



***SUBJECTS
AND
METHODS***

CHAPTER III

SUBJECTS AND METHODS

The major objective of this research was:

To study the urban health system of the Vadodara Municipal Corporation with respect to the quality of implementation of nutrition services for pregnant women in the antenatal care program, and to facilitate qualitative improvements in these services using the Health Systems Research Methodology.

The specific objectives were:

- To study the antenatal care program of the Vadodara Municipal Corporation – it's overall structure, job functions and training of the functionaries, and availability of IEC material on antenatal care services.
- To assess the perceptions of the health service providers with respect to nutrition related antenatal care services, with a focus on quality of care.
- To assess the perceptions of local medical practitioners and traditional birth attendants (*dais*) regarding health problems during pregnancy, especially anemia.
- To study the nutritional status of pregnant women in selected slums by assessing weight gain and hemoglobin levels during pregnancy.
- To assess the perceptions of the pregnant women and their family members in selected slums about antenatal care services, especially receipt and utilization of nutrition services (monitoring of weight gain, anemia control, and nutrition education).
- To develop and implement selected strategies to improve the quality of implementation of the nutrition care services in the antenatal care program with the participation of the Vadodara Municipal Corporation's health officials.

- To study the changes occurring in the health system as a response to the intervention strategies put in place in the ANC program of the Vadodara Municipal Corporation.
- To compare the urban health system with the rural health system of a selected Primary Health Center in Vadodara district with respect to the quality of implementation of nutritional related antenatal care services for pregnant women.
- To document strengths and limitations of various qualitative and participatory research methods used in the study, for the purpose of understanding and improving nutrition care services in an urban health system.

RESEARCH SETTING AND SAMPLE SELECTION

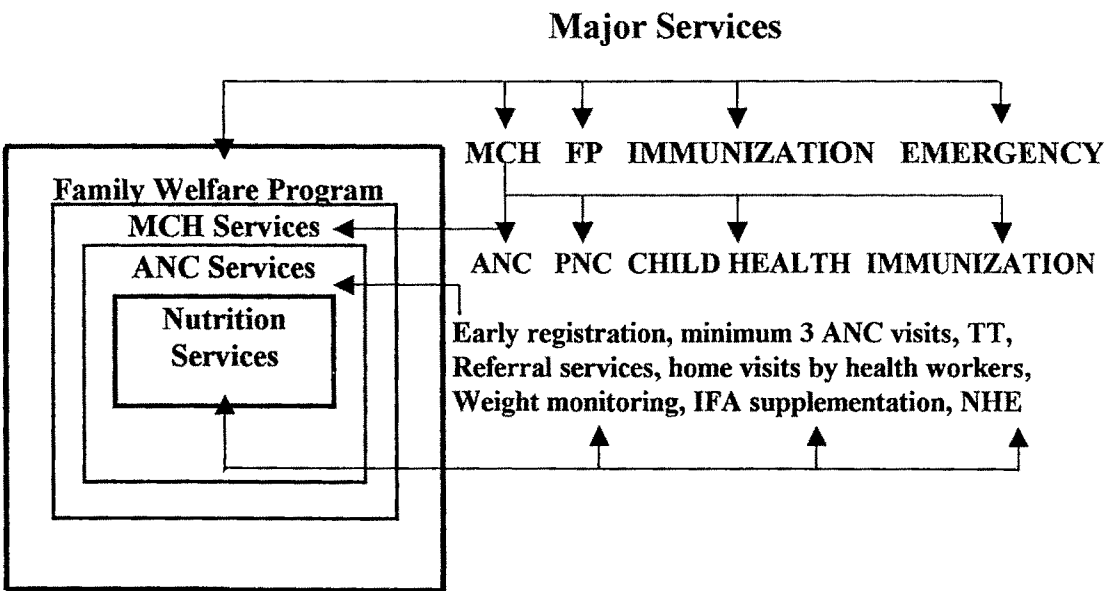
The study was carried out in the urban health system of the Vadodara Municipal Corporation, Vadodara, Gujarat over a period of two years (1997-1998).

