

4. Methods & Materials



CHAPTER 4

METHODS AND MATERIALS

The study was undertaken with the broad objective to study the effectiveness of imparting nutrition health and food safety education to mothers with children below three years in improving the nutritional status and reducing the diarrheal morbidities among these children residing in the tribal villages of Chikhli taluka of Navsari district . This chapter discusses the methods and materials used in order to elicit necessary data for above mentioned objective under the following heads.

4.1 Situational analysis:

- 4.1.1 Socio economic status of the family.
- 4.1.2 General information about the child and parents
- 4.1.3 Household information
- 4.1.4 Nutritional status of the children
- 4.1.5 Morbidity profile of the children
- 4.1.6 Knowledge and practice questionnaire for the mothers
 - 4.1.6.1 Hygiene and sanitation
 - 4.1.6.2 Infant and young child feeding
 - 4.1.6.3 Childhood diarrhoea
- 4.1.6 Observation checklist
- 4.1.7 Health seeking beliefs of the mothers

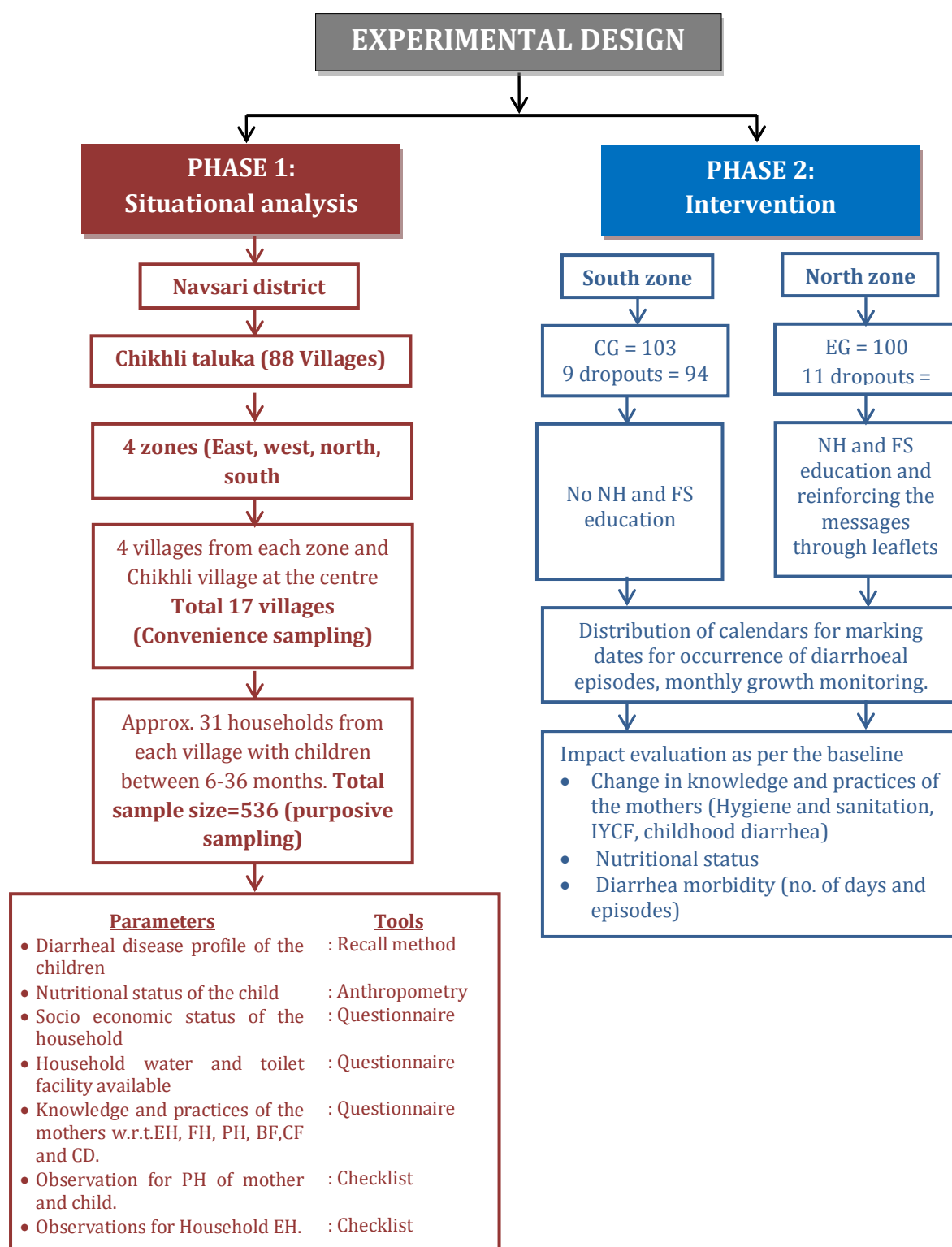
4.2 Development of nutrition, health (NH) and food safety (FS) module

4.3 Imparting nutrition health and food safety education to mothers.

4.4 Impact analysis of Nutrition health education.

4.5 Statistical analysis

The plan indicating five phases of the study is depicted in Figure 4.1.



