RESULTS AND DISCUSSION

CHAPTER IV

RESULTS AND DISCUSSION

SECTION I
PHASE A

A SITUATIONAL ANALYSIS OF THE STATUS OF ANTENATAL CARE AND NUTRITION CARE SERVICES FOR PREGNANT WOMEN IN THE VADODARA MUNICIPAL CORPORATION

The **overall objective** of this phase was to conduct a situational analysis of the current status of nutrition related antenatal care services for urban poor pregnant women under the health program of the Vadodara Municipal Corporation with a focus on the components of the health system: program and policy, administration and management, and the community and family in the urban slums, earlier described in the Introduction (Figure 1.2).

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 with respect to antenatal care services, especially receipt and utilization of nutrition services (monitoring of weight gain, anemia control, and nutrition education).

Qualitative Methods Used in the Formative Research

As seen in Table 4.1, the qualitative methods used in the formative research included meetings and key informant interviews with health officials, secondary data review which included the availability of IEC material at the Corporation's Health Department and the 2 Health Posts, and records and registers maintained as regards the nutrition services, semi-structured interviews, matrix ranking/scoring exercise, free listing and seasonality diagramming exercises, focus group discussions and food frequency method as described later.

- **Meetings with Health Officials**

Several meetings were held with the Corporation's Medical Officer (Health), Family Welfare Medical Officer, and Lady Medical Officers of the selected Health Posts over a period of one year regarding the situation of the nutrition related antenatal care services and the priority given to them as compared to other antenatal care services.

- **Key Informant Interviews**

Principle: Key informant interviewing is an integral part of qualitative ethnographic research. Good key informants are those people who one can talk to easily, who understand the information one needs, and who are glad to give it (Bernard 1995). Key informants besides being knowledgeable regarding the information needs of the research, may participate in the investigation by providing useful periodic feedback during the course of the study.

Purpose and Method: Key informant interviews were conducted several times with the Medical Officer (Health), Family Welfare Medical Officer, and Lady Medical Officers of the selected Health Posts for seeking information on the position of the nutrition related services in the Corporation's antenatal care program, implementation of these services by the health functionaries, difficulties faced by them, and the priority given to these services.

Table 4.1 : Qualitative and Participatory Methods Used in the Formative Research

Method Bernard (1995)	Informants	Number	Information Sought
• Meetings with health officials • Key Informant Interviews	MO (H) FWMO LMOs	Several meetings and interviews were held over the study period	▪ Position of nutrition services in the ANC program of the VMC ▪ Priority given to these services ▪ Implementation of ANC services
• Semi-structured Interviews	ANMs LHVs LMOs PW[1] FM[2] Nursing tutor LMPs[3] TBAs[4]	25 7 7 40 40 1 4 2	▪ Perceptions regarding health problems during pregnancy, ANC and nutrition care services provided by the VMC ▪ Behaviors of PW regarding utilization of nutrition services, especially anemia control services ▪ Training imparted to ANMs with respect to antenatal care ▪ Perceptions regarding health problems during pregnancy; ANC services
• Matrix Ranking/Scoring Exercise	ANMs	3 groups of 8-10 ANMs each	▪ Availability, utilization and benefits of ANC services to pregnant women
• Food Frequency	PW	80	▪ Frequency of consumption of iron and vitamin C rich foods
• Free Listing and Seasonality Diagramming	PW and LW[5]	3 groups of 8-10 women each	▪ A list of local foods which 'make the blood red and healthy' and finding seasonal availability and consumption of these food items
• Focus Group Discussion	PW	2 groups of 8-10 women each	▪ Perceptions regarding pregnancy anemia

[1] Pregnant women
[2] Family members
[3] Local medical practitioner
[4] Traditional birth attendant
[5] Lactating women

- **Secondary Data Review**

Principle: This includes reviewing archival data or records already available with the subjects under study : census records, household registers and clinic records (published or unpublished). Written records give important information but they may contain a limited amount of relevant information (Annett and Rifkin 1990).

Purpose and Method: The purpose of using secondary data in the present study was to obtain information regarding the availability of IEC material on the nutrition related services, e.g. charts or posters on importance of consuming IFA tablets during pregnancy, and records or registers maintained at the MCH clinics regarding the utilization of these services, e.g. total number of women receiving IFA tablets on a particular clinic day.

In this study, the various data sources included IEC material available in the form of booklets, charts, posters, pamphlets, and illustrations and several records maintained at the Health Posts, monthly reports, and daily diaries maintained by the ANMs.

- **Semi-structured Interviews**

Principle: Semi-structured interviews are a combination of structured and unstructured or open-ended interview questions. Semi-structured interviewing is based on the use of an interview guide, which is a written list of questions and topics that are to be covered in a particular order. Semi-structured interviews help to control the type of information sought from the informants (Bernard 1995).

Purpose and Method: In this study, pre-tested question guides (Appendix 2) were used to interview informants in single sessions to gain information on their perceptions about the nutrition related antenatal care services. The informants included the Corporation's health functionaries- ANMs, LHVs and LMOs. Pregnant women and their family members were interviewed regarding their perceptions about the antenatal care services and behaviors regarding their service utilization. A nursing tutor was also interviewed as regards the training imparted to the ANMs especially on the nutrition services.

- **Matrix Ranking or Matrix Scoring Exercise**

Principle: Matrix Ranking/Scoring is a participatory research method which is useful in obtaining in-depth data from a group of informants based on the principle of ranking (or giving scores) wherein relatively higher scores indicate better quality of the services in terms of pre-determined criteria. Matrix ranking/scoring exercises can be carried out in a relatively short span of time without causing any interview fatigue. However, it may take some time to introduce the participants to the concept of building a matrix on a particular topic, e.g. utilization of antenatal care services by beneficiaries.

Purpose and Method: As a part of the situational analysis, three groups of ANMs of the Vadodara Municipal Corporation participated in Matrix Ranking/Scoring exercises to discuss about -

- regular availability of various ANC services
- utilization of these services by the women beneficiaries
- benefits of these services for the women beneficiaries.

Three groups with 8-10 ANMs in each group were formed. A set of 6 cards with illustrations representing 6 ANC services was given to each group: weight monitoring, antenatal check up, tetanus toxoid (TT) immunization, referral services, nutrition health education (NHE) and distribution of iron folic acid (IFA) tablets.

The MR/S exercise was first explained to them followed by the actual session and discussions. The ANMs in each group were asked to name all the ANC services and as each service was being called out, the facilitator placed the respective cards in front of the group. In this method, the group made a matrix in which services were given scores according to 3 criteria: availability of services, utilization of services and benefits of services. Higher the score, better was the service by these criteria. Local materials were used to give the scores. In this exercise, the ANMs were asked to place chalk pieces against each service based on the following scoring pattern.

- 5 pieces: **most** regularly available service/most utilized/most beneficial
- 3, 4 pieces: **fairly** regular in availability or utilization/moderate benefit
- 1, 2 pieces: **irregular** service; least utilized or beneficial

- **Free Listing and Seasonality Diagramming**

Principle: Free listing is a simple and powerful technique generally used to study a cultural domain. For example, the lists of "foods beneficial for health" and "foods harmful for health" refer to specific items in a cultural domain. These items within the domain of 'healthful foods' or 'harmful foods' often vary between cultures (based on Bernard 1995). The free list generated by a group of informants is often a prelude to more complex participatory exercises such as seasonality diagramming.

Seasonality diagramming exercises are used to obtain community responses regarding availability of specific foods during particular seasons or finding out the changing pattern of diseases according to different seasons. This method is useful to determine resource availability by season (as defined by the specific culture). This especially helps to design interventions for nutritional improvement, which depend on seasonal availability of foods, seasonal cropping patterns and seasonal activity patterns.

Purpose and Method: In the present study free listing was done with two groups of pregnant and lactating women (8 to 10 women in each group) to determine the locally available foods which were thought to 'increase the strength of blood' and 'make the blood red and healthy' and were consumed during pregnancy. This was followed by the seasonality diagramming exercise for collecting information regarding the seasonal availability and consumption of these foods by pregnant women.

- **Focus Group Discussion (FGD)**

Principle: Focus groups are recruited to discuss a particular topic. They typically have 6 to 12 members, a moderator who facilitates the discussion, and a recorder or note-taker. If the group is too small, it might get dominated by one or two people, and if it gets beyond 10 or 12, it gets difficult to manage. The group moderator gets people talking about the issue under discussion. It is good to have a homogeneous group of participants for better results. Focus groups are less expensive to conduct than questionnaire surveys and they yield insights on *why* people feel as they do about a particular issue or behavior (Bernard 1995).

Purpose and Method: Two FGDs were conducted with groups of 8-10 pregnant women each to gain information regarding their perceptions of common health

problems during pregnancy, anemia and iron supplementation, their awareness of various antenatal care services, and changes in their diet and work pattern during pregnancy. The moderator encouraged the participants to freely express and discuss their views and ideas on each aspect in the local language using the local terms. A recorder recorded the sessions in the local language, which were later translated into English.

- **Food Frequency Method**

Principle: Food frequency helps to find out the frequency of consumption of selected food items from a list of foods for a specific time period. It may also include approximate quantity of foods habitually consumed by the subjects. Other data such as method of cooking, and combination of foods in meals may also be obtained through the use of this method (Thompson and Byres 1994).

Purpose and Method: In the present study, qualitative food-frequency method was used to obtain a frequency of consumption of locally available iron and vitamin C rich foods by pregnant women. A pre-tested food frequency pro-forma (Appendix 2F) was used to collect this information. The pregnant women were asked to recall their usual consumption of several food items daily, two to three times a week, once a week, fortnightly, monthly and rarely.

Quantitative Methods Used in the Study

As seen in Table 4.2, the quantitative methods used in the study included measurements of height and weight (anthropometry) and calculation of Body Mass Index (BMI) based on these data of the pregnant women for assessing their nutritional status. Cyanmethemoglobin method was used to assess the hemoglobin status of the pregnant women. Data on socioeconomic status, morbidity profile, obstetric history and delivery record were collected using pretested structured questionnaires, which are given in Appendix 3.

Table 4.2 : Quantitative Methods Used In The Study

Information Sought	Informant	Number	Method
• Socioeconomic status	Pregnant women	153	Structured questionnaire
• Obstetric history	Pregnant women	70	Structured questionnaire
• Nutritional status assessment ▪ Height ▪ Weight ▪ BMI ▪ Hemoglobin	Pregnant women	153	 Standard method Standard method Standard method Cyanmethemoglobin method
• Health problems experienced	Pregnant women	80	Structured questionnaire
• Delivery record and birth weights of the newborn	Pregnant women	50	Structured questionnaire

- **Anthropometric Measurements**

Evidence from around the world suggests that poor nutritional status in pregnant women is associated with adverse pregnancy outcomes such as low birth weight or increased risk of obstructed labor. Maternal height, weight and other anthropometric indicators can be useful for identifying pregnancies at risk. These indicators can be measured relatively easily and seem to be a reliable and low cost way for health workers with limited training to assess a woman's nutritional status at community level (WHO 1995).

