

**Dependant Variables**

- Nutritional status of the infants as assessed by height and weight.
- Mental and Motor Development of the infants as assessed by DASII.

3.8. DESCRIPTION OF TOOLS USED FOR THE STUDY:

3.8.1. Tool Used to Assess the Care Giving Practices of Mothers:

The tool used to assess the care giving practices of mothers was prepared by the researcher.

**Preparation of the interview schedule:**

An interview schedule is very useful in extensive enquiries. It yields reliable and accurate results. The scope of enquiry is greatly enlarged and it can be widely used even if the respondents are illiterate (Pillai and Bhagavati, 1993). It is one of the most commonly and effectively used techniques of data collection in human studies (Liong, 1984).

As per the objective and sample of the study, interview was considered to be the most suitable and appropriate technique for data collection. Therefore an interview schedule was formulated to collect information on the various aspects of the study. The interview schedule was developed by the investigator on the basis of available literature and
Photograph – 1: Showing the investigator conducting an interview to assess the care giving practices of the mother
in consultation with subject matter specialists. Points were made from reviewing literature and accordingly questions were framed. After that the tool was checked by the subject matter specialists. Necessary modifications were made as per the suggestions given by the experts. (Appendix 7.1)

**The interview schedule covers the following information:**

1. Care for mothers - covers personal information of the mother regarding her age, marital status, educational qualification, eating pattern and work details.

2. Details of amount of time spent in cooking and the type of stoves used.

3. The hygienic practices followed.

4. Questions to elicit information about the home health practices followed.

5. Details of psychosocial care given to the infant.

6. Questions to elicit information on breastfeeding and complimentary feeding practices followed.

**Scoring**

The scoring for the Interview Schedule was done in the following manner: A score of “1” was given for every correct answer. A score of “0” was given for every wrong answer. Thus a total was arrived at and care practices were classified as inadequate and moderate.

Inadequate and moderate scores were calculated using the following formula:

\[
(\text{Actual score/Total score}) \times 100.
\]
Scores less than 50% = Inadequate score, scores 51-75% = moderate score, scores more than 76% = adequate score.

**3.8.2. Tool used to assess the nutritional status of infants.**

Anthropometric measurements like height and weight were used to assess the nutritional status of the infants.

**Anthropometric measurements of infants.**

Of the almost unlimited number of possible body measurements, those selected should be the simplest and quickest to take and the easiest to reproduce that will give the maximum information concerning the particular nutritional problem under investigation (Derrick, 1966).

WHO, (1983) reports have shown that body height and weight are the two simplest measurements that can be taken to assess the nutritional status of infants.

The parameters chosen to measure growth were stunting and underweight. Stunting is deficit in height-for-age. Underweight is deficit in weight for age (Sachdev and Chowdhury, 1995).

**Height**

The procedure recommended by Derrick (1966) was followed in assessing the heights of the infants in the present investigation. Height is a very important measurement in the assessment of nutritional status (Swaminathan, 1975). Malnutrition and certain illnesses during the
growing period can prevent an individual from reaching the optimum height (Robinson and Weighley, 1989).

Recumbent length (crown-heel length) was employed for infants, as the measurement of standing height was either impossible or very inaccurate with an uncooperative child. This was usually carried out with a wooden length-board.

The infant was laid on the board which is itself on a flat surface. The head was positioned firmly against the fixed headboard, with the eyes looking vertically. The knees were extended usually by firm pressure applied by an assistant and the feet were flexed at right angles to the lower legs. The upright sliding foot piece was moved to obtain firm contact with the heels and the length read to the nearest 0.1 cm. The nutritional status of the infants was graded on the basis of height for age criteria based on the NCHS Classification (NCHS Standards, 1983).

**Weight**

Weight is the anthropometric measurement most in use. Its potential value, especially for infants, is appreciated not only by health personnel, but often by less educated parents, for whom it is useful as a source of health education.

Weight is the simplest and most important measurement of growth and nutritional status (Jelliffe, 1966 and Swaminathan, 1975).
The anthropometric parameter ‘weight’ is simple to measure accurately; easily reproducible and considered as the most sensitive indicator of nutritional status of infants. (Vijayaraghavan, 1987).

The weight of infants was taken using an electronic weighing scale. This scale is very simply designed, easy to carry, is of light weight and more importantly highly accurate. The infant was weighed with minimum clothing.