4.1 Situational analysis

The situational analysis was carried out with the major objective of building database about the prevailing nutritional status of the children and child feeding and rearing practices of the mothers.

Location of study and sampling design

A map of Chikhli taluka was obtained from stationery supplier (Figure 4.2; Plate 4.1). Chikhli village being the headquarter of the taluka was taken as the centre point and a circle of 15 cm was drawn (Plate 4.2). The area was divided into 4 zones- east, west, north and south. Four villages were conveniently sampled from each zone considering easy availability of transportation for the investigator. Chikhli village also formed part of sample making a total of 17 villages.

Sample Size

Under the Integrated Child Development Scheme (ICDS) of Government of India, Chikhli taluka has about 400 functional *anganwadis* (community centre). Taking an average of 10 children between the age group 6- 36 months enrolled in each anganwadi, it was assumed that there are approximately 4000 children between 6-36 months in Chikhli. With a confidence interval of 4 and confidence level of 95% the minimum sample size calculated to be 522 (<http://www.surveysystem.com/sscalc.htm>). Hence about 31 households with children between 6-36 months were purposively selected from each village after door to door survey. Mothers were explained the purpose of the study and were ensured of the confidentiality of the details provided. Mothers who agreed to participate were included in the study.

4.1.1 Socio economic status of the family

A structured questionnaire was used to assess the socio economic status of the families according to criteria developed by Agrawal et al 2005 (Annexure 1). The questionnaire included questions to elicit information regarding the ownership of land, milch animals, vehicle etc. Information was also collected regarding type of house, locality in which the family resided, the caste to which the family belonged to etc. Each question was given an appropriate score and later a composite score was

obtained. The families were categorized into 6 income groups namely upper high, high, upper middle, lower middle, poor and very poor (Plate 4.3 and 4.4)

Sampling technique for selecting the villages



Plate 4.1: Map of Navsari district indicating Chikhli taluka

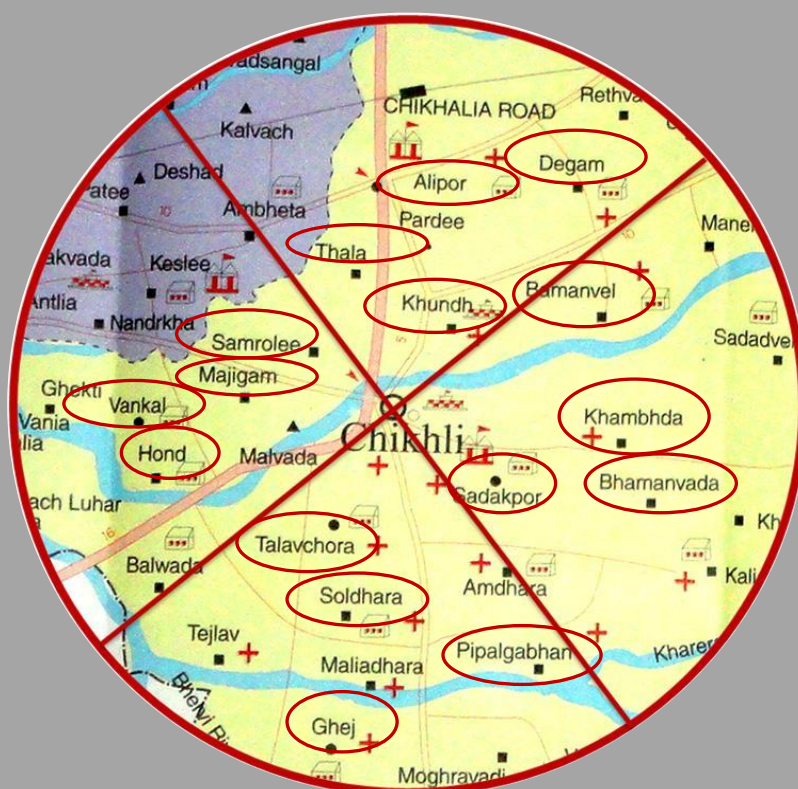


Plate 4.2: Selection of villages from the four zones

North Zone	South Zone	East Zone	West Zone
Khundh	Talavchora	Sadakpor	Samrolee
Thala	Ghej	Khambhda	Majigam
Alipor	Pipalgaban	Bhamarwada	Vankal
Degam	Soldhara	Bamanvel	Hond
Centre: Chikhli			

4.1.2 General information about the child, mother and father

A questionnaire was administered to collect information regarding the age, gender and birth order of the child. Information regarding age and educational qualification of the parents was also collected (Annexure 2, Part 1).