- **Maternal Height**

Principle: Height is the best simple anthropometric indicator of risk of obstetric complications due to cephalopelvic disproportion and obstructed labor (Merchant and Villar 1993, Moreman 1982). Maternal height is a good indicator of socioeconomic status and is useful to identify women at risk as well as for targeting nutritional interventions (Lechtig et al 1976).

Purpose and Method: Height of the subjects was measured to identify women at risk of intrauterine growth retardation. A non-stretchable fiberglass measuring tape was fixed vertically on a smooth wall of the pregnant women's house, perpendicular to the ground, ensuring that the floor was smooth. The pregnant women were asked to stand barefoot with heels together and in close contact with the wall. The head was held comfortably erect, arms hanging loosely by the side. A thin smooth plastic ruler was held on top of the head in the center, crushing the hair at right angle to the scale and the height was read from the lower edge of the ruler to the nearest 0.1 cm. Each height measurement was taken twice to ensure correctness (Gibson 1989, Jelliffe 1966).

- **Weight Gain in Pregnancy**

Principle: Appropriate weight gain in pregnancy is critical to maternal and infant outcomes of pregnancy. Assessment of the velocity (or increment) of weight gain in the second or third trimester of pregnancy is a simplified means to monitor the weight gain in pregnancy. A minimum weight gain of 1 kg per month throughout the second and third trimester is recommended (USAID/WHO/PAHO/MotherCare 1991).

Purpose and Method: All the 153 pregnant women were weighed at the time of enrolment in the study (at 20 to 24 weeks of gestation). The 50 women who were followed up till delivery were weighed again at 32+ weeks of gestation to find out their attained weight during this period. Weight of these women was measured using an adult platform weighing scale. The pregnant women were asked to stand straight, barefoot, looking straight and wearing light clothing. The weights were taken twice for accuracy and recorded to the nearest 0.25 kg. The weighing scale was re-calibrated to zero before each measurement and it was periodically calibrated using standard weights (Gibson 1989, Jelliffe 1966).

- **Body Mass Index (BMI)**

Principle: Body Mass Index (weight (kg)/height (m^2)) is commonly used for monitoring of weight gain during pregnancy since thinner women need to gain more weight during pregnancy than average-size or heavier women in order to significantly lower their risk of unfavorable outcome such as low birth weight, small-for-date infants and perinatal mortality (USAID/WHO/PAHO/MotherCare 1991).

Purpose and Method: As maternal BMI is predictive of intrauterine growth retardation, this index was calculated for all the subjects using the formula given above.

Blood Hemoglobin Estimation

In this study, hemoglobin estimation was done by the cyanmethemoglobin method (INACG 1985). This technique requires dilution of blood with a single reagent, measures all forms of circulating hemoglobin (except sulfhemoglobin), produces a relatively broad absorption band at 540 nm that can be measured in both filter and narrow band spectrophotometers and employs standards with exceptionally long stability.

Principle: In solution, the ferrous ions (Fe^{2+}) of the hemoglobin are oxidized to ferric state (Fe^{3+}) by potassium cyanide to from methemoglobin. Methemoglobin in turn reacts with the cyanide provided by potassium cyanide to form cyanmethemoglobin.

The time necessary for full color development is shortened to 3 minutes if dihydrogen phosphate is substituted for sodium bicarbonate in the classic Drabkin's reagent. The addition of nonionic reagent enhances erythrocytic lysis and minimizes turbidity resulting from lipoprotein precipitation.

Method: The blood samples were collected from the subjects at their homes in the field. A finger other than the thumb and little finger, was cleaned with an alcohol swab and then dried with a filter paper in order to avoid hemolysis with alcohol. Using a sterile disposable lancet, a bold prick was made at right angles to the direction of the skin creases so as to obtain free flowing blood. The first drop of blood was wiped off using filter paper. Then 0.02 ml (20 µl) of blood was pipetted into a graduated hemoglobin pipette and transferred to the vial containing 5 ml of Drabkin's reagent. The sample was well mixed and allowed to stand for at least 10 minutes before spectrophotometrically reading its optical density at 540 nm.

A series of standards were run using the cyanmethemoglobin reference standard obtained from *Span Diagnostics*. A calibration curve was plotted using the standard. A series of 5 test tubes were labeled 1 to 5 respectively. 10 ml of the standard was pipetted into tube 1 and 5 ml of Drabkin's reagent was pipetted into tubes 2, 3, 4 and 5. tubes 2, 3 and 4 were serially diluted as follows:

Tube No.	**Dilution**
1	10 ml standard
2	5 ml reagent + 5 ml standard
3	5 ml reagent + 5 ml solution from tube 2
4	5 ml reagent + 5 ml solution from tube 3
5	5 ml reagent blank

The readings were recorded at a wavelength of 540 nm using a spectrophotometer after setting the instrument to zero with the reagent blank. A factor of 38.3 was established from the standardization and each spectrophotometer reading was multiplied by this value to obtain the hemoglobin concentration in g/dl.

Assessment of **Socioeconomic Status, Morbidity Profile, Obstetric History** and **Delivery Record** was carried out using pretested structured questionnaires which are given in Appendix 3. These data also reflect the nutritional status of the subjects. Socioeconomic status assessment included background data on aspects such as the subject's age, occupation, total family income, per capita income per month, family composition, housing and sanitation conditions. As regards morbidity, a sub-sample comprising pregnant women in the first, second and third trimesters of pregnancy was used to collect information using a recall period of one month. The obstetric history pro forma consisted of questions regarding menstrual history and previous pregnancies. The delivery record included information on date of delivery, type and place of delivery, and weight of the newborn.

RESULTS

In the formative research phase, a situational analysis of the current status of nutrition related antenatal care services for pregnant women in the Vadodara Municipal Corporation's health set up was done. The results of the situational analysis are described under the following heads:

- **Current implementation of the antenatal care services**, especially the nutrition related antenatal care services in the government health system (Vadodara Municipal Corporation) in an urban set up
- **Perceptions of the government health functionaries** regarding health problems during pregnancy, anemia, and antenatal care (ANC), including the nutrition services, especially the anemia control program
- **Perceptions of local medical practitioners and TBAs** regarding health problems during pregnancy, especially anemia.
- **Nutritional status of pregnant women** as regards anthropometric measurements (weight and height) and hemoglobin levels
- **Perceptions of pregnant women and their family members** (husbands or mothers-in-law) regarding ANC and nutrition services during pregnancy - need, benefits, access and use of services, and their quality.

Current Implementation of Antenatal Care Services

In Vadodara, the nutrition services for pregnant women are a part of antenatal care services (ANC) implemented under the Vadodara Municipal Corporation's Family Welfare Program (FWP) as stated earlier (Figure 3.1). The Family Welfare Services are implemented through several Health Posts and Family Welfare Centers of which two Health Posts, A and B, were taken up in this study.

- **Expected Job Functions of the Health Functionaries**

Table 4.3 shows that several tasks were expected of the health functionaries under MCH activities, which however were not clearly specified, for example, "do field work in the allocated area"; "organize camps to improve MCH activities".

Table 4.3 : Job Functions of ANMs and LHVs (As Described in Corporation's Records)

1.	Field work in the allocated field areas.
2.	Fill, maintain and update the registers, follow-up cards as well as any other related papers for 4 hours after field work.
3.	Fill registers related to immunization and family planning.
4.	Organize educational programs such as group discussions, film shows and exhibitions related to family welfare and MCH in the field areas.
5.	Contact voluntary organizations to seek their cooperation in the educational programs.
6.	Organize camps to improve MCH activities (immunization and nutrition related)
7.	Maintain proper stock of all family planning related material.
8.	Make separate registers for antenatal care and postnatal care services provided to the women.
9.	Visit postpartum women in maternity homes in their area and to encourage them for family planning.
10.	Apart from the above activities, LHVs should guide and monitor activities of other field workers.
11.	They should also do all the work assigned by any of the officials of the Government, the Family Welfare Bureau and of the Health Post.

- **Review of Training Imparted to Auxiliary Nurse Midwives (ANMs)**

Some information on the nature of training received by ANMs, the grassroots level health functionaries of the Corporation, was obtained through an interview with a nursing tutor working at a government hospital in Vadodara.

The ANMs had to undergo training for 1½ years after secondary schooling. This training included a course on nutrition in which the ANMs received information regarding vitamins and minerals, including iron. Anemia related training consisted of imparting the following information :

Iron deficiency anemia (IDA) as a problem of public health significance, prevalence of IDA in India, causes and symptoms of IDA, prevention and cure of IDA, iron tablets and their dosage, use of foods like jaggery, brinjal, *bajra* (pearl millet), and green leafy vegetables, diagnosis of anemia through clinical examination and history of symptoms, estimation of blood hemoglobin by Talqvist technique.

Scarcely any teaching aids were used during training. Clinical cases of severe anemia were shown to the trainees. According to the tutor, anemia control was a weak component of the training and not much importance was given to it.

After the training, the ANMs were given 17 weeks of field experience at Primary Health Centers in rural areas. The Medical Officer (Health) and the FWMO who oversee the Corporation's health program stated that the Government of Gujarat (GOG) pays little attention to urban functionaries' training needs; most of their training programs concentrate on rural functionaries.

The current situation remains the same. There has not been any change in the training curriculum of the ANMs.

- **Nutrition Related Antenatal Care Services Provided at the Health Posts**

The Health Posts provided 3 nutrition services to pregnant women, namely weight monitoring of pregnant women, anemia control through iron supplementation, and nutrition-health education and counseling.

- **Monitoring of weight gain during pregnancy**

Pregnant women attending the maternal and child health (MCH) clinics held at the Health Posts once a week were weighed during the antenatal checkup. However, this service was not provided to the women during home visits made by the ANMs and their supervisors.

- **Anemia control program**

- **Target groups of ACP :** Target groups for IFA supplementation are all pregnant and lactating women and under-5 children in the field area. The dose per day for women is 100 mg elemental iron plus 0.5 mg folic acid/day (one adult tablet daily) while for under-5 children, it is 20 mg elemental iron plus 0.1 mg folic acid/day (one pediatric tablet). After a 8 month long spell of lack of supply of iron tablets in 1996, the supply from the Central Government had become regular. However, as the quantities supplied were usually not adequate, pregnant women got priority in distribution as compared to other target groups.