The Corporation's Health System

The Vadodara Municipal Corporation's Health Department offers antenatal care services at no cost to slum dwelling pregnant women through its Health Posts and Family Welfare Centers. The nutrition services available to pregnant women include monitoring of weight gain during pregnancy, iron supplementation under the anemia control program, and nutrition health education at the Maternal and Child Health (MCH) clinics held at the Health Posts and Family Welfare Centers.

Figure 3.1 explains the position of these nutrition care services in the broad framework of the Family Welfare Program of the Vadodara Municipal Corporation based on the information obtained from the Corporation's health officials. The Family Welfare Program of the Corporation provides various health and nutrition services such as family planning, maternal and child health services, which include antenatal care services, immunization of mothers and children, nutrition health education, and

Figure 3-1: Nutrition Services for Pregnant Women in the Health System of the Vadodara Municipal Corporation



emergency health care services in case of epidemics and natural calamities like floods. Out of these services, the three nutrition services - weight monitoring, anemia control, and nutrition health education - form a part of the antenatal care services under the broad area of maternal and child health.

The Nutrition Related Antenatal Care Services

Weight monitoring includes weighing of pregnant women visiting the maternal and child health (MCH) clinics conducted every week at the health facility and recording it in the mother-retained card as well as in the clinic register.

The anemia control program consists of procurement of iron-folic acid (IFA) tablets by the health officials, identification of anemic pregnant women, distribution of IFA tablets to pregnant women at the MCH clinics as well as through home visits, maintenance of records and registers pertaining to this information, and counseling and follow up with pregnant women for better coverage and compliance. Under this program, pregnant women are advised to consume IFA tablets (containing 100 mg of elemental iron and 0.5 mg of folic acid) for at least 100 days. These tablets are distributed in sachets of 25 each at the health facilities and also through home visits by the health functionaries.

The service of nutrition health education of pregnant women includes imparting information regarding the importance of nutritious diet, iron supplementation and weight monitoring during pregnancy, and counseling and advice regarding various health services such as antenatal checkup and immunization.

In the present study, the focus on these nutrition services was in the context of the antenatal care, maternal and child health and the overall Family Welfare Program in the Corporation's health system.

The Health Functionaries

The Corporation's Health Department is headed by Medical Officer (Health) who is the overall in charge of the administrative staff. Other staff members include the Family Welfare Medical officer (FWMO), Lady Medical Officers (LMOs), Lady Health Visitors (LHVs) or supervisors, and Auxiliary Nurse Midwives (ANMs) who are the grassroots level functionaries of the Corporation's health department. The LMOs are in-charge of individual Health Posts or Family Welfare Centers and provide various services to pregnant women with the help of the LHVs and ANMs.

The Health Posts

The Vadodara Municipal Corporation runs nine Health Posts under its Urban Revamping Scheme, which provide health care services (MCH and family planning) to its population. Each Health Post covers approximately 50,000 population comprising all income groups residing in slums and housing societies. The staff of a Health Post includes one LMO, one LHV or supervisor, four ANMs, one vaccinator, one accountant-cum-clerk, and a helper. These Health Posts are expected to improve the Family Welfare Program of the Government of India, giving equal emphasis to Maternal and Child Health services (immunization, antenatal care, postnatal care, nutrition health education and counseling) and Family Planning services (contraceptive advice and other services) (Appendix 1).

After preliminary discussions with the Corporation officials, two Health Posts - Health Post A and Health Post B - were purposively selected for the study. Both Health Posts catered to deprived groups in about 25 to 40 slums each. Most of these slums had a similar socioeconomic composition, having a mix of ethnic groups of varying income levels. Both the Health Posts also had several societies under their jurisdiction, in which middle to high income groups lived. In practice, however, these groups were very infrequently provided with government health care services as they preferred paid and better quality care from private doctors or hospitals. The estimated population covered by the Health Posts under study is given below.

