CHAPTER III

MATERIALS AND METHODS

As mentioned in the introductory chapter, the major objectives of the present study were to design relevant NHE training materials for the field functionaries of the ICDS scheme, to train them in the use of these, to examine the process of implementation in the community, and to evaluate the impact of NHE on the knowledge gains of the field functionaries, and knowledge gains and practice changes of the mothers. The study was carried out in five phases. The first and second consisted of a situational analysis, the third, designing, testing, and production of the NHE materials, the fourth, training of the functionaries, and implementation of the NHE in the community and the fifth, evaluation of the impact of NHE. The materials and methods used in these five phases are described in this chapter. The study was carried out over a period of two years from March 1984 to June 1986.

Design of Intervention

The intervention design which encompasses these five phases, as utilized in the present study, is shown in Figure 3.1 and Figure 3.2. Figure 3.1 shows the design which was used to address the majority of the problems in the present study. Cognitive change and informed choice were the key elements of this design.

A modification of the same design was used for addressing certain other problems, namely, inadequate dietary intake of energy by pregnant and lactating mothers, inadequate feeding of children 6 months-2 years and the control of diarrhoea through the use of oral rehydration therapy. The key elements in this design were similar to the previous one. But an additional step of community testing of the proposed solutions, modification of the solution based on the results of community testing and incorporation of this into the synthesis of message content was introduced in the second design (Figure 3.2).
Figure 3.1 Intervention design based on cognitive change and informed choice

Source: Modified from Zeitlin (1985)
Figure 3.2 Intervention design based on community testing of proposed solutions with a focus on behavioural change

NUTRITION EDUCATORS

Documented dietary nutritional status problems, thematic solutions

Specific behavioural problems supported by evidence of lack of knowledge and potential behavioural solutions

Synthesis of message content

Materials Development

Materials Production

Evaluation of behaviour changes supported by knowledge gains

COMMUNITY

Household interviews

Community testing

Local Artist

Group Pretesting

Community receives and responds

Evaluation survey

Source: Modified from Zeitlin (1985)
Selection of Target Audience

The target audience for nutrition health education as per the ICDS guidelines are women in the age group of 15-45 years. However, for the purposes of the present study the target audience was narrowed down to pregnant, lactating mothers and mothers of 1-3 year old children.

Selection of Areas for Study

Two ICDS blocks in the district of Baroda were selected purposively for the study. These were the urban Baroda block consisting of 100 anganwadis and the tribal Chhotadepur block consisting of 66 anganwadis. The reasons for selecting these two blocks purposively were that the ICDS Centres in these two blocks had been in operation for at least four years and therefore there was a reasonable chance that the field functionaries were trained and were in position. Further, it was also expected that the flow of services would have been well established. The year of commencement and personnel in position in these two blocks, as of January 1984, are shown in Table 3.1.

Selection of Sample and Experimental Design

Selection of the Field Functionaries

The field functionaries for the study were selected with the help of the Child Development Project Officers (CDPOs). The CDPOs were requested to arrange for a meeting for the investigator with the supervisors and anganwadi workers (AWWs), when they reported for their monthly meetings. The purpose of the study was explained to the supervisors and AWWs and their co-operation was sought. Subsequently the investigator met the AWWs in small groups of twenty each, along with their supervisors and requested them to fill in a socio-economic and background information questionnaire (Appendix II) which elicited information on age, training received and other relevant details. These forms were scrutinized and all AWWs who had received their usual training were selected for the study which came to a total
Table 3.1 The year of commencement and personnel in position in the tribal and urban blocks selected for the study

<table>
<thead>
<tr>
<th>Details</th>
<th>Tribal Chhotaudepur Block</th>
<th>Urban Baroda Block</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year of commencement</td>
<td>1976</td>
<td>1980</td>
</tr>
<tr>
<td>Number of anganwadis as of January 1984</td>
<td>66</td>
<td>100</td>
</tr>
<tr>
<td>Personnel in position</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CDPO</td>
<td>1 (acting)</td>
<td>1</td>
</tr>
<tr>
<td>Supervisors</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>ANWSs</td>
<td>66</td>
<td>100</td>
</tr>
</tbody>
</table>
of 82 urban AWWs and 55 tribal AWWs. All supervisors were enlisted for the study. The sample selected for the study is shown in Table 3.2.

Experimental Design for Training the Functionaries

A pre-post experimental design was used for studying the impact of training on the knowledge gains of the functionaries.

In the tribal area, the AWWs were divided into six groups, one under each supervisor. Four supervisors along with their AWWs were assigned randomly to the experimental group which was given the training while two other supervisors and their AWWs were assigned to the control group that was not trained. Data were collected before and after training. The experimental design is shown in Figure 3.3. This design facilitated the organization of the training in the tribal area as the supervisor and her anganwadi workers formed a cohesive unit administratively and the supervisor could be entrusted with the responsibility of bringing the group of AWWs for training. As the tribal block of Chhotaudepur was 105 km away from Baroda city, the investigator had to rely on the supervisor for intimating the AWWs about the venue, date and time of the training. This could be accomplished only by assigning all AWWs under one supervisor to either the experimental or the control group. The training was given by a team of investigators who were specially trained for this purpose.

In the urban setting, the experiment was so designed as to test the effectiveness of supervisor as the trainer versus the trained investigator as the trainer. To achieve this objective, the AWWs in the urban area were divided randomly into two groups, an experimental and a control. The experimental group was further divided randomly into two sub-groups. One sub-group and all supervisors were trained by the team of investigators while the other sub-group was trained by the supervisors. The control group was not exposed to the training. Data were collected from all the subjects before and after the training. The experimental design in the urban setting is shown in Figure 3.4.
Table 3.2  Sample of tribal and urban functionaries selected for the study

<table>
<thead>
<tr>
<th></th>
<th>Tribal Chhotaudepur Block</th>
<th>Urban Baroda Block</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisors</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>AWW</td>
<td>66</td>
<td>100</td>
</tr>
<tr>
<td>Number in position</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number who</td>
<td>5</td>
<td>82</td>
</tr>
<tr>
<td>had received</td>
<td></td>
<td></td>
</tr>
<tr>
<td>usual training</td>
<td>6</td>
<td>55</td>
</tr>
<tr>
<td>Number selected</td>
<td>6</td>
<td>55</td>
</tr>
<tr>
<td>for study</td>
<td>5</td>
<td>82</td>
</tr>
</tbody>
</table>
Figure 3.3 Experimental design for training the functionaries in the tribal block.