The nutritional status of the infants was graded on the basis of weight for age criteria based on the NCHS classification (NCHS standards, 1983).

3.8.3. Tool used to assess the mental and motor development of the infants:

The infants mental and motor development was measured using the Developmental Assessment Scales for Indian Infants (DASII) which is a revision of 1970 Baroda norms from birth to 30 months (Phatak, 1997) on Bayleys Scales of Infant Development (BSID).

**The Scales:** The Scales consist of 67 items for motor development and 163 items for mental development. The motor development items cover the infant’s development from supine to erect posture, locomotion and basic locomotive skills, such as climbing, jumping, skipping etc. It also includes the record of manipulatory behaviour, such as reaching, picking up things, handling and manipulating them, putting or throwing them in a
Photograph – 2: Showing the Tool used to assess the mental and motor development of the infant - DASII
Photograph – 3: Showing the Investigator conducting the test to assess the mental and motor abilities of the infant using the DASII Tool
directed manner, etc. The mental development items record the infant’s cognizance of objects in the surroundings, perceptual pursuit of moving objects, exploring them to meaningful manipulation. It also covers the development of communication and language comprehension, spatial relationship and manual dexterity, imitative behaviour and social interaction, etc. The total scales of 230 items do not ignore any basic area of development during infancy. This evaluated simultaneously but independently the two basic aspects of development, namely, motor development and mental functioning.

In testing any infant it was not necessary to administer all the items. In fact it was impossible to do so as a number of items are related as developmental sequence. For example, when an infant was observed to sit with good coordination he was credited for all items of sitting at lower level.

Testing a child was started with the material which is likely to attract the infant, may be red cubes or red ring. The level of the child’s performance was judged and administering the items at that level was continued till the infant fails a number of items continuously or till it was felt confidently that the child had reached the limits of this ability. The items in the motor scales and mental scales were administered together and were observed simultaneously. As a general procedure the infant was given three trials and the best performance was scored.
**Scoring:** The scoring on both the sections of DASII was similar and simple, leading to two independent scores and results. Each item for which the child was credited is scored ‘1’. The total scores on the respective sections of the scales were counted by adding the number of items credited, irrespective of their serial position on the scale.

In assessing a child’s development, on the basis of Developmental Quotient, his developmental age and chronological age was compared, and developmental quotient (DQ) of 100 was interpreted as on par, less than 100 = lower performance, and more than 100 = higher performance.

3.9. **PILOT STUDY TO PRETEST THE INTERVIEW SCHEDULE:**

Pretesting the schedule was done prior to the commencement of the study. Through pretesting the investigator could find out the drawbacks of the schedule and also an idea about the extent of non response likely to take place. Greater cooperation of the informants could be secured through pretesting. Therefore pretesting the schedule or a pilot study helps in efficient conduct of the main study.

The pilot study was conducted on 100 mothers with infants in the age group of 0-12 months. After a period of 15 days the study was conducted again on the same 100 mothers.
**Reliability and Validity:**

The test-retest method helped in finding out the reliability of the interview schedule. The reliability score was found to be 0.86. As the reliability was quite high the interview schedule was used for the present study.

**3.10. MAIN STUDY**

The mothers who brought their infants for immunization to the pedriatic outpatient department of the Kilpauk Medical College and Hospital were contacted personally by the investigator. A short informal discussion was made and the purpose of the investigation was explained to them. The information was obtained from the mothers verbally and entered in the schedule used to assess the care giving practices of mothers. Details regarding the immunization were noted down from the note book which is used by the doctors to enter information about the infant and the mother. The anthropometric measurements of the infant were taken and then the infant’s mental and motor development was assessed.

This procedure involved dealing with the mother infant dyad for a minimum of one hour. As the speed and efficiency of the investigator increased the time duration came down. A good rapport was first developed with the mother by giving her snacks and a cup of tea. She was asked to breastfeed her infant and then bring it for testing. In some cases
the baby slept after being breastfed. In such cases the investigator had to wait for the infant to awaken and become alert. Only then was the study conducted. After the study the mother was thanked for her cooperation. Thus a total of 1200 mother infant dyads were included in the study.

**3.11. PROCESSING AND ANALYSIS OF DATA:**

The data collected was tabulated, grouped and subjected to statistical analyses using SPSS Package (Statistical Package for Social sciences).

The following tests were used:

- Mean
- Standard deviation
- Chi-square test
- Pearson Correlation.