		Slums	Housing Societies
Health Post A	Population:	40,000	10,000
	Families:	8,000	2,000
Health Post B	Population:	41,000	10,000
	Families:	8,200	2,000

(Source: Personal communication with the in-charge Medical Officers of the 2 Health Posts)

Living conditions, environmental sanitation and health care services

Half of the pregnant women who participated in the socioeconomic and nutritional status aspects of the study lived in semi-*pucca* houses with brick walls and a tin roof whereas the comparatively better off women lived in concrete houses. Others lived in *kutchra* houses with mud walls or huts. A majority of the families got drinking water from municipal taps and community hand pumps. The number of households with individual toilets was three-fourth of the total. Nearly 80% of the families were rated fair to good for sanitation of the houses and surroundings based on the cleanliness of house, absence of flies and insects, and ways of garbage disposal. Health care services were available through government health centers and hospitals, health centers run by non-governmental organizations, and health care facilities provided by private medical practitioners in the vicinity of the slums.

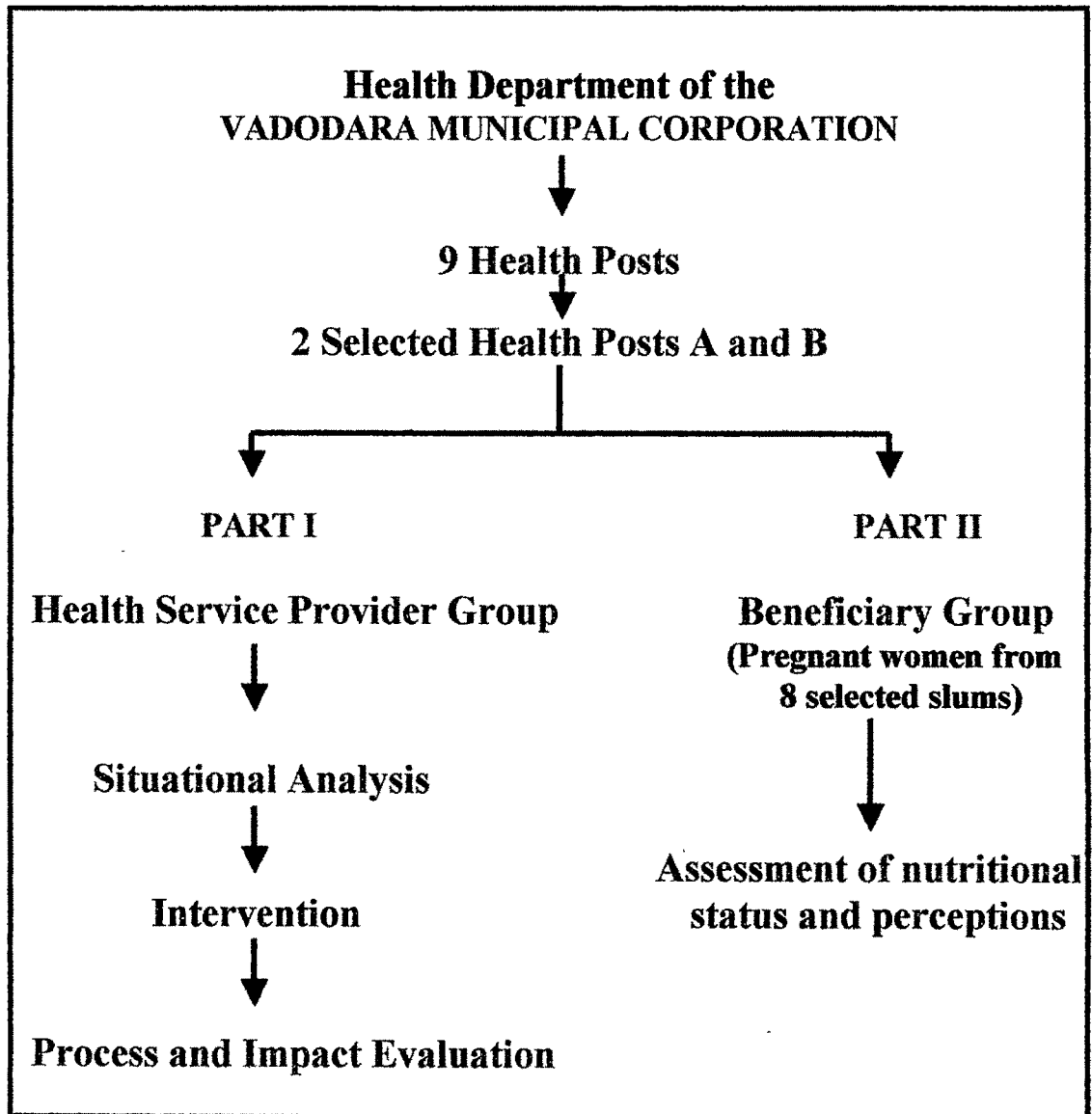
EXPERIMENTAL DESIGN

As shown in Figure 3.2, the study was carried out in two parts. Part I dealt with the Health Service Provider Group and Part II included the Beneficiary Group.