Tribal Block

Supervisors .. 6
AWWs .. 55

Experimental Group
- Supervisors .. 4
- Their AWWs .. 37
- Pre-intervention data
- Exposed to training
- Post-intervention data

Control Group
- Supervisors .. 2
- Their AWWs .. 18
- Pre-intervention data
- No training
- Post-intervention data
Figure 3.4 Experimental design for training the functionaries in the urban block

Supervisors . . 5

AWWs . . 32

Randomly divided into two groups

42 AWWs

Random - 2 Subgroups

40 AWWs

Pre-intervention data

Trained by Investigating Team

Post-intervention data

Pre-intervention data

Trained by Investigating Team

Post-intervention data

Pre-intervention data

Trained by Supervisor

Post-intervention data

Pre-intervention data

No Training

Post-intervention data
Selection of Sample for Community Level Investigations

The selection of sample for community level investigations was done in two stages. The first stage of sampling was the selection of the anganwadi centres from the tribal and urban blocks. In the tribal block a purposive sample of two anganwadi centres was selected using the following criteria:

- There should be a trained AWW in position who had established good rapport with the mothers.
- The villages selected should be of easy access to the investigator.

In the urban block, a list of anganwadi centres which catered mainly to scheduled castes and backward classes was prepared with the help of the supervisors. Three centres were selected from this list randomly.

In the second stage of sampling it was decided to select 50 mothers from each of these centres. Although the target audience for nutrition health education includes all women in the age group of 15-45 years, for the purpose of the present study, it was decided to select only the pregnant, lactating mothers and mothers of 1-3 year old children. A sampling frame was prepared from the records of the AWW as well as from house to house visits. All pregnant and lactating mothers in each of these centres were first selected. Then a random sample of mothers of 1-3 year old children was selected in order to make a total sample size of 50 mothers from each centre. Thus a total of 100 mothers from the tribal villages and 150 mothers from the urban slums were enrolled for the study.

Experimental Design for Assessing Cognitive Changes

A pre-post experimental design was used to assess cognitive changes. Of the two tribal anganwadi centres selected for the study, one was assigned randomly to the experimental group while the other was assigned to the control group. The mothers in the experimental group were exposed to the education in weekly sessions, while the mothers in the control group were not exposed to education. Before and after the education, data on nutrition and health knowledge were
collected from the mothers who were initially enrolled in the study. The sample and study design are shown in Figure 3.5.

A similar design was used in the urban block with a provision to test the effectiveness of supervisor trained AWW versus investigator trained AWW as the educator (Figure 3.5). Of the three anganwadi centres in the urban block, two were randomly assigned to the experimental group and one to the control group. The mothers in one of the experimental centres were educated by an AWW who was trained by the investigating team while mothers in the other group were educated by an AWW who was trained by the supervisor. The mothers in the control centre were not exposed to the education. Data on nutrition health knowledge were collected from the mothers who were initially selected, before and after the intervention.

Experimental Design for Assessing Practice Changes

There was a practical difficulty in following the same subjects for assessing the practice changes. The status of the mothers (i.e. pregnant or lactating) as well as the age of children changed by the time the intervention was completed. Thus a pregnant woman from whom dietary intake data were obtained initially was not in this category at the end of the study. Therefore in order to assess the practice changes, a post-only experimental design was used. At the end of intervention all available pregnant, lactating mothers and mothers of 1-3 year old children in the experimental and control centres were interviewed for assessment of their practices. Comparisons were made between the control and experimental centres. This design is shown in Figure 3.6.

It must be stated here that the education was open to all although the AWWs were requested to make an effort to encourage the pregnant, lactating mothers and mothers of 1-3 year old children to attend. The details of the methods used are described in the following sections from Phase I to Phase V.
Figure 3.5 Sample selection and experimental design for assessing cognitive changes in the tribal and urban mothers

<table>
<thead>
<tr>
<th>Tribal Block</th>
<th>Urban Block</th>
</tr>
</thead>
<tbody>
<tr>
<td>66 AWs</td>
<td>100 AWs</td>
</tr>
<tr>
<td>Two AWs selected</td>
<td>Three AWs selected</td>
</tr>
<tr>
<td>purposively</td>
<td>randomly</td>
</tr>
<tr>
<td>Random allocation</td>
<td>Random allocation</td>
</tr>
<tr>
<td>E</td>
<td>E1</td>
</tr>
<tr>
<td>50 mothers</td>
<td>50 mothers</td>
</tr>
<tr>
<td>No Education</td>
<td>No Education</td>
</tr>
<tr>
<td>Pre-intervention data</td>
<td>Pre-intervention data</td>
</tr>
<tr>
<td>Exposed to Education</td>
<td>Exposed to Education</td>
</tr>
<tr>
<td>Investigator trained</td>
<td>Supervisor trained</td>
</tr>
<tr>
<td>AWW</td>
<td>AWW</td>
</tr>
<tr>
<td>Post-intervention data</td>
<td>Post-intervention data</td>
</tr>
</tbody>
</table>

E Experimental
C Control
Table 3.6 Experimental design for assessing practice changes in the tribal and urban mothers

- **Tribal Block**
  - 66 AWs
  - Two AWs selected purposively
    - E
      - Exposed to Education
        - Post-intervention period
          - All available pregnant lactating mothers and mothers of 1-3 year old children
        - Data on practices
    - C
      - No Education

- **Urban Block**
  - 100 AWs
  - Three AWs selected randomly
    - E1
      - Exposed to Education
        - Post-intervention period
          - All available pregnant lactating mothers and mothers of 1-2 year old children
        - Data on practices
    - E2
      - Exposed to Education
        - Data on practices
    - C
      - No Education
Phase I: Methods for Assessment of Situational Analysis at the Household Level

The primary concern of this phase was to determine the educational needs of the target audience (mothers) and to determine the training needs of the functionaries to deliver NHE. The situational analysis at the community level included the following investigations:

- Socio-economic status of the mothers
- Assessment of the nutritional status of the at-risk population through:
  - anthropometric
  - clinical
  - biochemical and
  - dietary survey
- Awareness of mothers concerning ICDS services
- The knowledge and perceptions of mothers concerning major nutrition and health problems
- Practices of mothers—The infant and toddler feeding practices, the dietary intake of pregnant, lactating mothers, and the feeding of ORS in diarrhoea.

These data provided important inputs to the development of the educational material.

Socio-Economic Status of the Mothers

Socio-economic status of the mothers selected for the study was obtained using a pretested schedule. The socio-economic information collected included income, religion, caste, mother tongue, type and size of family, fathers' and mothers' educational level, occupation, land ownership, type of dwelling, availability of physical facilities and material possessions. Data on NHE messages received by the mothers from the AWWs were also collected along with the socio-economic data.
Assessment of Nutritional Status

Anthropometry

The weight and height of pregnant and lactating mothers and the weight for age of children below the age of three years was assessed in order to determine the extent of malnutrition or undernutrition. The weights of mothers were recorded using a Detecto bathroom scale to the nearest 0.5 kg. Body weight of children was measured to the nearest 0.1 kg using a Salter weighing scale. Zeroing of both scales was checked after each measurement.