- **Distribution system :** The government supply of IFA tablets comes in polythene sachets of 25 tablets per sachet. However, as these are not autoseal sachets, once opened, the tablets tend to get discolored over time. The sachets are distributed to pregnant women during the MCH clinics and through home visits by the ANMs. Women are given one to two sachets at a time. The ANMs are expected to make at least 3 home visits during the 3 trimesters of pregnancy. The LMOs added that this however is not possible because of the large population (approximately 10,000) to be covered by each ANM. Monitoring by LMOs is done only with regard to the number of tablets given to those pregnant women who visit the MCH clinic, for which records are maintained. The doctors admitted that no record of the compliance with the iron tablets is maintained and no follow up is done to ensure compliance by women.

- The next page gives the columns of the **ANC register** related to IFA supplementation.

Sr.No	Name and Address	Age	Iron Tablets Pregnant/Lactating Other Women			
			Date	No. of tablets	Date	No. of tablets

It is clear from the register that firstly, the women beneficiaries are all grouped in one column making it difficult to assess distribution to the more important group of pregnant women; secondly, data on distribution only is given, not on compliance.

Field based observations also confirmed that tablet distribution through home visits was irregular and no follow up visits were made to monitor compliance; nor was any record maintained regarding total number of tablets given to each woman or the consumption of tablets by them.

Table 4.4 gives a list of other records and registers maintained by the ANMs and LHVs at the two Health Posts. As evident from the list, many of the records and registers focused mainly on family planning and immunization activities.

- **Nutrition-health education and counseling**

The Corporation's Chief Medical Officer (Health) stated that the health functionaries of the Corporation were normally expected to impart nutrition-health education to pregnant women (chiefly family planning advice, when to take iron tablets and ORS) at the Health Posts as well as through home visits to their houses.

- **Availability of IEC Material on Nutrition Services**

It was very disheartening to note that very little IEC material was available at the Vadodara Municipal Corporation's health department on antenatal care services and there was a paucity of material on the nutrition services. Scrutiny of available IEC material and discussions with the Corporation officials indicated that the existing IEC material covered topics such as family planning, use of contraceptive methods, immunization and childhood diseases (especially diarrhea) and there was a total absence of material on anemia and benefits of iron supplementation.

Table 4.4: List of Files, Records and Registers Maintained at the Health Posts

The following are the files, registers and records, which were maintained by the ANMs and LHVs at the 2 Health Posts.

1. Monthly Report File for the year
2. Time Book
3. Attendance Register
4. Daily Case Register
5. Movement Register
6. Family Planning Operation Register
7. IUD (Intrauterine Device) Register
8. Immunization Register
9. *Nirodh* (condom) Register
10. Oral Pills Register
11. Action Plan
12. MCH Register including ANC and PNC register
13. Referral Cases Register for the special cases referred to the Government Hospital

Perceptions of the Government Health Functionaries

- **About health problems during pregnancy :** As seen in Table 4.5, according to the LMOs, LHVs and ANMs, the common health problem during pregnancy were anemia, nausea and vomiting, hypertension, and edema on feet and body. In addition, the LMOs stated that toxemia was also a problem of concern during pregnancy. The LHVs and ANMs added giddiness and frequent urination as common health problems encountered by pregnant women. The major reasons given by all the functionaries for these problems comprised : anemia, inadequate food intake due to cultural beliefs and improper food habits such as avoidance of certain food items considered 'hot' or 'cold', poverty and repeated pregnancies. The ANMs felt that heavy household workload also contributed to the occurrence of these health problems. The treatment prescribed by them for the above mentioned problems included: drugs to stop vomiting, oral iron supplementation and dietary advice for anemia, and reduction in salt intake and rest for hypertension and edema. The ANMs also mentioned consulting a doctor for these problems.

- **About anemia :** The estimated **prevalence** of anemia among pregnant women in their respective working areas, as perceived by the LMOs, ranged from 40-70% with 10% of the women estimated to be suffering from severe anemia. The LHVs believed it to be as low as 15% or as high as 50% whereas the ANMs estimated anemia prevalence during pregnancy to be in the range of 50 to 70%. According to the health functionaries, **detection** of anemia during pregnancy was done by them through observing for clinical signs such as presence of pallor on face, palms, nails, tongue and conjunctiva and symptoms such as weakness, tiredness, giddiness, and breathlessness as well as a decrease in the hemoglobin level. Two of the LMOs stated blood testing for diagnosing anemia. Subsequent direct observations in the field however revealed that the ANMs and LHVs rarely examined women for clinical evidence of anemia.

The common **causes** of anemia mentioned were worm infestation, repeated pregnancies, improper diet, and malaria. The doctors believed that **adverse consequences** of anemia during pregnancy were weakness, reduced appetite,

Table 4.5 : Perceptions of Health Service Providers Regarding Health Problems During Pregnancy

Responses	LMOs (n=7)	LHVs (n=7)	ANMs (n=25)
	Number of respondents		
• Common health problems during pregnancy			
▪ Anemia	7	2	14
▪ Nausea and vomiting	5	6	25
▪ Hypertension	6	4	9
▪ Edema on feet and body	4	2	13
▪ Toxemia	4	NR	NR
• Reasons for these problems during pregnancy			
▪ Anemia	2	1	12
▪ Poor nutrition and inadequate food intake	5	1	9
▪ Wrong food habits	3	NR	NR
▪ Poverty	3	NR	NR
▪ Repeated pregnancies	3	NR	3
• Treatment for common health problems during pregnancy			
▪ Anemia			
IFA tablets	5	NR	11
Proper diet	2	1	2
▪ Nausea and vomiting			
Short, frequent meals	1	NR	1
Medicines to stop vomiting	1	1	7
▪ Hypertension			
Reduce salt intake	3	NR	1
Increase rest	2	1	NR
Anti hypertensive medicines	1	NR	NR
▪ Edema on feet			
Reduce salt intake	1	NR	5
Take rest	1	NR	3
▪ Toxemia			
Complete bed rest and salt restriction	2	NR	NR
• Causes of anemia during pregnancy			
▪ Worm infestation	5	NR	1
▪ Repeated pregnancies	5	2	5
▪ Inadequate food intake	4	3	10
▪ Repeated attacks of malaria	3	NR	1
▪ Irregular consumption of IFA tablets	NR	3	NR

Responses	LMOs (n=7)	LHVs (n=7)	ANMs (n=25)
	Number of respondents		
• Treatment of anemia			
▪ Regular consumption of IFA tablets	NR	3	NR
▪ IFA tablets	7	7	25
▪ Increased intake of iron rich foods such as green leafy vegetables and jaggery, and advice from health workers on adequate nutrition	7	5	15
• Counseling given to anemic pregnant women			
▪ Take IFA tablets	7	4	18
▪ Increase consumption of green leafy vegetables, pulses and legumes, and milk and milk products in your diet	7	6	21
▪ Take treatment for malaria	2	NR	NR
▪ Take food 3 - 4 times a day in small quantities (take small, frequent meals)	1	NR	NR
▪ Go to health center for regular checkup	1	2	2
▪ Get your hemoglobin levels tested every 3 months	1	NR	NR

NR = No Response

decreased rate of weight gain, post-partum hemorrhage and shock. The adverse pregnancy outcomes included intrauterine growth retardation (IUGR), premature delivery, and low birth weight babies. The LHVs and ANMs stated in general terms that there was a possibility of an anemic woman giving birth to a baby with some type of physical defect or handicap.

With regard to prevention and treatment of anemia, the LMOs, LHVs and ANMs said that they counseled women to take IFA tablets, and increase the intake of iron rich foods such as green leafy vegetables, seasonal fruits, pulses, legumes, jaggery, and milk and milk products. The LMOs also advised treatment for malaria (as common in their region), small frequent meals, regular antenatal check-up and testing of hemoglobin level in each trimester of pregnancy. The general problems encountered during counseling, according to them, was that though the women agreed to take iron tablets they did not put the advice into practice.

In this study, the health service providers listed down a variety of common health problems during pregnancy, including anemia. They were well aware about anemia. However, all the ANMs could not specify the causes of anemia during pregnancy. All the HSPs said that IFA tablet consumption was the best way of treating anemia. Some of them also reported that increasing the intake of iron rich foods in the diet was also beneficial, and said that they gave this advice to the pregnant women. Similar observations were also made in a study carried out in rural Karnataka (Stephen et al 1998).

The iron tablets were distributed by the ANMs and LHVs to the women at the Health Posts during the MCH clinics and through home visits to the women's houses. They coordinated with the ICDS (Integrated Child Development Services) *Anganwadi* workers and field level functionaries of an NGO (non-governmental organization) for improving the coverage. The record of the number of tablets distributed was kept in ANC and MCH registers, but not the record of the actual number of tablets consumed by the women.

The main reasons behind non-consumption of iron tablets as perceived by the health care providers were lack of awareness regarding the benefits of tablet consumption, side effects such as vomiting, abdominal pain and constipation, as well as the belief that the tablets were 'hot'. They mentioned that the beneficiaries gave excuses such as forgetfulness and dislike of consuming tablets due to their unpleasant after-taste besides side effects such as vomiting, constipation and diarrhea. According to many LHVs and ANMs, the family members especially mothers-in-law and husbands played an influential role in allowing the women to consume the tablets. Also, one of the LMO mentioned that the women do not consume the tablets because of they lack awareness of their importance, and refusal by the elders in the family (*"Baheno goli khati nathi karan ke temne jankari nathi hoti ane gharna mota na paade chhe")* Therefore they suggested that the family members of the women should be taken into confidence to gain their cooperation.

In a study by Khanna and Kanani (1994), the reasons for non-compliance with IFA supplements also included lack of awareness and side effects. In the same study, suggestions given by the HSPs at various hierarchial levels for improving the anemia control program included educating community about the program, frequent home visits, timely and adequate supplies, increase in the number of personnel, better training of functionaries, and prioritizing the anemia control program.

The objective of the government iron supplementation program, as perceived by the LMOs was to reduce anemia and promote "healthy mother and healthy baby". As regards distribution of the iron tablets, besides the center based distribution, the women also received tablets from ICDS (Integrated Child Development Services) *Anganwadi* centers as well as from the centers run by an NGO, according to the doctors.

The LHVs and ANMs believed that the objectives of the government's Anemia Control Program were to reduce maternal mortality and infant mortality, to reduce the incidence of anemia during pregnancy and, to provide iron tablets to poor people.