The Health Service Provider Group

The study broadly consisted of three phases. During **Phase A** of the study, a situational analysis was carried out in which health functionaries of all the nine Health Posts of the Vadodara Municipal Corporation participated in selected aspects of the formative research.

Figure 3.2 : Experimental Design of the Study



Phase B comprised the development and implementation of selected strategies to improve the nutrition care services in the antenatal care program with the participation of the Corporation's health officials.

Phase C focused on the changes occurring in the health system as a response to the interventions.

In all these phases, the Health Systems Research framework was used as explained in the flow chart (Figure 3.3).

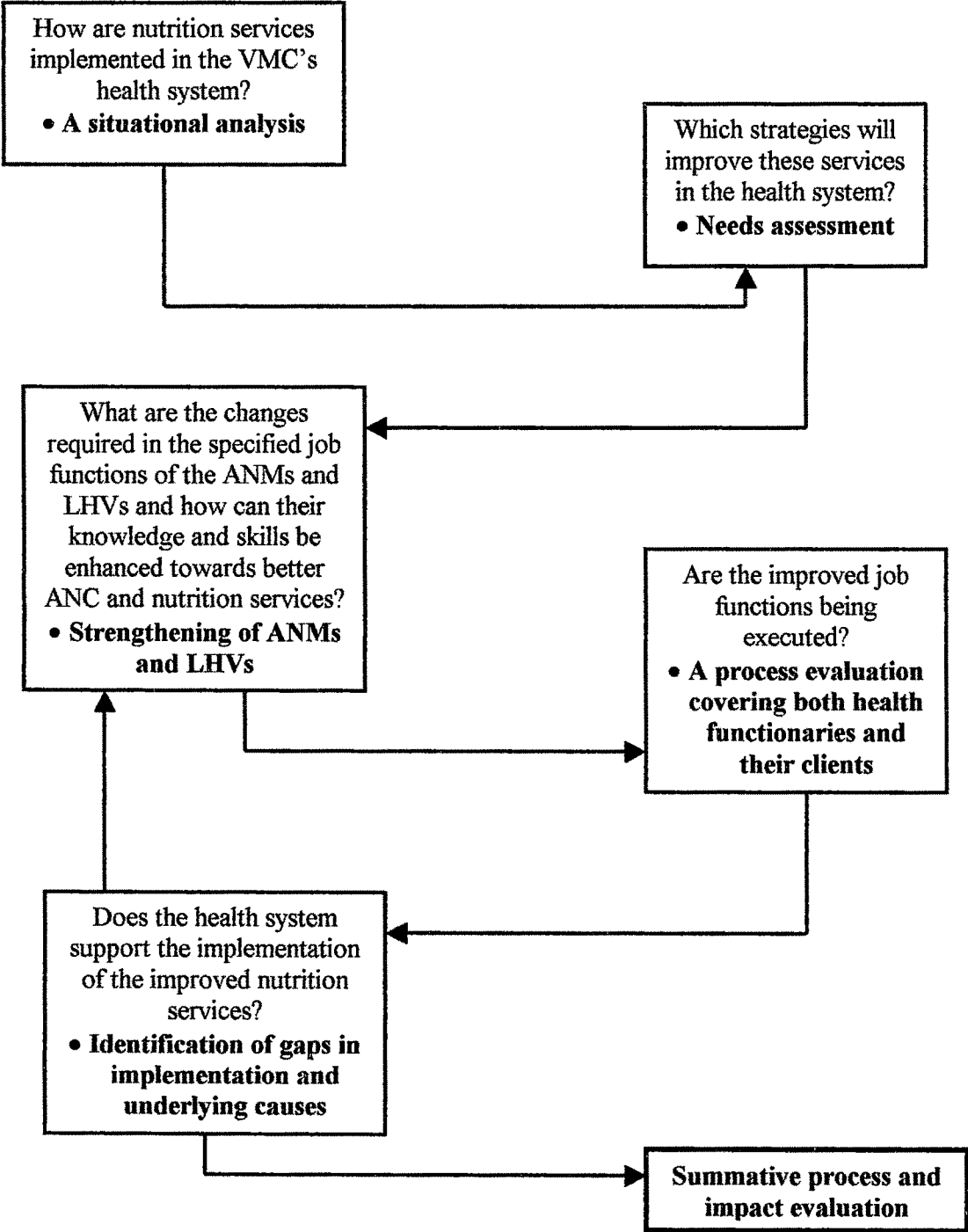
An Overview of the Study Using the Health Systems Research Methodology