Clinical Examination

A rapid clinical examination was done for any obvious nutritional inadequacy. The clinical examination was carried out according to the descriptive list given by Jelliffe (1966), based on the report of the WHO Expert Committee on Medical Assessment of Nutritional Status.

Haemoglobin (Hb)

Hb was measured using the Cyanmethemoglobin method (Dacie and Lewis, 1977) using the filter paper technique (NIN Annual Report, 1974). The details of the method are given in Appendix III.

The anthropometric measurements, Hb estimation and clinical examination were carried out in the anganwadi on all available children below 3 years and pregnant and lactating mothers. For the dietary survey a random sub-sample of children 1-3 years was taken.

Dietary intake

The dietary intake of energy and protein of the target population namely, pregnant mothers, nursing mothers and children 1-3 years were obtained by the 24 hour recall method (NNMB, 1984).

Diet recall, since its introduction has become one of the commonest methods used in the collection of food consumption data of families and above all of individuals. The principle of the dietary recall is that the food consumption of a shorter period of time prior to the survey is recalled as accurately as possible, usually the previous 24 hour. The amounts consumed are estimated in household
measures as very few people can estimate the amounts directly in
weight (Maija Pekkarinen, 1970). One of the limitations of 24 hour
dietary recall is that the recall day may be atypical and thus affect
the results. The recall and weighed food records have been shown to
give comparable results on the mean intakes (Young et al, 1952) and
can thus replace each other in group. It is reported that data
obtained by recall method for individual's food consumption may
deviate from those obtained by more accurate methods that its
reliability as a quantitative method is questioned (Maija Pekkarinen,
1970). However, where seasonal variation and day to day variations
are small the 24 hour recall may not give results that are different
from the weighed food record, thus justifying its use for evaluating
individual intakes as well. The validity of data obtained by the oral
questionnaire method as compared to that obtained by 3 day weighment
method, particularly among the poor socio-economic communities in
India, has been established (Pasricha, 1959; Thimmayamma and

The subjects of the present study were visited in their homes,
the purpose of the study was explained and their co-operation sought.
Prior visits, especially in the tribal area, were made to get to know
their dietary pattern and manner of cooking. In the tribal area,
mothers of children were not the only ones who took care of the
feeding of children. Older siblings and grandmothers were seen to
feed the child when the mother was away in the farms. Therefore, as
far as possible, dietary interviews were conducted when the other
members were also present.

The respondents were asked to recall all the foods eaten by the
child (or themselves in the case of pregnant and lactating women) in
the 24 hour period preceding the day of the interview. The amount of
cooked foods eaten by the child or the subject was recorded in terms
of household measures converted to standard measures. Respondents
were carefully questioned about any foods bought from outside and
the amount of such foods fed was recorded. The raw food equivalents
of the cooked foods were calculated from the recipe. The intake of
energy and protein was calculated using the nutritive value of Indian
Awareness of Mothers Concerning ICDS Services and their Utilization of these

Simple pretested schedules were used to record this information through interviews of the target mothers (Appendix IV and V).

Nutrition and Health Knowledge of Mothers

In order to investigate the nutrition health knowledge of the mothers, an interview schedule was prepared which included questions from the following areas. These areas were selected on the basis of the content areas for NHE which were in turn based upon the situational analysis:

- Practical diets for pregnant mothers, lactating mothers and children below the age of 3 years
- Breast feeding and introduction of semisolids
- Growth monitoring
- Malnutrition: (protein energy malnutrition (PEM), vitamin A deficiency and anaemia)
- Diarrhoea management
- Worm infestations
- Immunizations.

The interview schedule used was semistructured and standardized (Richardson et al, 1965). This form of interview is used when the same or almost the same information is to be collected from each respondent. Because the standardized interview is designed to collect the same information from each respondent, the answers of all respondents must be comparable and classifiable, they must deal with the same subject matter, differences or similarities between responses must reflect actual differences between the respondents and not differences due to the questions that were asked.

The interview schedule was drafted first in English and then translated into Gujarati. The wording and sequence of questions were determined in advance and the questions in the schedule were asked
of all respondents in the same manner as far as possible. Responses were recorded in precoded category. If a response fell outside a precoded category, it was written down. This schedule was pretested with the mothers (the pretest sample was different from the sample selected for the study) and changes were made wherever necessary.

**Scoring Procedure**

The responses were coded and a key to scoring was evolved. All expected correct responses were written down. Each correct response was given a score of 1 and incorrect and 'do not know' responses were given a score of zero. No attempt was made to weight the scores.

The key to the scoring was validated by three experts in nutrition. The schedule was then administered to 30 mothers. Responses were coded and scored by two investigators independently. The intercoder reliability (0.94) was established using the Pearson-Product moment correlation. These schedules were then administered to the test sample before and after intervention (Appendix IV). The key to the scoring is shown in Appendix VI.

**Administration of the Schedule**

The mothers were contacted in their homes for interviews. The time taken to complete the interview ranged from 45 minutes to 60 minutes.

**Practices of Mothers**

The feeding practices of infants, toddlers and the dietary intake of pregnant and lactating mothers were determined using a 24 hour recall.

To determine their practices regarding the control of diarrhoea, an oral questionnaire was used. Whenever mothers reported that their infants or toddlers had diarrhoea in the past three months, they were asked specific questions on what practices they followed to control diarrhoea. This included questions on home remedies and the feeding of oral rehydration solution (ORS) or sugar-salt (SS) solution, and the dietary practices during diarrhoea (Appendix V). If the mothers
reported using the sugar-salt solution, they were asked to measure out the salt and sugar which were collected in polythene bags with an identification slip to be weighed later and recorded. The amount of water they used for preparing ORS was recorded on the spot using standard measures. The composition of the sugar-salt solution reported was evaluated using reports by Rohde (1981) and Mittal (1986).

Phase II: Methods for Assessment of Situational Analysis at the Functionary Level

The situational analysis at the functionary level was designed to provide information on the following:

- Type of NHE materials available at the anganwadis
- The time that anganwadi workers spent on NHE
- The kind of training that the field functionaries had received in NHE
- The field functionaries' perceptions concerning the IODS programme, its objectives and services, and their job functions
- Their knowledge in important areas of nutrition and health
- Their ability to demonstrate the quantity of foods for pregnant, lactating mothers, children 6 month-1 year, 1-3 year old and their practices for control of diarrhoea and feeding during diarrhoea.

Analysis of these data provided important inputs to the development of the training material, allocation of time specifically for NHE, the amount and kind of training that the functionaries will require and the knowledge and skills to be transferred to the functionaries. The methods used and the tools developed for the collection of these data are described below.

Type of NHE Materials Available at the Anganwadis

In order to study the written and visual materials available on nutrition and health in the anganwadis, the investigator visited 20 anganwadis in urban Baroda at the commencement of the study and recorded all available written and visual materials on nutrition and
health. These materials were then scrutinized for the following:

- objectives - are they stated clearly?
- content - is it relevant?
- illustrations - are they comprehended easily?
- suitability - are they suitable for NHE?