Suggestions to improve the anemia control program : With regard to the delivery system of iron tablets, the LMOs suggested that first of all the supply of tablets from the government should be made regular. They felt that distribution through home visits and at the center during regular ANC clinics would improve the coverage. The improvements suggested by the doctors to make the ACP more effective were : give protein and calcium rich food supplements to pregnant women such as protein biscuits, groundnuts, roasted *bengal* gram and milk powder; encourage pregnant women to visit antenatal clinics regularly; give family planning advice to avoid unwanted pregnancies; conduct medical camps in slum communities; and conduct group meetings to impart health education.

The improvements suggested by the LHVs and ANMs were : reduction of population allotted to each ANM to improve work efficiency; regular supply of iron tablets; and arrangement of medical camps in communities for diagnosis and treatment of anemia. Yet the functionaries themselves did not effectively implement any of these suggestions, as is elaborated in the subsequent section.

- **Perceptions of ANMs on importance of antenatal care services through Matrix Ranking or Matrix Scoring Exercise**

As explained earlier in this section, Matrix ranking/scoring exercises were carried out with 3 ANMs working in the Vaododara Municipal Corporation to assess regular availability, utilization and benefits of various antenatal care services to pregnant women. The results of these exercises are summarized in Table 4.6.

- **Regular availability of the various ANC services to pregnant women**

All 3 groups gave highest scores (5) to TT immunization, distribution of IFA tablets and NHE placing them at the top position as they were the most regularly available services to the pregnant women. According to the ANMs, all pregnant women came for TT immunization due to wide television coverage and media publicity. ANMs on their part too were regular in providing this service as it was a priority program in the Corporation.

Table 4.6 : Matrix Ranking/Scoring Exercise with 3 groups of Vadodara Auxiliary Nurse Midwives (ANMs)

Scores Given to Various Antenatal Care Services			
	Criteria		
Services	**Regularly available to women**	**Beneficial to women**	**Frequently utilized by women**
Registration	5, 3, 5	5, 5, 3	2, 3, 4
Weight monitoring	3, 3, 4	4, 5, 5	3, 2, 5
TT Immunization	5, 5, 5	5, 5, 5	5, 5, 5
Iron folic acid tablets	5, 5, 5	5, 4, 5	5, 2, 4
Health check up	3, 4, 2	5, 5, 5	4, 3, 2
Referral services	2, 1, 4	4, 5, 5	3, 1, 3
Nutrition Health Education (NHE)	5, 5, 5	5, 5, 5	3, 1, 2
Key : Score 5 - Most regularly available/beneficial/utilized 4, 3 - Fairly regularly available/beneficial/utilized 2, 1 - Irregularly available/beneficial/utilized			

Matrix Ranking/Scoring Exercise

The MR/S exercise in progress

Matrix obtained through the exercise

IFA tablets were regularly distributed to the women through the centers and during home visits and there was enough stock of tablets with the ANMs to ensure regular distribution.

Regarding NHE, the ANMs said that it was an ongoing service imparted to the women during home visits, and at the centers or during MCH clinics. They educated women either individually (one to one) or in group based sessions.

Antenatal registration was given a score of 5 by 2 groups. All the 3 groups of participants said that though they understood the importance of early registration, they were unable to have 100% coverage due to large population to be covered by each worker. As one of the ANMs said, *"Vasti vadhare hovane karane aame badhe kevi rite pohonchiye?"* (Due to the large population we have to cover, how can we reach everywhere?). Also, according to them, some women did not inform about their pregnancies early enough either because they felt shy or due to cultural beliefs such as, someone might cast an 'evil eye' on the unborn child. However, those who gave a score of 5 said that they themselves went house to house to register pregnant women thereby ensuring its regularity. The group which said that it was not that regular was because they were given the responsibility of all other vertical health programs as well, such as school health program, malaria, leprosy, polio and AIDS-program, and programs related to epidemics and floods (emergency services). They admitted that they also had to give priority to women who agreed to family planning operations due to the specific targets, which they had to achieve for the family planning activities. In the health workers own words, *"Atyar sudhi TL target ne hisabe, area maa sagarbha baheno male to pan ae TL karvana hoy toj vadhare dhyan aapiye"* (Till now, because of TL targets, even if we meet pregnant women in the area we concentrate only on those who want to undergo (family planning) operation afterwards).

Availability of weight monitoring was considered to be 'fairly regular' and not very regular mainly because they felt that the women were not aware of the importance of this service. Regarding health checkups, the ANMs said that the LMOs were not

regularly available at the center or MCH clinics hence a complete checkup could not be done in their absence. Many women preferred to go to private medical practitioners as they did not trust the government health centers or clinics.

Referral service was considered as the most irregular service. It received the lowest scores as the ANMs felt that all women did not require this service - only mothers at high risk require it and many of them took outside help. Besides, the centers did not have the infrastructure or facilities to treat such cases.

To sum up, the ANMs rated the various services in the following manner as regards availability :

Most regular	5	TT, IFA, NHE, antenatal registration
Fairly regular	3-4	Health check up Weight monitoring
Irregular	1-2	Referral services

- **Utilization of various ANC services by the beneficiaries**

Of all the services, TT immunization received the highest score in all the groups again because of high level of community awareness, and realization of benefit of the service. The ANMs said that all the women came for TT vaccination on their own.

IFA, weight monitoring, health check up and registration were considered 'fairly utilized' services, while referral services and NHE rated between poorly and fairly utilized services.

With regard to IFA distribution, varied scores of 2, 5 and 4 were obtained. The group which gave it the highest score did so as they specified that they distributed the tablets through home visits. However, with regard to consumption of the tablets, none of the groups was sure that the women consumed them regularly. According to them, many

women threw away the tablets or forgot to consume them and in some instances the consumption was stopped due to side effects. Many of the ANMs perceived that as the tablets were distributed free of cost, the women thought them to be worthless and bought more expensive tonics from pharmacies instead.

Antenatal health checkup was only a fairly utilized service according to 2 groups of ANMs. The reasons perceived were long distances from home to the clinic, and parity. The ANMs felt that more than half of the pregnant women would avail of this service regularly if their residence was closer to the health post. One group gave 2 separate scores of 3 and 4 respectively. Score 3 represented primiparous women who preferred to go to private doctors rather than visiting the health post. The score of 4 represented women expecting their second or third child who visited the health post more frequently for availing antenatal care. Some of the ANMs and LHVs also mentioned that *"Baheno check-up mate aave, pan doctor hotaj nathi etele pachha jayei"* (Women come for checkup but since doctor is not available they have to go back) and *"Center par doctor na hoy to ame vajan kariye ane goli aapiye pan tapas na thaye"* (When doctor is not present at the center, we take weight and give medicine but checkup cannot be done).

The service of weight monitoring was 'fairly utilized' by pregnant women due to lack of awareness in the women about the importance of weight monitoring that and the fact that this service was not provided through home visits.

Antenatal registration was also given an average score as most of the ANMs and LHVs agreed that the pregnant women come only in the 6th or 7th month of pregnancy for TT immunization so they get registered at that time (*"Sagarbha baheno 6-7 mahinej rasi mukava aave, tyare temnu registration thay"*).

Referral services were scored between 1 and 3. Regarding referral services, the ANMs said that home deliveries were still common in the slums. There was a problem

of conveyance and the ANMs were unable to cover all pregnant women due to the large area given to them.

Similarly, NHE also received a low score as according to the ANMs, most women did not have time to attend NHE sessions or were reluctant to come and spend time. As one ANM put it, "Out of 5 women, 2 will listen and 3 will not".

The service utilization by pregnant women according to the ANMs' view is summarized below.

Well utilized	5	TT
Fairly utilized	3-4	IFA, Check-up Antenatal registration, Weight monitoring
Poorly utilized	1-2	Referral services and NHE

- **Services beneficial to pregnant women**

The initial response in all the groups, was that all the services were beneficial to the pregnant women. However, slight variations were obtained on further probing.

TT immunization, antenatal checkup and NHE were given the score of 5 by all the 3 groups. TT immunization was perceived as the most beneficial service as many women living in slums whose babies were delivered at their homes by untrained traditional birth attendants (TBAs) were protected against tetanus. Regular health checkup was considered very useful for monitoring the health of mother throughout pregnancy and for a better pregnancy outcome. NHE was considered to be very useful for the mothers as it made them aware about the various ANC services available to them as well as their importance for keeping healthy.

IFA distribution service was given a score of 5 by all the groups. This service was considered beneficial as it helped reduce anemia, increase appetite and prevent symptoms such as giddiness. Some ANMs in a group gave it a score of 4 reasoning that even though the pregnant women did not take IFA tablets, they could still get iron from food. However, others felt that as the women had very poor socioeconomic background, they could not afford to get iron rich foods throughout the year hence it was considered necessary that they took the tablets. Thus, this group agreed to give 2 scores of 5 and 4 respectively to IFA tablet distribution.

Weight monitoring and referral services received a score of 5 by 2 groups and a score of 4 by the remaining group. The ANMs felt that through weight monitoring, they could come to know about the development of the fetus as well as about the presence of risk factors if any, as too less or too much weight gain would indicate abnormality, which could be corrected if detected in time. The group that gave a lower score reasoned that 90% pregnancies progressed well without any complications and even though one did not regularly monitor weight it would not cause any trouble. They felt that it would not be feasible to carry heavy weighing scales from house to house during their field visits.

Referral services received similar scores of 5, 5 and 4 by the 3 groups. The 2 groups that gave a score of 5 said that the main aim of referral services was firstly to reduce the number of home deliveries as it put both the mother and her child at risk and secondly to decrease maternal and neonatal mortality.

Two groups gave antenatal registration a score of 5 stating that through registration, they could identify the antenatal cases based on which they could provide them with other services. The only exception wherein one group gave it a score of 3 stating that the pregnant women did not consider it to be important and several women believed that the ANMs were registering their names for family planning instead of antenatal care.

Some interesting insights emerged from the MR exercise. Firstly, as expected, most ANMs and LHVs in all 3 groups, gave high scores as regards 'regular availability' to 5 of the 7 ANC services saying that they ensured that these were offered regularly to the women. But the responses of the minority were more revealing as regards poor coverage of services. According to them, vertical programs interrupted their work or led to irregular availability of doctors at the Health Posts. Subsequent observations by the investigator showed that inefficient use of time, poor work organization and inadequate supervision also led to poor service delivery including that of nutrition services. **An available service was not necessarily qualitatively well implemented.**

Secondly, all services were considered beneficial to women but their utilization varied, according to the health workers. Except for TT immunization, all other services were utilized to a 'fair-to-poor' degree by women either because of poor awareness, cultural beliefs or preference for private health practitioners. Subsequent observations showed that poor quality of care and infrequent community contacts by health functionaries were important reasons why women did not utilize the government services.