The flow chart in Figure 3.3 explains the various steps which were followed with a focus on the overall health system of the Vadodara Municipal Corporation.

To gain an insight into how the nutrition services were implemented in the Corporation's health system, a situational analysis was carried out with the health functionaries and the beneficiaries to find out the drawbacks in the provision of these services to pregnant women. Several qualitative and quantitative research methods were used in the formative research stage which are discussed in detail in the following section.

The next step involved an assessment of the system's need for improving the implementation of the three nutrition related antenatal care services. This was followed by instituting certain modifications or changes in the specified job functions of the Auxiliary Nurse Midwives and their supervisors. These functionaries were also trained for strengthening of their knowledge and skills and capacity building which in turn would enable them to provide better quality nutrition and antenatal care services to the pregnant women.

Figure 3.3 : A Glance at the Study Using the HSR Methodology



To know whether the improved and specified job functions were executed by the functionaries, a process evaluation was carried out which covered the functionaries of the 2 selected Health Posts as well as the beneficiaries who visited these Health Posts.

In order to know about the support of the health system to these interventions, identification of gaps and lacunae in the implementation of the improved services was carried out along with their underlying causes and necessary action was taken to correct them with inputs from the Corporation's health officials and the health functionaries of the 2 Health Posts.

To find out the overall response of the health system to these interventions summative process and impact evaluation was carried out. The whole process was of iterative nature, alternating process evaluation and program improvement in the selected 2 Health Posts.

The Beneficiary Group

Pregnant women residing in the slum areas covered under the 2 selected health Posts formed the Beneficiary Group of the study.

The total population covered by the 2 Health Posts - A and B - was approximately 1,00,000 covering all income groups with about 1000 pregnant women at a given point of time (approximately 1% of population). From these 2 Health Posts, 8 representative slums were purposively selected and all the pregnant women residing in the selected slums who were at 20-24 weeks of gestation were enrolled in the study. Data on socioeconomic status, anthropometry (weight and height) and hemoglobin levels were collected on all the 153 women. A random sub-sample of 80 women was used to collect data on health problems experienced during different trimesters of pregnancy and frequency of consumption of iron and vitamin C rich foods. Data on obstetric history were collected from a random sub-sample of 70 women.

Out of the 153 women, 50 were randomly selected and followed up till delivery. Data on weight gain and hemoglobin levels were obtained from these women at 32+ weeks of gestation, and birth weights of their newborn were also recorded.

Data were collected on perceptions of the pregnant women and their family members (husband/mother-in-law) with respect to the nutrition related antenatal care services provided by the Corporation. Efforts were made also to accumulate information on the behaviors of the pregnant women in availing these services, especially the procurement and consumption of iron supplements during pregnancy.

Methods Used : An Overview

The qualitative and participatory research methods used in the **formative research** included several meetings and key informant interviews with the Corporation's health officials, semi-structured interviews with ANMs, LHVs and LMOs, a nursing tutor, pregnant women and their family members, local medical practitioners and traditional birth attendants (*dais*) working in the slum areas under study and Matrix Ranking/Scoring exercises with the ANMs. The methods of food frequency, free listing and seasonality diagramming, and focus group discussions were also used to collect data from pregnant women.

The qualitative methods used in the **process evaluation** were follow up visits to Health Posts A and B, and to the pregnant women's houses, direct observations of the health functionaries at work, and exit interviews with women visiting the maternal and child health (MCH) clinics conducted at Health Posts A and B.