The information was utilized in making a decision concerning the development of training material for the supervisors and AWWs.

**Pattern of Time Allocation by the AWWs to Different Job Activities**

All AWWs who were initially contacted for the socio-economic information were provided with a proforma to fill up their daily schedule of activities at the anganwadi from the time they arrived at the anganwadi to the time they left for their homes. The proforma included six days. Each day was divided into blocks of half an hour each from 8.00 a.m. to 4.00 p.m. The AWWs were collected in small groups of 10-12 and were told how to fill the proforma. They were then requested to keep a record of their activities for six days, starting from Monday the following week. The completed proformas were collected at the time of monthly meetings. In the same proforma, the AWWs indicated the number of home visits they had made during the week.

**Training Received, Awareness about ICDS Objectives and Job Perceptions of the Functionaries**

A series of schedules were developed, pretested and used for the collection of these data. The functionaries' perceptions concerning their job functions were evaluated using a checklist, which was prepared on the basis of job functions of functionaries described in the revised syllabi for ICDS functionaries and trainers prepared by the National Institute of Public Co-operation and Child Development (NIPPCD, 1983) (Appendix VII).

**Nutrition Health Knowledge of the AWWs**

The knowledge concerning nutrition and health was obtained using a schedule similar to the one that was developed for the mothers (Appendix VIII). This schedule was pretested on 15 AWWs. The pretest
results were coded, scored and the intercoder correlation was established \((r = 0.94)\).

The field functionaries were given a specific date and time and the interviews were conducted in a central place. The time taken to complete the interview with one subject was one hour on an average. The key to the scoring of the functionaries schedule is indicated in Appendix IX.

**The Functionaries' Ability to Demonstrate the Amount of Foods (Calorie Needs) for Pregnant, Lactating Mothers, and Children Below the Age of 3 Years**

The functionaries were shown typical food items (cooked) that the families consumed. The food items in standard measured quantities were laid out for visual inspection by the field functionaries. They were then asked to indicate the amount of the different foods that a pregnant/lactating mother or a child 6 month-1 year or 1-2 year old will need to consume at different meals. Thus the quantity at each meal and frequency of consumption were written down. Foods not kept for visual inspection were sometimes included by the functionaries such as sweet biscuits, slices of bread or bun. These were recorded in quantities as mentioned by them. The food items were generally in portions or multiples of the standard quantity laid out for visual inspection. The calorie value of the standard quantity of each food item was previously determined. The calorie needs were then computed by using appropriate multiplication factors. The calorie needs thus mentioned by the functionaries were compared with the recommended dietary allowances suggested by the Indian Council of Medical Research (ICMR, 1984). A similar procedure has been used by Ghosh et al (1977) in demonstrating to illiterate mothers, the quantity of foods needed by children at different ages.

**The Functionaries' Ability to Demonstrate the Preparation of ORS**

The functionaries' ability to demonstrate the preparation of ORS was determined by asking each functionary to measure out the salt and sugar which were collected in polythene bags for weighing at a later date. The amount of water was recorded on the spot using a measuring
Phase III: Methods Used in Message and Materials Development

Selection of Priority Areas and Setting Objectives

The results of the situational analysis are presented in detail in the section on Results and Discussion (see Chapter IV). Based on these results the following key messages were developed.

Key Programme Messages

The key programme messages were divided into two sections, those that aimed primarily at a cognitive outcome and others that aimed primarily at a behavioural outcome. These messages are outlined in Tables 3.3 and 3.4. As mentioned earlier, the elements of intervention were different for these two. The messages which aimed at a behavioural outcome were tested with a small sample of mothers to see if they were acceptable to them.

The testing procedure is described separately for each of the messages below. The group with which the messages were tested included subjects who belonged to that particular category. For example, testing of the message of feeding adequate amount of semisolids to a six month-one year old child consisted of mothers with infants in that age group. Similarly the message on practical diets for pregnant/lactating mothers was tested with a small group of pregnant and lactating women.

Testing the Messages

Practical Diets for a Pregnant Mother or Lactating Mother

The messages on practical diets for pregnant and lactating mothers were to consume four meals in a day and eat 50% more than when non-pregnant or non-lactating. The specific message for the urban mothers was to eat four more wheat rotlas in a day and one additional cup of dal while for the tribal mothers it was to eat two additional maize rotlas in a day and one additional cup of dal.

The message content was supported by a study carried out by Devadas et al (1975) who prepared specific menus and offered them ad libitum
Sr.

No.  Messages

1. Beneficiaries of the anganwadi services are the pregnant, lactating mothers and children below the age of six years.

2. Make use of the following ICDS services to keep your children healthy:
   - Supplementary food
   - Immunization
   - Health care
   - Health inputs (vitamin A and iron folac acid)
   - Referral
   - NFE
   - Non formal preschool education

3. Those who need the ICDS services most are the pregnant, lactating mothers and children below the age of three years.

4. The best way in which you can participate in the anganwadi is to enrol yourself first.

5. Out of school teenage girls can help in the anganwadi by adopting five families each.

6. Pregnant mothers must eat more.

7. Pregnant mothers must eat at least 3-5 times in a day.

8. Lactating mothers must eat more.

9. Lactating mothers must eat at least 3-5 times in a day.

10. Feed colostrum to your baby.

11. Introduce semisolids at 4-6 months.

12. Feed your toddler frequently 4-6 times in a day.
<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Messages</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Get your children weighed regularly in the AW.</td>
</tr>
<tr>
<td>14</td>
<td>Know if your child is healthy from the growth card.</td>
</tr>
<tr>
<td>15</td>
<td>Feed the special energy food of the anganwadi to your weak children 4 times in a day.</td>
</tr>
<tr>
<td>16</td>
<td>Give your child the vitamin A syrup from the anganwadi to keep his eyes healthy.</td>
</tr>
<tr>
<td>17</td>
<td>Give green leafy vegetables to your child to keep his eyes healthy.</td>
</tr>
<tr>
<td>18</td>
<td>Give your child the iron folic tablets from the anganwadi to keep his blood healthy.</td>
</tr>
<tr>
<td>19</td>
<td>Know that paleness of eyes, nails and tongue and tiredness are signs of weak blood.</td>
</tr>
<tr>
<td>20</td>
<td>Feed this simple sugar salt solution to help your child to recover fast from diarrhoea.</td>
</tr>
<tr>
<td>21</td>
<td>Know that loss of fluids in diarrhoea is dangerous.</td>
</tr>
<tr>
<td>22</td>
<td>Know when to refer a diarrhoeal child to the ANM or doctor.</td>
</tr>
<tr>
<td>23</td>
<td>Protect your children from worms by giving tablets available at the anganwadi.</td>
</tr>
<tr>
<td>24</td>
<td>Know that personal and environmental hygiene are the most important to ward off worms.</td>
</tr>
</tbody>
</table>
Table 3.4 Programme messages that aimed at behavioural outcomes