DISCUSSION - A FOCUS ON MANAGEMENT OF SERVICES AND QUALITY OF CARE

The situational analysis revealed a sad neglect of the nutrition related antenatal care services in the urban health system, in particular: a low priority accorded to the antenatal care services, lack of clarity regarding the job functions of the health service providers, absence of adequate supervision and monitoring, unplanned distribution of IFA supplements, infrequent home visits by the health workers, and absence of IEC material related to nutrition care services. These problems were mainly related to the management of the nutrition related ANC services.

According to ACC/SCN (1991), factors underlying ineffectiveness of nutrition programs are both technical and managerial in nature. The most frequently reported constraints in the management of nutrition programs include inappropriate design, absence of targeting, weak training and supervision, unskilled management and inadequate financing.

In a review paper, Mavalankar (1999) has listed down several management constraints which adversely affect the operationalization of RCH interventions in the PHC system in India. These constraints were broadly related to human resource management, access and quality of services, monitoring and supervision, infrastructure, demand for services and their overall management. Many of these were also observed in the present study.

- **Inadequate training of health functionaries**

Lack of in-service training has been a major constraint for health workers to do their job effectively. In-service training was conducted for PHC health workers only when any new program was introduced such as immunization or ORS. In the present study, similar observations were made. For example, when the Modified Leprosy Elimination Campaign was introduced, the health workers were given a 3-day crash course in identifying and treating leprosy affected individuals. As regards implementation of nutrition related ANC services such as anemia control, the training of the ANMs was

only a part of their basic training, which was mainly theoretical and classroom based. The training was also not linked with the actual performance of the health workers.

- **Lack of clarity regarding job functions**

Mavalankar's observations show that training did not clarify the expected job functions of the health workers (Mavalankar 1999). In the present study too, it was noted that the job functions of the workers as listed in the Corporation's records were very unclear. For example, "do field work in the allocated areas". There was no mention of the exact nature of the work expected from the health service providers. In addition to this, there was a conflict between several tasks to be carried out within the same time frame. In this study, the workers' everyday job functions were not properly planned so as to avoid a clash between two tasks to be completed simultaneously. This is all the more essential in view of the fact that management of ANC services within a health system becomes quite difficult as the health workers have to simultaneously implement several tasks related to provision of various health care services. It was observed that certain services were prioritized at the cost of other services which are equally important. For example, nutrition services were usually neglected as compared to family planning and immunization services. Hence, clarity and prioritization (achieving a balance) among the various services is critical for quality of care. To avoid this problem, a strong in-built component of monitoring and supervision is essential.

- **Weak monitoring and supervision**

Mavalankar (1999) also talks of another important management related weakness in the government health system, which is weak monitoring and supervision. In the present situational analysis, in the VMC's health system, the role of supervisors (LHVs) was not well defined. Supervisory visits to the field areas by the Medical Officer were very few and far between. They merely checked the records filled in by the ANMs and LHVs, which was again a cursory task, and did not include supportive supervision. Further, the supervisors had the same workload (i.e. population coverage) as their subordinates, which left little time for efficient supervision.

ACC/SCN (1991) recommends that supervision should be a part of daily activities involved in the operation of the program/services, especially if tied to monitoring activities. The VMC's health system did not have adequate capacity to collect, analyze and use the information regarding the nutrition care services for effective monitoring. As regards monitoring of performance by the higher health officials of the VMC, in this case the FWMO, she met all the health staff of the nine Health Posts once a month, and asked them how much of the set targets they had achieved.

- **Poor record keeping and MIS**

The key factors for success in a management information system are simplicity and flexibility. Simplicity is necessary so that the data gathered will be as error-free as possible and so that the information gathered from the system is understandable to users and reliable for decision making (ACC/SCN 1991).

As mentioned earlier, the VMC's health functionaries maintained over 13 records/registers covering their performance related to various health services. Information on the 3 nutrition services was recorded in the MCH register. However, weight monitoring of pregnant women was carried out only at the weekly MCH clinics and not during home visits/field work. Records regarding nutrition counseling were practically non-existent. As regards IFA supplementation, a record of the number of tablets given to pregnant women was maintained. But monitoring of actual consumption of the supplement by the women was not done and hence not recorded. All the records were maintained manually and compiled every month in the form of a report for assessing the overall performance of the Health Posts. No feedback was given by the functionaries to the women regarding their nutritional status on the basis of the monitoring data thus missing out on an excellent opportunity to educate and motivate women as regards antenatal care.

While exploring the MCH record maintenance at PHC level, Kumar et al (1992) found glaring deficiencies in their maintenance, for example, missing entries and duplicate entries. This was also observed in the present study. The authors suggest that such

problems could be avoided by modifying the information system, making records simple, action oriented with a built-in system of evaluation, and involving community in its maintenance and utilization.

- **Absence of IEC material on nutrition services**

Use of IEC material has been proven to improve the performance of services. Especially in case of low literacy levels of the clients, IEC materials with culturally appropriate illustrations can effectively put forward the message. For example, an illustrated flip chart on anemia prevention and control would definitely improve the understanding of the target group in a better way than a lecture on the same topic. In this study, it was found that the Corporation did not have any IEC material on the 3 nutrition services.

Not only in case of the ANC services but even in other national programs like the ICDS, nutrition care services are poorly implemented. This has been revealed in a national evaluation of ICDS by the National Institute of Public Cooperation and Child Development, New Delhi (NIPCCD 1997) as well as in other studies. The NIPCCD evaluation was carried out during 1990-92in 100 ICDS blocks in 25 states and one union territory, covering 698 AWWs, 328 supervisors, 91 CDPOs and 11311 community representatives. The major drawbacks in the program noted were: inadequate job training and refresher training of the functionaries, poor monitoring and supervision, too much administrative work for the supervisory cadre, lack of community participation, low beneficiary coverage (IFA supplements: 60% for pregnant women), poor community contact and home visits by the AWWs, and few and far between NHE sessions poorly attended by the beneficiaries.

A social assessment of the ICDS services in 10 *Anganwadis* representing 5 ICDS blocks in Gujarat by Kanani and Zararia (1996) has clearly revealed that poor infrastructure adversely affected the quality of implementation of ICDS services. Poorly implemented NHE sessions and erratic supply of iron and vitamin A supplements also contribute to the poor quality of this program.

The cumulative outcome of the above program management related problems is likely to have an adverse impact on the quality of services provided.

QUALITY OF IMPLEMENTATION OF NUTRITION CARE SERVICES

Quality is a key element in the provision of health care and a factor closely related to its effectiveness, compliance and continuity of care. The concern for quality of health care applies just as much at the program manager's level as it does at the level of the grassroots health worker. This ensures the best standard of health for people in the community where the health worker works. The quality of implementation of the antenatal care services provided by the Vadodara Municipal Corporation's health department were assessed through interviews and visits to the 2 Health Posts as described earlier.

The elements of quality of care used in the discussion have been adapted from the WHO's framework for quality of maternal care in safe motherhood programs (WHO 1995a). These elements have been described earlier in the Review of Literature (Chapter II). In the context of antenatal care, quality of impelmentation as observed in this study has been described here from the perspective of the Health Service Providers.

Quality of Care Elements Related to the Antenatal Care Program of the Vadodara Municipal Corporation

THE HEALTH SERVICE PROVIDER OR THE PROGRAM PERSPECTIVE

Accessibility and availability of services and their appropriateness

This means that the pregnant women should receive the full range of services, which are provided close to where they live. They should be aware of the fact that the antenatal care services are available to them at a particular place, e.g., a health center or a health post. The services should be appropriately provided according to the need of the clients.

In this study, the **accessibility** of services was variable especially with respect to nutrition services. For example, IFA tablets were distributed to the pregnant women at the MCH clinics held once a week at the Health Posts. However, the tablets were given to only those women who attended these clinics. Availability was also constrained as the MCH clinics were held only once a week in morning hours when many women had their household chores to be carried out. These clinics were combined with child immunization, which shifted the focus from mother to the child. However, distance was not a constraint as the Health Posts were situated within a distance of 3 km from the neighboring slums.

As regards **awareness**, conversations with the clients visiting the 2 Health Posts A and B, revealed that the women were aware about the weekly MCH clinics only as ones which provided the facility of child immunization and not antenatal care.

With regard to **appropriateness**, the physical facilities available at the Health Posts with their little space and layout were not conducive for nutrition counseling and counseling regarding IFA consumption. The attention of the workers was mainly on child immunization.

Essential supplies and equipment

No health program can function well towards achieving its goal without essential supplies of medicines and vaccines, and equipments such as weighing scales and syringes used for vaccinations. Adequate supplies should be available in adequate quantity as well as quality with a provision of replacing the ones that have been used. The equipment, though available, should be maintained in good working order.

As regards the 3 nutrition related antenatal care services of monitoring of weight gain during pregnancy, iron supplementation for controlling nutritional anemia and nutrition counseling, the picture related to essential supplies and equipment was not very encouraging. Each of the 2 Health Posts had only one weighing scale, which was used for weighing not more than 10 pregnant women per week. The weighing scale was

never taken to the field areas where the health workers came in contact with a large number of pregnant women. The IFA acid tablets were available during the study period. However, they were not available for 8 months during the previous year. With respect to nutrition counseling, there was no IEC material available to aid the health workers while counseling the pregnant women regarding the importance of dietary modification during pregnancy.

Support to health care providers

Health care providers cannot function without the back up and economic support from the authorities. They also need the support of the community where they work.

In the present study, the health care providers were given certain work targets by the higher authorities to be completed every month with regard to services such as family planning and immunization. Therefore, the workers spent more time on meeting these targets. Antenatal care received much less attention and it was provided only once a week, for 2 hours through MCH clinics. These clinics were poorly attended by pregnant women. Thus the system did not actually support the health service providers to appropriately divide their time between all the services. Focus was only on certain services, at the expense of others; especially nutrition care services.

Comprehensiveness of care and linkages to other reproductive health services

Antenatal care is a unique opportunity to provide women with comprehensive reproductive health care. Yet ANC received scant attention and was not comprehensively delivered. Further, it was not as well monitored as other services like family planning and immunization. Rather than synergizing and strengthening other reproductive health services, nutrition linked ANC services were neglected. The RCH program of the Government of India (1997) recognizes the importance of maternal and child health as well as the significant role of good nutrition for the success of the MCH services as a part of the larger RCH program.

Technical competence of health service providers

Technical competence depends on regular training and retraining of health service providers regarding clinical treatment.