4.1.3 Household information of the family

Household information regarding type of house, drainage system, source of water etc was also collected using a structured questionnaire (Annexure 2, Part B).

4.1.4 Nutritional status of the children

Nutritional status of the children was assessed through anthropometry. The data included weight, recumbent length (for children less than 24 months of age) and height (for children more than 24 months of age). Weight of the children was taken with the help of a standardized digital weighing balance and measured to the nearest 0.1 Kg. Height was measured with the participant standing on a firm/level surface against a wall, looking straight with shoulders and back of the head touching the wall and erect knees. A 1 foot scale was used to make a mark on the wall to the nearest 0.1 cm.

Recumbent length (for children less than 24 months of age) was measured by using non stretchable tape. The child was laid down on a white sheet with head at one end, looking straight upwards. The knees were pressed down by applying pressure gently and the legs were fully extended making sure that the feet are at the right angles to the lower legs. A mark was made on the white sheet and the length was measured. The children were dressed in light underclothing and without any shoes during the measurement. The WHO Anthro plus software were used to calculate the z scores of individual child and classify them under different grades of nutritional status w.r.t weight for age (WFA), length/height for age (L/HFA) and weight for length/height (WFL/H). (Plates 4.5 and 4.6)

4.1.5 Morbidity profile of the children

Past one month diarrhoeal disease and acute respiratory tract disorder profile of the child was recorded as reported by the mother by recall method (Annexure 2: Part 3).

4.1.6 Knowledge and practice questionnaire for the mothers

The knowledge and practice questionnaire included several close ended questions on various parameters (discussed further) which helped assess the present knowledge and practices of the mothers in relation to the parameters studied. The questionnaire was pretested with 15 mothers and modified accordingly. Each desirable response was given a score of 2 and an undesirable response was given a score of 1. A composite score percentage was calculated for each aspect and the mothers were ranked into four categories i.e excellent (with a percent score of 91-100%), very good (76-90%), fair (61-75%) and poor ($\leq 60\%$).

The questionnaire was developed in English but was translated to the local language (Gujarati) during administration. The investigator took about 30-40 minutes to administer one questionnaire.

4.1.6.1 Hygiene and Sanitation

The hygiene and sanitation questionnaire had three sub parts that is environment, food and personal hygiene (Annexure 2: Part 4A) The modified questionnaire was compiled as per the checklists developed and used by many investigators and government surveys.

([www.zpjalgaon.gov.in/pdf/Village Panchayat/TSC/baselinesurvey.pdf](http://www.zpjalgaon.gov.in/pdf/Village%20Panchayat/TSC/baselinesurvey.pdf);

<http://www.measuredhs.com/pubs/pdf/FRIND3/FRIND3-VOL2.pdf>;

[http://www.arghyam.org/sites/](http://www.arghyam.org/sites/default/files/Ashwas%20Process%20Handbook%20-%20pdf%20version.pdf)

[default/files/Ashwas%20Process%20Handbook%20-%20pdf%20version.pdf](http://www.arghyam.org/sites/default/files/Ashwas%20Process%20Handbook%20-%20pdf%20version.pdf);

[http://sangamindia.org/uploads /MGRSurvey.pdf](http://sangamindia.org/uploads/MGRSurvey.pdf);

[http://www.who.int/water_sanitation_health /monitoring/oms_brochure_core_](http://www.who.int/water_sanitation_health/monitoring/oms_brochure_core_questions_final24608.pdf)
[questions final24608.pdf](http://www.who.int/water_sanitation_health/monitoring/oms_brochure_core_questions_final24608.pdf); http://pdf.usaid.gov/pdf_docs/PNADF300.pdf;

http://www.unicef.org/oPt/FINAL_WASH_REPORT.pdf; Nielsen et al 2003; Takanashi et al 2009.).

Spot observations were also conducted to assess the household environmental hygiene and personal hygiene of the mother and child. (Annexure 2, Part 5).

The individual household surroundings were inspected by the investigator for presence of garbage, stagnant water, flies etc. The inside of the household was also

inspected for general cleanliness of the cooking area and other parts of the house, availability of proper hand washing facility with soap and water etc.

Spot observations were also conducted for personal hygiene of the child and the mother. They were checked for cleanliness of their hands, nails and clothes.

4.1.6.2: Infant and young child feeding (IYCF).