The quantitative methods used in the study included assessment of the socioeconomic and nutritional status (height, weight, body mass index and hemoglobin levels) of the pregnant women, health problems experienced by a sub-sample of these women, their obstetric history, and birth weight of their newborns.

A detailed description of each of these methods along with the informants, sample size, and information sought through these methods is given section wise in the Results and Discussion chapter.

THE RURAL PRIMARY HEALTH CENTER (PHC)

A comparative assessment was also carried out at a rural PHC to get information on the implementation of nutrition related antenatal care services in the rural areas of Vadodara district. In Vadodara district, health services for the rural population are provided through a network of Primary Health Centers and their sub-centers which are monitored by the office of the Chief District Health Officer (CDHO). There is one PHC catering to every 30,000 population, and one sub-center of the PHC looks after the health needs of every 5,000 population.

A rural Primary Health Center was purposively selected for this study. The population in the study area was a mix of different ethnic groups with communities belonging to predominantly Hindu and Muslim religions. Various socioeconomic groups were also represented in the population. The pregnant women who participated in the study lived in semi-*pucca* houses or huts. The facility of drinking water was available in the form of community hand pumps. As regards health services, the PHC mainly catered to the immediate health needs of the community.

For the purpose of this study, permission was obtained from the CDHO to gain knowledge about how the rural health system works in the PHC as regards

- implementation of nutrition services
- job functions of the health functionaries
- training received by the health functionaries
- weight monitoring during pregnancy at the MCH clinics
- the anemia control program including supply and distribution of IFA tablets to pregnant women
- IEC material available on nutrition related antenatal care services

- record keeping, monitoring and supervision
- perceptions of health service providers, pregnant women and their family members with respect to the nutrition services
- provider-client interaction at the MCH clinics

Staff Structure of the PHC

The PHC is headed by the Medical Officer who is the overall in-charge of the PHC and gets his instructions from the District Health Officer. Other staff members include 2 female supervisors, 9 ANMs, 2 of whom work at the PHC and the rest at the sub-centers. They also have 5 male workers, 1 male supervisor, 1 pharmacist, 1 senior clerk, 1 laboratory technician, 1 leprosy assistant, 1 ophthalmic assistant (who comes in once a week), 1 tuberculosis supervisor (who comes once a fortnight), one driver, and a helper. They provide various health services to the people visiting the PHC and its sub-centers.

DATA MANAGEMENT AND ANALYSIS

Qualitative Data

The raw field notes collected through various qualitative methods were taken down in detail in a dialogue-script form in the local language, *Gujarati*, by the investigator. The expansion of these notes and subsequent translation into English was done keeping the English translation as close as possible to the *Gujarati* original. Significant verbatim quotes were retained in *Gujarati* language with English equivalent given in parentheses. The expanded and translated notes were keyed in a word processing software package Word Perfect 6.0, and filed according to the methods giving a 'txt' extension to all the file names. Files were later coded according to a previously prepared code list, which was modified if necessary as data coding progressed.

In case of the semi-structured interviews, which formed a major portion of the qualitative data, the questions were formulated according to themes and were given

thematic codes after translation into English. The codes were created according to the respondents' perspective and meaning of the data. Examples of these codes are given in Appendix 4. These thematic codes were given names that were closest to the concept or theme they were describing. Some codes were broken down into sub-codes to take care of smaller segments of the data.

Using the 'code macro' as a criterion, a search request was made for each thematic code using DT Search - a data search computer software package. The data were categorized and major responses were summarized. Some of the responses were quantified, and their frequencies and percentages were presented in a tabular form. Others were presented in form of text, matrices, flow charts and ethnographic decision models. Major categories of data were illustrated using verbatim statements of the health service providers and beneficiaries. Textual interpretation and discussion were also provided.

Quantitative Data

The quantitative data were entered in MS-Visual FoxPro 3.0 and Epi Info 6.04b software packages, verified and cleaned. The data were analyzed using Epi Info 6.04b in form of frequency distributions, percentage values, means and standard errors. Appropriate statistical tests like students' 't' test and paired 't' test were used to test the differences between the means or proportions of selected parameters. The analyzed quantitative data were displayed as tables and graphs with accompanying text containing interpretation of data and discussion.