In the present study, all the health service providers had received training only before they joined the health system as health workers and supervisors. No retraining was given to them regarding antenatal care services. The only training which they received from time to time was related to any new vertical program/campaign which was to be implemented, e.g., pulse polio, leprosy elimination campaign. However, all these training programs were brief and superficial, and were administered in a hurry just before the beginning of the new campaign in such a manner that the workers did their job with several doubts in their minds which were hardly cleared by their supervisors.

As training was found to be weak in the system, during the course of this study, the workers were given intensive training regarding antenatal care services. They were also trained to build capacity and develop skills for providing antenatal care in an appropriate manner. Attempts were also made to clarify their job function and distribute their time for separate tasks. Yet the workers were not given adequate opportunities to improve their competencies at the field level as regards nutrition care despite the training offered in this study.

Continuity of care and follow up

Antenatal care should be a part of a continuum of maternal health care comprising pre-pregnancy, antenatal as well as post-natal services with appropriate follow up home visits by the health service providers.

As regards follow up, the health workers participating in this study did make some home visits to the pregnant women's houses to distribute iron-folic acid supplements and to give advice regarding diet during pregnancy. However, these visits were not regularly made. Home visits in the field areas had the main purpose of achieving their family planning targets.

Quality of provider-client contact

Low quality of provider-client interaction is a major barrier to utilization of ANC services by the clients. FCI and SMIAG (1998) have reported unsympathetic care providers as one of the major barriers to utilization of antenatal care in developing countries like Tanzania. In the present study, the service providers and clients came in contact with each other in two situations – pregnant women attending the weekly MCH clinics, or through home visits made by the health workers. For those pregnant women who came for ANC checkup at the Health Posts, the contact with the service providers was very brief as revealed through direct observations. These women did not receive adequate nutrition counseling and no IEC material was available and hence not used for counseling women. Also, home visits made by the health workers were irregular.

- **Perceptions of Local Medical Practitioners (LMPs)**

Two local indigenous health practitioners were interviewed in the study area: an *Ayurvedic* practitioner and a practicing Homeopath. According to both of them, the pregnant women came to their clinics only if they had some medical problem during pregnancy and not for a regular antenatal checkup. The pregnant women were reported to complain frequently of vomiting, giddiness, stomachache and backache. According to the two LMPs, 45% to 60% of pregnant women in the slum areas were anemic.

Anemia was usually assessed by them by observing clinical signs such as general pallor, pale face, nails, and symptoms such as giddiness and loss of appetite. Occasionally, some women got their hemoglobin testing done at a nearby health center run by an NGO.

The LMPs prescribed iron syrups (e. g. Heam Up) to the pregnant women as the women preferred taking medicine in a liquid form rather than tablets. The LMPs were unable to do any kind of follow up as regard compliance as the women visited them very irregularly and took medicines only for symptomatic relief. On rare occasions, a few women a few women reported some benefits of consuming iron-containing medicines. In their words- *"saaru lage"* (feel good) and *"vadhare kavay chhe"* (can eat more food).

Two other medical practitioners-gynecologists - who were very popular in the study areas, and many women reported about visiting them were also interviewed. These doctors had their own hospitals at a distance of about 3-5 kilometers from the Health Posts and consulted about 10-20 pregnant women at their private clinics, especially belonging to the low socioeconomic group.

The common health problems mentioned by the two doctors among pregnant women were white discharge, anemia and early pre-eclampsia. They diagnosed anemia through clinical signs such as paleness of conjunctiva, tongue, nails and general pallor.

The doctors said that the pregnant women indicated anemia through symptoms such as *"bhookh nathi lagti"* (loss of appetite), *"haanf chadhe"* (breathlessness) and *"khoon ka pani ho jata hai"* (blood turns into water). They perceived the main causes of anemia as lack of nutritious diet, ignorance, worm infestation and irregularity in continuing iron supplements (due to side effects or forgetfulness). According to them, due to poor awareness regarding anemia, the pregnant women often came late for treatment. The slum dwelling women believed that they had "jaundice" when actually they had pallor due to anemia. These women took treatment for jaundice from religious *'gurus'*. When the paleness still persisted, they visited the doctor by which time they were in an advanced state of pregnancy- 8 or 9 months.

As regards treatment of anemia, the doctors prescribed commercial iron supplements such as *Levogen* and *Haem Up*. The recommended consumption was one tablet every day or 2 teaspoonfuls twice a day in case of syrup, since a majority of the women had mild to moderate anemia. The compliance was good except for a few cases. Dietary modification was also advised such as increased food intake, increased consumption of green leafy vegetables, jaggery, legumes and fruits.

Some suggestions given by the doctors:

- The local medical practitioners should spread awareness regarding anemia and the importance of dietary modification during pregnancy and should not misguide the women by giving them B complex injections or intravenous glucose administration for giving temporary relief from weakness.
- Awareness programs should not focus only on anemia and diet but should also include ways of maintaining good personal hygiene and environmental sanitation.

In a study on perceptions of women regarding women's health disorders in Baroda slums by Kanani et al (1994), local health practitioners were also interviewed to assess the treatment seeking behavior of women. It was found that the women delayed treatment seeking till the condition was not considered serious enough to warrant outside care. Also women tended to visit the health practitioners who were well-liked among their friends.

- **Perceptions of Traditional Birth Attendants (TBAs or *dais*)**

Two TBAs *(dai)* popularly consulted by pregnant women in slums were interviewed. One of the *dais* worked as a helper in a health center run by an NGO. She had received informal education and training regarding various aspects of health care during pregnancy and childbirth. The other *dai* had long experience of conducting deliveries and had not received any kind of training.

Both the *dais* mentioned that the common health problems which they came across among pregnant women in the slum areas were stomachache, vomiting, weakness and *"lohi ni kharabi"* (bad blood). According to them, these health problems were caused by excessive work load, inadequate rest and poor food intake.

The *dais* were aware that the problem of anemia was prevalent among the pregnant women and termed it as *"khoon ki kami"* (lack of blood), *"kamjori"* (weakness), and *"ochhu lohi"* (less blood). They stated consequences of anemia in terms such as *"lohi nu pani thay chhe"* (blood turns into water) and *"sharir phikku padi jaay"* (body becomes pale). They advised the pregnant women to consult a medical doctor for treatment of anemia and other health problems. One of the *dais* mentioned that she asked them to increase the consumption of green leafy vegetables and citrus fruits like lemon, *amla* and sweet lime for preventing anemia.

In a study carried out in Malaku Province of Indonesia (Robinson 1998), TBAs were successfully used as conduit for IFA distribution to pregnant women, specifically for increasing the number of tablets consumed and thus, increasing the hemoglobin levels of the women. This clearly calls for the attention of using the TBAs to create awareness among women regarding anemia and its prevention.

The Beneficiary Perspective

- **Enrolment Profile of the Pregnant Women**

Initially, 153 pregnant women were enrolled at or before 20-24 weeks of gestation from the 8 selected slums under the two selected Health Posts of the Vadodara Municipal Corporation. Of the enrolled women, 50 women were followed up till delivery through home visits. The major reasons for the 32 dropouts (out of the total 153) were non-cooperation in giving a blood sample for a second time (37 %), migration to parental homes for delivery (36 %) which is the local custom in the area, medical termination of pregnancy (12 %) and pregnancy complications (9 %) such as miscarriages.

- **Socioeconomic Profile of the Pregnant Women**

The socioeconomic profile of the 153 pregnant women initially enrolled in the study is shown in Table 4.7. About half of the pregnant women (54%) studied were Hindus and a third were Muslims. The percentage of women belonging to nuclear families and joint families was more or less similar. The average family size was 5 members. Almost all the women were housewives (90%) with no home based or gainful occupation. Majority of their husbands had a salaried employment (29%) and were skilled workers (26%). The rest of them were drivers, *larriwallahs*, unskilled workers or self employed.

The total family income per month of majority of the women (60%) ranged from Rs.1000-2500, with 58% of the families having per capita income of Rs.201-500 per month, reflecting their disadvantaged economic status. The literacy status of the husbands was much better than that of their wives, with 90% of the husbands being literate as against 77% of the women. The level of education was also higher in the men, with 57% of the men being educated till secondary school level as against 40% of the women.

Table 4.7 : Socioeconomic Profile of the Pregnant Women (N=153)

Characteristic	n	%
Religion		
▪ Hindu	83	54
▪ Muslim	57	37
▪ Christian	13	9
Family Type		
▪ Nuclear	72	47
▪ Joint	81	53
Family Size		
▪ <4	53	35
▪ 4-7	81	53
▪ >7	19	12
Occupation		
▪ Self		
• Housewife	148	97
• Maidservant and others	5	3
▪ Husband's		
• Service	44	29
• Driver	28	18
• *Lariwala*	17	11
• Skilled worker	39	26
• Semi-skilled worker	5	3
• Unskilled worker	6	4
• Self employed	12	8
• Unemployed	2	1
Total family income per month (Rs.)		
▪ ≤1000	23	15
▪ 1001-2500	91	60
▪ 2501-5000	29	19
▪ ≥5001	10	6
Per capita income per month (Rs.)		
▪ ≤200	13	8
▪ 201-500	88	58
▪ 501-1000	42	28
▪ ≥1001	10	6

Characteristic	n	%
Education		
▪ Self		
• Illiterate	36	23
• I - VII	52	34
• VIII - XII	61	40
• Undergraduate/Graduate	4	3
▪ Husband's		
• Illiterate	15	10
• I - VII	43	28
• VIII - XII	87	57
• Undergraduate/Graduate	8	5
Construction of the house		
▪ Hut	3	2
▪ *Kutcha* house	22	14
▪ Semi-*pucca* house	78	51
▪ *Pucca* house	50	33
Source of drinking water		
▪ Individual tap	46	30
▪ Common tap	72	47
▪ Hand-pump	22	14
▪ Bore-well	13	9
Toilet facilities		
▪ Individual toilet	115	75
▪ Public toilet	6	4
▪ Open defecation	29	19
▪ Sharing with neighbors	3	2
Sanitation of the house and surrounding*		
▪ Poor	33	22
▪ Fair	91	59
▪ Good	29	19

*Appendix 3A (Socioeconomic status pro forma) gives the scoring system.

More than half of the women lived in semi-pucca houses. About a third had individual taps for drinking water but a majority of them (47%) shared a common tap. A high percentage of the women (75%) had individual toilets in their houses. The sanitation in and around the houses was rated on a scale, (as described in Appendix 2A) as Poor, Fair and Good. About 60% of the women fell in the Fair category and 19% in the Good category. The hygiene and sanitation of the environment overall was not very poor despite the fact that they were slum dwellers.