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Target Group</th>
<th>Message</th>
<th>Expected Behavioural Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pregnant mothers</td>
<td>Each day eat 4 rotlas more and 1/20 of dal more than you do normally</td>
<td>Increased intake of energy by pregnant women</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Eat 4 times a day rather than twice</td>
<td>Increased frequency of meals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Take two injections of tetanus toxoid (TT)</td>
<td>Increased immunization coverage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Take one tablet of iron daily</td>
<td>Increased utilization of iron-folic acid tablets provided by anganwadi</td>
</tr>
<tr>
<td>2</td>
<td>Lactating mothers</td>
<td>As above but no TT</td>
<td>Same as above</td>
</tr>
<tr>
<td>3</td>
<td>Mothers of infants 6 months to 12 months old</td>
<td>Introduce semisolids at six months</td>
<td>Increase in number receiving semisolids</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feed semisolids at least 4 times in a day</td>
<td>Increased frequency of feeding</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feed 20 of khichdi divided in 4-6 portions in a day</td>
<td>Increased intake of energy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Add 1 teaspoonful of oil to each portion, if you can.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Continue to breast-feed</td>
<td></td>
</tr>
</tbody>
</table>

1Rotla is a wheat chapati

2Khichdi - Rice and tuver dal (Cajanus cajan) cooked together

For the tribal infants rab (maize porridge) 4-5 times a day was recommended
Table 3.4 contd..

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Target Group</th>
<th>Message</th>
<th>Expected Behavioural Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Mothers of children 1-2 year old</td>
<td>Feed your toddler frequently in a day, 4-6 times a day</td>
<td>Increased frequency of feeding</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feed approximately half of what his father eats in a day and more if the child demands</td>
<td>Increased energy intake</td>
</tr>
<tr>
<td>5</td>
<td>Mothers of children with diarrhoea</td>
<td>Give the child sugar-salt solution prepared by dissolving one kobo(^1) sugar, two (three-finger) pinches of salt in two seria lota(^2) of water</td>
<td>Increased use of sugar-salt solution in diarrhoea</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feed at least one seria lota of this water in a day to your diarrhoeal child</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feed it patiently little by little</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Continue to give soft foods to your child</td>
<td>Discontinuation of the practice of restricting foods</td>
</tr>
</tbody>
</table>

\(^{1}\)Kobo - a handscoop (see Figure 3.11)

\(^{2}\)Seria lota - a vessel to measure 500 ml of water
to five pregnant and five lactating mothers and recorded their consumption. The amount of raw food equivalents consumed in grams by pregnant and lactating mothers and the energy consumption are shown in Table 3.5. These authors reported that pregnant mothers could consume 401 g cereals, 72 g pulses, 31 g oil and 40 g sugar in a day besides vegetables, fruits and milk, if these were distributed into four meals. The recorded energy intake for pregnant mothers was 2265 Kcals in a day. Lactating mothers were found to consume a little more than pregnant mothers. The amounts recommended in the present study are shown in Table 3.5 and do not exceed the figures reported by Devadas et al (1975).

For testing this message a small group of pregnant and lactating mothers were collected in the anganwadi. The amount of food consumed by the non-pregnant, non-lactating mother was laid out on a plate. This amount plus the extra food that a pregnant or lactating mother was recommended to eat was placed on another plate. The pregnant and lactating mothers were then asked if they could consume the extra amount of food. They were initially uncertain. Then the mothers were asked to divide the food into 4 more or less equal portions during which process the mothers observed on their own that it was possible for a pregnant or a lactating woman to consume the extra food if the total quantity was divided into 4 meals. Thus the amount of extra food and frequency of consumption were both demonstrated and the message was comprehended by the mothers. The foods suggested included only what they generally prepared at home such as rotlas and khichdi and so there was no resistance to consuming these foods. However, the general belief was that a pregnant mother must eat less during pregnancy because eating larger amounts of food may produce a feeling of discomfort. The suggestion to overcome this was to eat more frequently, adding small quantities of extra food each time.

Practical Diets for an Infant 6 Month - 1 Year

The messages on practical diets for an infant 6 months-1 year were to introduce solids at the age of 4-6 months, feed mashed solids at least 4-6 times a day and by the time the child is 8 months old feed 2 cups of khichdi in a day divided into four parts.
Table 3.5. Reported food intake of pregnant and lactating mothers fed ad libitum in comparison with the diet recommended in the present study

<table>
<thead>
<tr>
<th>Intake/Recommendation</th>
<th>Weight of Raw Ingredients</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Em</th>
<th>EDA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cereal</td>
<td>Pulse</td>
<td>GLV</td>
<td>Other</td>
<td>Roots</td>
<td>Fruits</td>
<td>Milk</td>
<td>Fats</td>
<td>Sugar</td>
<td>Energy</td>
<td>Energy</td>
</tr>
<tr>
<td></td>
<td>(g)</td>
<td>(g)</td>
<td>(g)</td>
<td>(g)</td>
<td>(g)</td>
<td>(g)</td>
<td>(g)</td>
<td>(g)</td>
<td>(g)</td>
<td>(g)</td>
<td>(g)</td>
</tr>
<tr>
<td>Pregnant mothers</td>
<td>401</td>
<td>72</td>
<td>115</td>
<td>70</td>
<td>52</td>
<td>115</td>
<td>333</td>
<td>31</td>
<td>40</td>
<td>2265</td>
<td>2200</td>
</tr>
<tr>
<td>Lactating mothers</td>
<td>415</td>
<td>80</td>
<td>144</td>
<td>89</td>
<td>47</td>
<td>150</td>
<td>311</td>
<td>50</td>
<td>48</td>
<td>2613</td>
<td>2600</td>
</tr>
<tr>
<td>Message content in the present study</td>
<td>380-</td>
<td>50-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Variable</td>
<td>-</td>
<td>30-</td>
<td>30-</td>
<td>1895-</td>
<td>2200-</td>
</tr>
<tr>
<td></td>
<td>450</td>
<td>80</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>40</td>
<td>40</td>
<td>2305</td>
<td>2600</td>
</tr>
</tbody>
</table>

1Results of the ad libitum feeding trials by Devadas et al (1975)
2Results of the ad libitum feeding trials by Devadas et al (1975)
3The amount recommended for pregnant and lactating women in the message in the present study
The diet surveys carried out as part of the investigations in Phase I showed that 'khichdi' was cooked everyday in the urban households but not in the tribal households. Therefore it became necessary to make recommendations for the tribal infants choosing from foods that were available in tribal households daily and which were also suitable for infant feeding. Observations of the tribal households revealed that the women had little time and no equipments to prepare any special foods for the infants. The daily menu consisted of primarily three dishes, a maize porridge called rab approximating to 10% (wt/v) gruel consistency, maize rotlas and liquid dal prepared out of either tuver (Cajanus cajan) or urad (Phaseolus mungo). Frequently the unsplit tuver was cooked with just enough water which was called bhakra.