The questionnaire on IYCF included several close ended questions related to mothers knowledge and practices on breastfeeding and complementary feeding. The questionnaire was developed according to national and international guidelines on IYCF

(<http://wcd.nic.in/nationalguidelines.pdf>; http://www.unicef.org/nutrition/files/Final_IYCF_programming_guide_2011.pdf). Information was collected regarding feeding of colostrum, time of initiation of breastfeeding after child birth; feeding of prelacteals and age of initiation of complementary feeds etc (Annexure 2: Part 4B).

4.1.6.3: Diarrhoea cause and management

The questionnaire on diarrhoea cause and management included several open and close ended questions. Information was collected regarding causes and symptoms of diarrhoea, foods to be fed and avoided during diarrhoea and the preventive measures (Annexure 2: Part 4C)

4.1.7 Health seeking beliefs of the mothers

Mothers were asked to state whether their child is healthy or not according to them. They were also questioned about their beliefs about what leads to undernutrition in children (Annexure 2, Part 6)



Plate 4.3



Plate 4.4

Plate 4.3 and 4.4: Investigator interviewing the mothers



Plate 4.5



Plate 4.6

Plate 4.5 and 4.6: Investigator taking weight and height of the subject

4.2 Development of nutrition health and food safety module

Reviewing the baseline responses of the mothers, an assessment of prevailing knowledge levels and practices with respect to hygiene, IYCF and childhood diarrhoea was done to determine the existing gaps. A short film in *hindi* was developed which was translated to local language *gujarati*, to impart education to mothers.

The film was for about 13 minutes in which information was disseminated in the form of short one line messages which can be easily understood and retained. The messages

The film consisted of two parts. Part one consisted of messages for good child rearing practices from birth to two years. Messages included key information like feeding of colostrums, initiation of breastfeeding within 1 hour of birth, avoiding prelactals, complementary feeding at 6 months, etc (Annexure 3A and 3B).

Part two included messages on childhood diarrhoea prevention and management. Mothers were informed that child should be breastfed and given ORS during diarrhoea along with continued complementary feeding. Hygiene as a key to diarrhoea prevention was the most important aspect discussed in part two.

Leaflets were also distributed to the mothers eliciting the key messages (Annexure 4).

4.3 Imparting nutrition health and food safety education to mothers.

The phase involved two groups that is experimental and control group. Experimental group consisted of 100 mothers from the north zone and control of 103 mothers from the south zone of the Chikhli taluka as explained earlier (Figure 4.2).

Mothers were explained the purpose of the study and were enrolled after they agreed for a follow up 5 months. Mothers from the experimental group were invited at the *anganwadi* centre for viewing the film on a pre decided day in small groups of 8-10 mothers for two consecutive days. For better viewing LCD projector was

used. Each session was followed up by a group discussion to clarify any doubts regarding the messages imparted (Plates 4.7 to 4.10).

On the second day messages from the previous session were revised followed by the new messages on childhood diarrhoea. After the session mothers were given calendars for subsequent 6 months along with a ball point pen (Annexure 5, Plates 4.9 and 4.10). They were asked to mark the dates with the pen on the days on which the child suffered from diarrhoea (Plates 4.11 and 4.12). Leaflets were also distributed as ready reckoners for reinforcing the messages.

Mothers from the control group were provided with calendars to mark the occurrence of diarrhoeal episodes in children.

Post intervention every month all the household from both the groups were visited by the investigator upto 5 months and anthropometric measurements of the child were taken for growth monitoring. In case mothers had not marked the dates of diarrhoeal episodes on the calendar the investigator marked them on individual mothers calendar. Visits at the control group only involved growth monitoring and marking the dates on the calendar.

4.4 Impact analysis of Nutrition health education.

After a period of 5 months mothers from both the groups were assessed for their change in knowledge and practices with respect to hygiene, IYCF and diarrhoea. Change in nutritional status of the child and occurrence of diarrhoeal diseases was also assessed for both the groups.

4.5 STATISTICAL ANALYSIS

Data was analyzed using Microsoft Excel 2007. Means and standard deviation for all the values were calculated. Epi info 2007 was used to carry out chi square analysis. Chi square values were calculated to determine the significant association of various factors with nutritional status of the children and the occurrence of diarrhoeal diseases. Chi square analysis was also used to determine whether there existed any difference in the control and the experimental group.

The impact of the intervention on the knowledge and practice scores of the respondents was assessed with the help of Paired 't' test.



Plate 4.7



Plate 4.8

Plates 4.7 - 4.8: Mothers viewing the film



Plate 4.9

Plates 4.9: Investigator having group discussion with the mothers after viewing the film.



Plate 4.10



Plate 4.11

Plates 4.10 and 4.11: Calendars distributed to mothers with name, date of birth and photograph of individual child.



Plate 4.12



Plate 4.13

Plate 4.12 and 4.13: Mothers from control and experimental groups marking dates on the calendar for occurrence of diarrhoeal episodes.