- **Obstetric History of the Pregnant Women**

The obstetric history of randomly selected seventy pregnant women out of the 153 women who were enrolled in the study is given in Table 4.8. The mean age of the women studied was around 23 years ranging from 19-40 years. The age at menarche ranged from as low as 10 to as high as 18 with the mean age at menarche being around 14 years. As this information was based on recall of age it may give only an approximate age at the onset of menarche. The women studied were married at the young age of around 18 years which is similar to data of other studies carried out in Vadodara (Saiyed 1996, Edward Raj 1994). Most of women were mothers by the age of around 21 years.

Almost half (41%) of the women were primiparous, and about the same number had either one or two children. The gap between two pregnancies in a third of these women (32%) was one to two years, indicating a need for creating awareness and providing services for child spacing contraceptive methods.

A very high percentage of women (>90%) reported that they had no past history of low birth weight babies, premature deliveries or still-births. Similar findings were reported by Saiyed (1996) in Vadodara. The investigator could not verify this stated information through written records or case papers with women, nevertheless it indicates, overall, an uneventful obstetric history, though low birth weight is known to be a problem in low income groups.

Table 4.8 : Obstetric History of the Pregnant Women (n=70)

Parameter	n	%
Age of the women (years)		
▪ <21	10	14
▪ 21-25	47	67
▪ >25	13	19
Age at menarche (years)		
▪ <14	39	56
▪ 14-16	26	37
▪ >16	5	7
Age at marriage (years)		
▪ <16	11	16
▪ 16-20	53	76
▪ >20	6	8
Parity		
▪ Primiparous	29	41
▪ One child	22	32
▪ Two children	12	17
▪ More than two children	7	10
Age at the birth of first child (years)		
▪ <19	16	23
▪ 19-22	41	59
▪ >22	13	18
Birth interval		
▪ Primiparous	29	41
▪ <1 year	6	8
▪ 1-2 years	22	32
▪ >2 years	13	19
History of miscarriages		
▪ None	64	91
▪ One	4	6
▪ More than one	2	3
History of premature deliveries		
▪ None	65	93
▪ One	4	6
▪ More than one	1	1
History of still births		
▪ None	66	94
▪ One	4	6
History of low birth weight babies		
▪ None	63	90
▪ One	7	10
History of postpartum hemorrhage		
▪ None	63	90
▪ Severe	6	9
▪ Moderate	1	1

- **Anthropometric Measurements of the Pregnant Women**

As Table 4.9 shows, the mean height of the women studied was 151.36 cm which was similar to that reported by Gopaldas et al (1991) in their evaluation of ICDS in selected districts of tribal and rural Gujarat (mean height: 151.1 cm). The mean weight of the pregnant women at enrolment in this study was 46.58 kg which was comparable to the mean weight of the pregnant women (43.34 kg) in urban Vadodara as reported in another study (Saiyed 1996). Using the cut-off points suggestive of chronic energy deficiency in adults (BMI <18.5) established by the International Dietary Energy Consultative Group (James et al 1991), thirty nine percent of the women had BMI below 18.5, which is a cause for concern and indicates the need to focus on monitoring of weight gain and nutritional counseling in ANC services. This, unfortunately was lacking in the urban ANC setup as seen earlier.

- **Prevalence of Anemia**

Table 4.10 reveals that the percent prevalence of anemia among the women was high at 88 % (Hb < 11 g/dl). The mean hemoglobin level of the subjects was 9.07 g/dl. The prevalence of mild, moderate and severe anemia among the subjects is displayed in Figure 4.1. Unfortunately, despite the nationwide Nutritional Anemia Control Program of the Government of India, anemia has remained depressingly high over the past two decades as several other studies also indicate (Figure 4.2).

The percentage of women having severe anemia (Hb<7 g/dl) was also quite high (11%) and comparable to that reported in a multi-centric study by ICMR (1989) carried out in eleven states of India (12%). The frequency distribution of the hemoglobin levels of the pregnant women is presented in Figure 4.3 which highlights that most women had hemoglobin levels between 9 and 10 g/dl.

- **Health Problems Reported by the Pregnant Women**

The data on health problems during pregnancy were elicited from a random sample of 80 pregnant women stratified by the trimester of pregnancy. The type of health

Table 4.9 : Anthropometric Measurements of the Pregnant Women at Enrolment (N=153)

Measurements	Mean ± SE
Height (cm)	151.439±0.498
Weight (Kg)	45.666±0.634
Body Mass Index (BMI)	19.871±0.239

Table 4.10 : Prevalence of Anemia in the Pregnant Women at Enrolment (N=153)

Severity of Anemia	n	%
Mild[1]	33	22
Moderate[2]	84	55
Severe[3]	17	11
Overall anemia prevalence	134	88
Normal[4]	19	12

[1] Mild anemia : Hb - 10.00 to 10.9 g/dl
[2] Moderate anemia : Hb - 7.00 to 9.9 g/dl
[3] Severe anemia : Hb - < 7.00 g/dl
[4] Normal : Hb - ≥ 11.00 g/dl

Figure 4.1 : Prevalence of Anemia Among the Pregnant Women (N=153)

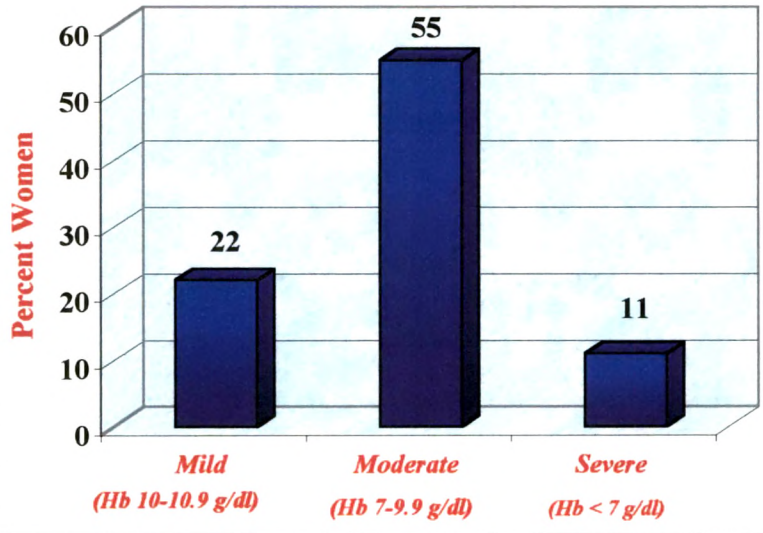


Figure 4.2 : Prevalence of Anemia in Pregnant Women in the Present Study As Compared With Other Studies

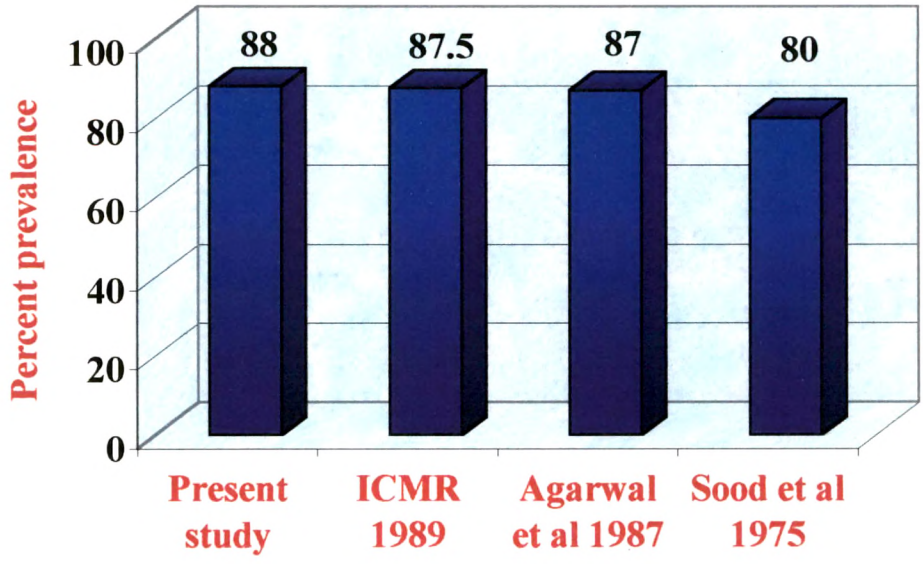
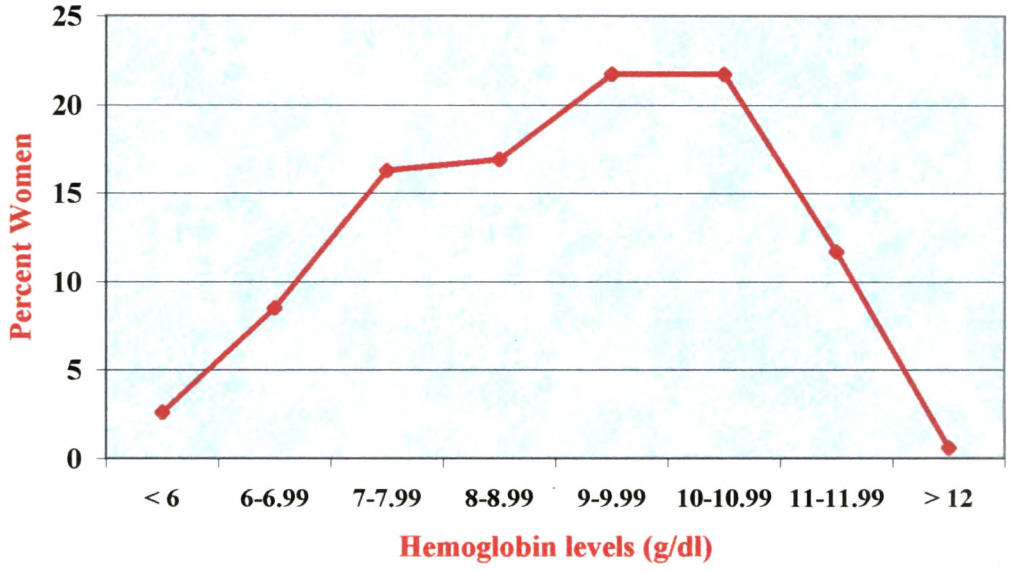


Figure 4.3 : Frequency Distribution of Hemoglobin Levels of the Pregnant Women (N=153)



problem experienced by the pregnant women during the different trimesters of pregnancy has been given in Table 4.11. Majority of the women (41%-66%) reported that they suffered from symptoms such as vomiting, nausea, giddiness and increased frequency of micturition. Nearly one-fourth of the women said that they experienced burning during micturition, pain in abdomen, loss of appetite, acidity and headache as mentioned in the table. Only a small percentage of women suffered from infectious diseases such as malaria (6%) and fever (11%). It was found that women experienced these health problems mainly in the first and second trimester, the frequency decreased with gestational age. Similar findings have been reported in a number of other studies in urban Vadodara (Sharma 1996, Saiyed 1996, Edward Raj 1994).