The morning meal usually consisted of only rab although sometimes the maize rotlas were also eaten. The noon and evening meal consisted of rab, maize rotlas and dal. Sometimes this was replaced by khichdi either in the afternoon or in the evening. The families also prepared a dish called ghenz which was maize porridge of a thicker consistency (15-20% gruel). They also made another dish called ghatto which was coarsely ground maize pounded with the addition of a little water and then cooked with just enough water. Of these foods the rab and ghenz were the only ones found suitable for infants. The mothers were also seen feeding small quantities of rab to young infants. Therefore the recommendation for the tribal infants consisted of feeding 400 ml of maize porridge (15% gruel) daily divided approximately into four equal portions.

Although attempts were made initially to persuade the mothers to add animal milk or mashed dal to the maize porridge to improve its protein quality these were largely unsuccessful. As all the infants were breastfed the failure to add animal milk or mashed dal to maize porridge was not considered a serious disadvantage.

The rab in the quantities recommended provided 210 Kcals while the khichdi in the quantities recommended provided 350 Kcals. This amount of solids along with the breastmilk was expected to provide a total of 590-780 Kcals for infants 8 months to 1 year old.
The recommendations for infants 6 month - 1 year were supported by feeding trials reported from the National Institute of Nutrition (Pasricha, 1973). The author formulated a diet based on cereals, pulses, vegetables and a small amount of milk, oil and sugar. The mothers fed this diet ad libitum to infants 6 month - 1 year, divided into four meals. Feeding was done under supervision. The infants were shown to consume 190 g cereal-pulse mixture in a day in the form of wheat parathas, khichdi or sambhar rice and small amounts of milk, oil and sugar. The amount recommended in the present study, namely, 60 g cereal (present in 400 ml of maize porridge), 50 g cereal + pulse mixture (present in 1 cup of khichdi with oil added) and 100 g cereal + pulse mixture (without oil added) were all well within the capacity of a 6 month - 1 year old child to eat (Table 3.6).

For testing this message a small group of mothers with infants in the age group of 8 month - 1 year were invited to the anganwadi. Initially they were asked informally about how long they exclusively breastfed their infants, when they introduced semisolids and how much quantity they fed. Then they were shown two cups of khichdi and asked if this quantity could be fed to the infant in a day. This was considered too much for an infant by the mothers. The mothers were then asked to divide the 2 cups of khichdi into 4-6 equal portions and were asked if an infant could be fed one portion at a time. This was followed by asking one of the mothers to feed a portion to the child, mashing it soft with clean hands, which the child finished if he or she had not been breastfed just before the session. By the time the feeding was finished the mothers were generally convinced that the infant can eat 2 cups of khichdi in a day.

As a further step at reducing the bulk, the mothers were also shown that the child could be fed only 1 cup of khichdi in a day if one or two teaspoonful of sugar or 1 teaspoonful of oil was added to each portion of the khichdi. But the mothers were against adding sugar as they believed that this would cause worms. A few held this

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1Wheat parathas are thicker than wheat chapatis, are roasted first and then turned over with a little oil.

2Cooked rice mixed with a curry made of tuver dal, vegetables and tamarind juice.
Table 3.6  Reported food intake of 6 month-2 year old children fed ad libitum in comparison with the diet recommended in the present study

<table>
<thead>
<tr>
<th>Intake/Recommendations</th>
<th>Weight of Raw Materials (g)</th>
<th>Kcals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cereal</td>
<td>Pulse</td>
</tr>
<tr>
<td>Children 6 month-1 year old</td>
<td>184.1</td>
<td>7.1</td>
</tr>
<tr>
<td>Children 13-18 month old</td>
<td>185.2</td>
<td>6.9</td>
</tr>
<tr>
<td>Children 19-24 month old</td>
<td>172.2</td>
<td>6.2</td>
</tr>
<tr>
<td>Present study recommendations 6 month-1 year old children</td>
<td>60.0</td>
<td>20.0</td>
</tr>
<tr>
<td>Present study recommendations 1-2 year old children</td>
<td>200</td>
<td>20</td>
</tr>
</tbody>
</table>

1 Pasricha (1973)

2 Message content of the present study

*With the addition of energy contributed by breast milk, the total intake will be 590-780 Kcals.
belief strongly while it was a weak belief with most others. Almost all mothers gave biscuits to their young infants. When they were asked why eating biscuits would not cause worms but sugar would, one or two of them said that sugar was cooked along with other ingredients in biscuits whereas it was being added raw to the khichdi. But the discussion generated a lot of interest and the mothers started questioning the belief. There was also some reluctance to accept the idea of adding oil to the khichdi as they believed that addition of raw oil would cause a sore throat and cough and may lead to respiratory infections. However, addition of oil in the traditional form of seasoning i.e. heating it to the smoking point, was acceptable to them and therefore this was adopted.

**Practical Diet for 1-2 Year Old Children**

The messages on practical diets for the toddler consisted of the following : feed half of what the father eats in a day and feed at least four times in a day.

Relating the food needs of a child to that of an adult is a practical and effective way of communicating the child's energy needs to the functionaries and mothers. In the cultural context of India, the male members are usually served the food first before the others. Therefore, it was thought that relating the food needs of a child to that of his father may be more effective than that of the mothers. Further, diet surveys carried out during the situational analysis showed that in the urban area, the intake of energy by an adult man was on an average 1782 Kcals half of which could give 891 Kcals to the child. The mothers on an average consumed less. These data are shown in Table 3.7.

That children can consume the amount recommended was supported by the studies of Paaricha (1973), who tested the consumption of 1-2 year old children fed diets similar to the one reported by her for 6 months - 1 year old children. The 1-2 year old children were shown to consume on an average 180 g of cereal pulse mixture in a day along with 20 g milk, 4 g oil and 8 g sugar. The diet recommended in the present study provided 200 g cereal, 20 g pulses, 12 g oil and
Table 3.7 Dietary intake of adult men and women in the urban setting.

<table>
<thead>
<tr>
<th></th>
<th>Mean Energy Intake/Day</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Kcals</td>
<td></td>
</tr>
<tr>
<td>Adult man</td>
<td>1782</td>
<td>124.9</td>
</tr>
<tr>
<td>Adult woman</td>
<td>1348</td>
<td>93.8</td>
</tr>
</tbody>
</table>

't' value: 2.778 NS

1 Results of diet survey carried out by the investigator in the urban slums.
10 g sugar, figures which are close to the ones reported by Pasricha (1973) (Table 3.6).

The audience for this testing consisted of mothers and their 1-2 year old children. The entire day's diet as consumed by the adult man was laid out on a plate. This consisted of one cup of tea and two rotlas in the morning around 7.00 a.m. At noon, the meal consisted of 6 rotlas, 1 cup of dal and 1 cup of vegetable. In the afternoon, there was a cup of tea and in the night the meal consisted of 4 cups of khichdi and 1 cup of khadi or dahi. The whole day's meal provided 1860 Kcals.

The mothers were drawn into a discussion of whether the child could consume half of this amount in a day. The first response usually was in the negative. Then they were asked to divide half of the father's diet into 5-6 portions of equal size and were again asked to estimate if the child can consume one portion of it at a time. The division of the food into 5 or 6 smaller portions helped them to appreciate that the child can eat probably about half of what the father eats although they were still not very convinced. This was then further reinforced by asking one of the mothers to feed one portion to the child. The feeding trials were generally a success as the toddler, 'the one to two year olds' usually finished one portion of the meal. Thus the frequency of feeding as well as the amount to be fed was conveyed through this message, which was accepted by the mothers.

Oral Rehydration Therapy in Diarrhoea

The messages on oral rehydration therapy were as follows: feed the sugar-salt solution made by dissolving one kobo (handscoop) of sugar and two pinches of salt in one litre of water as soon as your child gets diarrhoea; feed this sugar-salt solution little by little throughout the day; give one cup or one glass of this solution after every stool.

This concept was tested with mothers whose toddlers had suffered diarrhoea in the recent past. Initially it was proposed to use spoons available with the mothers for the preparation of the sugar-salt
solution. However, it was found that the spoons were of variable sizes. In the tribal villages mothers had no spoons of appropriate size. An appropriate measure for water also had to be identified. Discussion with the mothers in the tribal and urban areas revealed that most of them had a traditional vessel called "Seria lota" which could measure 500 ml of water with reasonable accuracy. As an alternative to the spoons, it was decided to use a hand scoop of sugar and two three finger pinches of salt. Before advocating this, the feasibility of training mothers to measure out approximately 40 g of sugar and 4 g salt using the hand measures was tried out. The trials were carried out both in the urban and tribal area. Mothers were first shown how to measure the sugar and salt. They were also instructed that too much salt in the sugar-salt solution can be dangerous. Then they were asked to measure the sugar and salt. The samples were weighed and the exercise repeated. The data on the weights of sugar and salt as measured by the mothers after instruction are shown in Table 3.8.

The weight of the sugar ranged from 17.4 to 36.4 g and salt ranged from 1.8 to 5.2 g. Salt exceeded the 4.0 g level in only one case. Even so it was not too high. Therefore, it was decided that with adequate training the mothers can measure out and prepare a satisfactory sugar-salt solution using these hand measures.

After making these decisions, mothers whose toddlers had suffered diarrhoea in the past few days were invited to the session. They were shown step-wise how to prepare sugar-salt solution. The mothers were then allowed to prepare the sugar-salt solution under supervision, taste it and were shown how much quantity is to be fed to a child at one time. Thus it was ascertained that the skill in preparation of ORS can be transferred successfully.

Selection of Media Strategy and Materials

It was decided at the beginning of the study that the field functionaries, particularly AWWs would be the principal medium for delivering NHE. During the socio-economic survey it was found that few mothers had access to radio in the tribal area and none had
Table 3.8  Weight of one handscoop (kobo) of sugar and two pinches of salt as measured out by mothers after instruction by the investigator.

<table>
<thead>
<tr>
<th>Sr. No. of mothers</th>
<th>Weight of one kobo sugar (g)</th>
<th>Weight of two pinches of salt (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>32.5</td>
<td>2.7</td>
</tr>
<tr>
<td>2</td>
<td>34.3</td>
<td>3.4</td>
</tr>
<tr>
<td>3</td>
<td>24.5</td>
<td>3.2</td>
</tr>
<tr>
<td>4</td>
<td>36.4</td>
<td>1.8</td>
</tr>
<tr>
<td>5</td>
<td>33.9</td>
<td>2.2</td>
</tr>
<tr>
<td>6</td>
<td>31.1</td>
<td>3.7</td>
</tr>
<tr>
<td>7</td>
<td>29.4</td>
<td>2.0</td>
</tr>
<tr>
<td>8</td>
<td>22.5</td>
<td>5.2</td>
</tr>
<tr>
<td>9</td>
<td>32.0</td>
<td>2.1</td>
</tr>
<tr>
<td>10</td>
<td>17.4</td>
<td>3.9</td>
</tr>
</tbody>
</table>
access to television. Although many mothers in the urban area possessed a radio, most of them had no regular listening habits. Television ownership was uncommon. This confirmed our initial stand that the best medium available was the AWW. The task therefore was to prepare appropriate training (educational) materials that the AWWs can use in delivering the key programme messages already identified. In the case of materials for a health promoter (health worker) the design should contemplate a visual component that will aid in the communication of messages and a manual with specific guidelines that will help the health educator remember appropriate educational techniques and develop the educational content as planned (International Nutrition Communication Services (INCS), 1984). This will also facilitate the use of the materials by other health educators. Lesson charts were selected as the most practical of the different types of visual aids available, as they could easily be transported and used in a setting with a minimum of physical facilities.

**Designing the Lesson Charts**

Visual aids are only instruments to help in the communication process; they do not need to communicate all educational messages as the educator will be explaining the total message. The visuals have to be simple, clear, attractive, and memorable. They should include only essential elements and be realistic rather than be abstract or animated.

The lesson charts were designed by a graphic arts specialist who was also a social communications specialist. The concepts for the lesson charts were developed by the investigator and there was constant interaction between the artist and the investigator. The messages to be communicated were discussed in detail with the artist. In addition, the local artist and the investigator together visited the anganwadis over a period of one week so that the artist could observe the anganwadi set up, the mothers and their surroundings. Several photographs were made of the people and the objects that would form a part of the visual communication. With the aid of these, the artist made a series of lesson charts to illustrate the messages. The lesson charts were in black and white, printed on half imperial size chart paper.
Pretesting the Lesson Charts

It was necessary to pretest the visuals to make sure that the audience understood them. Pretesting is not just finding out if the audience like the material or not but it is finding out if the material easily conveys what it is supposed to, if it holds the interest of the audience, if it is credible, and culturally acceptable. Recommended methods of pretesting include group testing as well as individual testing (Bertrand, 1978). In the present study as the materials were intended for group presentation and as a support material for verbal communication, group testing was chosen. All visuals were tested with the target audience. The testing was qualitative and included four aspects:

- visibility of the drawings to a group of about 30
- ability to hold the interest of the target audience
- the target audience's ability to comprehend correctly the visual illustrations
- identification of the message.

Three or four lesson charts were pretested at one sitting with about 5–8 mothers. The pretest sample of mothers was different from the sample for the study.

The pretesting team consisted of three investigators. One of the investigators showed the charts to the group and asked them questions while the others made the observations and recorded the responses of the mothers. The pretest results were tabulated and discussed with the artist who made the necessary changes. The responses of the audience to the finished product are given in Appendix X. The lesson charts were also pretested with the functionaries before testing them with the target audience. Only minimal changes were needed to be made after the pretesting with the functionaries.

Preparation of the Instructional Manual

The following steps were utilized in the preparation of the manual which described systematically when to say what and in what form and described the process for using the visual aid:

The key programme messages were organized into discrete units.
For each unit the major tasks that the field functionary has to perform were identified.
The major tasks were then broken down to specific ones.
The knowledge and skills needed to perform the specific tasks were then clearly defined.
The learning objectives and behavioural outcome were then formulated.

An example of how this was done for diarrhoea management is given in Appendix XI.

These were resynthesized into prototype lessons with clearly defined training content and activities suited to the content. The organization of the units was done in the following stages:
- specification of the problem
- specification of relevant content
- stating the objectives and expected cognitive and behavioural outcome
- activities to stimulate interest (visuals)
- activities to share information (discussion)
- activities to review (summarizing and role playing).

A team of nutrition experts, pediatricians and educationists formed a workshop group to review the manual as it was developed. The manual was revised primarily for its language and the real life situations that it contained.

Pretesting the Units in the Instructional Manual

All the units in the manual were pretested with anganwadi workers. The pretest sample consisted of a small group of AWWs, four in number. Each session with its objectives was presented to the group. The AWW's attentiveness, interest level and comprehension were recorded. The first two were recorded by personal observation and the last by responses to specific questions on the content. The responses to all the sessions were favourable. However, the AWWs suggested changes in relation to the content. Suggestions related
primarily to simplifying the content and reducing the length of the manual. There were also suggestions relating to language, making it simpler and more easily understandable by the target audience, namely, the mothers. The manual was revised following their suggestions.

A few selected units were then pretested with the mothers. The sample for the pretest consisted of 10-15 mothers from an anganwadi in urban Baroda. Attention of the mothers during presentation was marked by two observers and their tally was used as an index of interest. Recall of information to specific questions was used as an index of comprehension. The evaluation was only qualitative. The responses of the mothers were satisfactory. The manual is now available in printed form (Seshadri and Gopaldas, 1986). A list of the lessons in the manual is shown in Appendix XII.

**Communications Strategy**

The following methods were used for communicating the messages:

- visualizing the message (lesson charts)
- sharing the idea (talk)
- creating involvement (discussion and role play)
- learning by doing (demonstration).

An example of how this was done is indicated in the next section on training the field functionaries.

**Phase IV : Training and Implementation**

**Training the Field Functionaries**

In order to make the training practical and applicable at the field level, the training of the functionaries was carried out in the anganwadi itself. This had two advantages. First, subjects could be easily brought to the anganwadi for feeding trials, for showing signs of nutritional disorders or for feeding of ORS. Secondly, the replicability of the model could be established as the training could be done with the minimal facilities available at the anganwadi. This was particularly relevant to the supervisors who were expected to be the trainers on an ongoing basis. A group of AWWs at the training session in the AW are shown in Figure 3.7.
Each training group in the tribal area consisted of about 10-15 functionaries while in the urban area it consisted of 20-25 functionaries. The training began with an introduction of the participants and building up of rapport, continued with 4-5 modules being presented in a day. Each module was followed by a discussion. Some of the participants were called upon to repeat the presentation which helped in increasing their ability to recall the key messages and aided them in practising the communication skills. Figure 3.8 shows an AWW practicing the session on ICDs services for 1-3 year old children while the supervisors and other AWWs watch. Their presentation was evaluated by the remaining AWWs, the supervisors and the investigating team who offered suggestions concerning how the presentation can be improved. The participants also conducted role play for certain sessions. The role play was found to be particularly preferred by the participants for the session on diarrhoea and OES. The role plays were generally done spontaneously. There was no role play written ahead of time.

Almost every session was accompanied by a demonstration. The demonstrations were first conducted by the trainer and then the participants were allowed sufficient time to practise the demonstrations. The demonstrations were conducted in the same manner as described in Phase III (see testing messages under Phase III, p...). Figure 3.9 shows a feeding a demonstration by the supervisor to a 8 month old child.

During this practice, which was also one form of role play, the other members usually observed and offered suggestions concerning the clarity and correctness or otherwise of the role play. Thus the training was primarily a participatory training. The participants were also allowed sufficient time to discuss the feasibility of carrying out the demonstrations in the community and they were helped to find solutions to any problem they had. The primary problem for the AWWs was to assemble a whole day's diet for diet demonstrations. They eventually came up with the solution that they will ask different mothers to contribute small quantities of each food so that they can put together a whole day's diet.
Fig 3.7 A group of AWWs at the training session

Fig 3.8 A trainee practising the session
Fig 3.9 Feeding demonstration by supervisor

Fig 3.10 Lesson charts to create interest
At the end of each session there were also questions to stimulate discussion. The training lasted for full five days.

**Implementation of the NHE Strategy at the Community Level**

The supervisors and the AWWs were entrusted with the responsibility of conducting the NHE in the community. The AWWs called for a meeting of the mothers wherein they agreed upon a mutually convenient time to conduct the NHE. Written permission was obtained from the state level official in charge of ICDS, Gujarat, to allow the AWWs free one day in a week to allow them time to prepare for NHE and deliver the session to the mothers at a convenient time.

The AWWs used the communication strategies that they had learnt during their training. They used the lesson charts at the beginning of the session to create interest among the mothers and initiate a discussion (see Figure 3.10) following which the messages were conveyed and reinforced by demonstrations (Figure 3.10). The mothers were then allowed sufficient time to have guided practice (Figure 3.11 and 3.12). Thus, the emphasis was on participatory methods.

**Phase V : Comprehensive Evaluation**

A comprehensive evaluation of the NHE was carried out on the completion of the NHE intervention. The evaluation included both process and impact evaluation at the functionary and community level.

**Process Evaluation**

The following indicators were used for the process evaluation:

- observer rating of the training sessions
- number of lessons delivered by the trainer
- number of sessions delivered by the AWW
- per cent receipt by the mothers.

**Impact Evaluation**

The following indicators were used for impact evaluation:

- knowledge gain of the functionaries
Fig 3.11 Guided practice - mothers

Fig 3.12 Guided practice - mothers
ability of the functionaries to demonstrate the food needs of pregnant mothers, lactating mothers and children below the age of two years

ability of the functionaries to demonstrate the preparation of sugar-salt solution

knowledge gain of the mothers

practice changes of the mothers in the area of food intake of pregnant and lactating mothers, feeding of infants and children 1-2 year old and feeding of sugar-salt solution in diarrhoea.

Statistical Analysis

Means and standard errors were calculated for parameters that could be expressed quantitatively. All other attributes were expressed in percentages.

The dependent and independent 't' test was used to identify significant differences in means of scores. Chi square analysis was used for all other parameters.