Table 4.11 also shows the percentage of women taking treatment for the respective morbidity. Majority of the women (68%-100%) took prompt treatment for infectious morbidities, i.e. fever and malaria but the incidence of these diseases was less. However, only a few women took treatment for most of other illnesses suffered, probably because they considered these to be part of pregnancy related problems. The major source of treatment was private hospitals/clinics situated nearby, in the vicinity of the slum areas where the women lived.

- **Frequency of Consumption of Iron and Vitamin C Rich Foods**

From the food frequency method described earlier, the frequency of consumption of iron, vitamin C and protein rich foods by the pregnant women was obtained.

The frequency of consumption of iron, vitamin C and protein rich foods as reported by the women varied considerably as shown in Table 4.12. Nearly one-fourth of the women (15-23%) consumed steamed Bengal gram (*bafela chana*) and moth beans once to thrice a week. Majority of the women (49%) reported that they consumed fenugreek leaves two or three times a week in season (winter). The consumption of other green leafy vegetables such as *shepu*, mint and spinach either once, twice or thrice a week was reported by some of the women (14% to 28%).

Table 4.11 : Health Problems Experienced by the Pregnant Women (n = 80)

Sr. No.	Type of Health Problem	Women Experiencing the Health Problem		Gestational Age At Which Experienced								Women Taking Treatment	
				Tri-mester I		Tri-mester II		Tri-mester III		All Tri-mesters			
		n	%	n	%	n	%	n	%	n	%	n	%
1.	Vomiting and nausea	53	66	34	64	14	26	1	2	4	8	20	38
2.	Giddiness	53	41	15	44	9	26	5	15	5	15	11	32
3.	Burning micturition	13	16	3	23	5	38	4	31	1	8	2	15
4.	Increased frequency of micturition	40	50	10	25	10	25	12	30	8	20	8	20
5.	Pain in abdomen	21	26	6	29	9	43	3	14	3	14	8	38
6.	Perverted appetite	9	11	5	56	-	-	2	22	2	22	-	-
7.	Loss of appetite	16	20	6	37	4	25	3	19	3	19	4	25
8.	Acidity	22	28	2	9	7	32	9	41	4	18	6	27
9.	Headache	16	20	6	38	4	25	4	25	2	12	3	19
10.	Leucorrhea	27	34	4	15	7	26	12	44	4	15	4	15
11.	Backache	23	29	3	13	9	39	8	35	3	13	5	22
12.	Cramps in lower limbs	15	19	4	27	3	19	4	27	4	27	3	20
13.	Fever	9	11	3	33	4	45	2	22	-	-	6	68
14.	Malaria	5	6	1	20	4	80	-	-	-	-	5	100

Table 4.12 : Frequency of Consumption of Selected Protein, Iron and Vitamin C rich foods by the Pregnant Women (n=80)

Sr No	Food Items	Local Term	Percent Responses				
			5-7 times a week	2-3+ Times a Week	Weekly	Fort-nightly	Monthly
I	**Pulses**						
1	Steamed Bengal gram	*Bafela chana*	-	19	20	10	4
2	Cowpeas	*Chola*	3	11	9	5	11
3	Lentil	*Masoor*	-	8	6	4	6
4	Dry peas	*Suka vatana*	-	8	19	10	11
5	Moth beans	*Math*	-	15	23	9	8
II	**Green Leafy Vegetables**						
1	Colocasia leaves	*Pattarveli na pan*	-	8	8	13	16
2	Fenugreek leaves	*Methi ni bhaji*	8	49	20	9	6
3	Mint	*Phudino*	15	18	9	3	-
4	*Shepu*	*Suva ni bhaji*	5	28	14	10	5
5	Spinach	*Palak*	6	19	6	3	
III	**Fruits**						
1	Tomato	*Tamatar*	84	6	5	-	-
2	Indian goose berry	*Amla*	13	11	10	4	3
3	Orange	*Santra*	9	11	25	8	8
4	Guava	*Jamphal*	10	18	18	15	8
5	Watermelon	*Tadbuj*	10	15	19	9	4
6	Lemon	*Limbu*	30	19	13	8	-
IV	**Other Foods**						
1	Jaggery	*Gol*	11	9	8	5	8
2	*Bajra*	*Bajri*	19	15	13	5	6

There was a wide variation in consumption of vitamin C rich fruits as well. A high percentage of women (84%) reported that they consumed tomatoes daily. Some of the women (9% - 30%) consumed fruits like oranges, watermelon, guava, Indian gooseberries and lemon either daily, once a week or two to three times a week. The consumption of other foods such as *bajra* and jaggery was less as reported by the women. Majority of the women (73%) were non-vegetarians; however, the intake of heme iron through animal foods was negligible. The women consumed animal foods only once a month or only on some festive occasions, probably because of the high cost.

The food intake data suggest that the frequency of intake of iron and vitamin C rich foods varies considerably.

In view of the availability of iron and vitamin C rich foods and few food taboos during pregnancy, it is likely that a well implemented NHE program will help encourage women to improve their diet.

- **Free Lists and Seasonality Diagrams With Pregnant and Lactating Women**

As described earlier, two free listing exercises followed by seasonality diagramming exercises were conducted with two groups of pregnant and lactating women to determine cultural perceptions regarding "the foods which increase the strength of blood" and to get information regarding seasonal availability and consumption of these foods. A wide variety of about 20 foods were mentioned in the free lists (Table 4.13).

One woman mentioned that normally during pregnancy women liked to consume sour foods; however, she felt that they were not useful to make their blood red and healthy. Another woman felt that they should take a doctor's advice regarding diet during pregnancy; her doctor had asked her to eat everything except 'papaya', which might lead to miscarriage. Some varied responses of the women in their own words:

> *"Suvavad vakhate ke pachhi, Jamphal khavathi baalak ne pet maa dukhe chhe"*

Table 4.13 : Lists of Foods Obtained Through the Free Listing Exercise - Foods Which Make Blood Red and Healthy

Group 1		**Group 2**	
Milk	Watermelon	Milk	Apple
Jaggery	Apple	*Khichadi*	Sweet lime
Wheat porridge	Eggs	Maize flour *rotla*	
Khichadi	Mutton	Wheat flour *rotla*	
Rotla	Fish	Rice	
Spinach		Potato	
Fenugreek		Brinjal	
Amaranth		*Tinda*	
Shepu		Spinach	
Onion		Green gram	
Potato		Bengal gram	
Brinjal		Lentils	
Tomato		Sprouted legumes	
Bengal gram		Grapes	
Green gram		Sapota	

(During pregnancy or lactation if guava is consumed, the baby will have stomachache).
"Chana unala ma garam pade chhe"
(Bengal gram is "hot" especially in summer).

The data obtained for the Seasonality Diagramming method are shown in Table 4.14, which include foods which were commonly stated by both groups of women and were frequently mentioned. It can be noted that various foods unrelated to sources of iron and vitamin C were stated including all the food groups such as the staples, pulses, milk, fruits and vegetables. Green leafy vegetables and a few sour fruits also found a place in the list and it is evident that women were not aware of the specific foods required to increase the strength and redness of blood (i.e. iron and vitamin C rich foods). A few women did mention animal foods which are sources of heme iron.

It is evident from the table that the women felt that their daily staple diet which consisted of *rotla* (unleavened bread), *khichadi* (rice and red gram dal preparation) and potatoes and onions made their blood red and healthy. Milk, though available throughout the year, was consumed only in tea and none of them drank milk as such. Onions and potatoes were available over the year and consumed daily. Brinjal was consumed mostly during winters as it was considered 'hot'. Also brinjals were expensive during summers due to the marriage season, according to the women. Tomatoes, though costly were liked by all and used in *dal* preparations. Apples were very expensive hence consumed only in winters as the women thought that they were good for health. This participatory exercise clearly revealed that awareness was lacking regarding the specific foods rich in iron or vitamin C, which are seasonally available. The foods though available were consumed by the women only if they were economically affordable, and generally, food taboos during pregnancy were few.

Quite surprisingly, there were very few food taboos and only a few foods such as papaya, Bengal gram and guava were avoided. In contrast, a study by the SEWA team (1994) on beliefs and behavior regarding diet during pregnancy in rural Gujarat revealed several foods which were avoided by pregnant women. They included cold

Table 4.14 : Seasonal Availability and Consumption of Foods by the Subjects

FOOD ITEM	WINTER	MONSOON	SUMMER
Milk	***	***	***
Khichadi (Rice + Red Gram *dal*)	***	***	***
Rotla	***	***	***
Green gram	***	*	**
Spinach	***	**	**
Brinjal	***	**	*
Potato	***	***	***
Onion	***	***	***
Tomato	***	***	***
Apple	***	*	*

KEY : *** most available/consumed
** less available/consumed
* least available/consumed

and sour foods such as curd, milk and banana which were believed to cause "cold labor pains", and hot foods like fish, meat, and eggs - believed to cause pus formation and miscarriage. Certain foods such as curd, milk, buttermilk and groundnuts were believed to "make the baby stick to the womb" and hence avoided.

Perceptions of Pregnant Women and Their Family Members

- **Perceptions of the Pregnant Women regarding ANC services through Focus Group Discussions**

Three focus group discussions (FGDs) were conducted with groups of 8 to 10 pregnant women each to gain information regarding their perceptions of common health problems during pregnancy, anemia and iron supplementation, their awareness of various antenatal care services, and changes in their diet and work pattern during pregnancy.

The common health problems during pregnancy mentioned by the women were nausea, vomiting, stomachache, backache, giddiness, tiredness and weakness. Most of the women did not take any medical treatment to get relief from these symptoms as they thought them to be a normal occurrence during their pregnancies.

While talking about their knowledge of antenatal care services, it was found that all the women were aware about TT vaccination as it was done at the MCH clinic and even at the ICDS *Anganwadi* center. The women who visited the health center run by an NGO, recalled services such as physical examination, blood testing, and weight monitoring. They also received medicines at the center.

When discussing about the diet during pregnancy, the women came to a consensus that they should eat all types of foods during pregnancy, and increase the quantity and frequency of food consumption. One woman said that curd and buttermilk should be avoided during pregnancy as according to her, these food items caused edema of the body. Another woman said that she avoided eating papaya and guava due to cultural beliefs.

None of the women had heard of "*pandurog*" - the Gujarati term for anemia. However, they talked of certain terms and symptoms which were associated with "*ochhu lohi*" or less blood. These consisted of "*kamjori/ashakti*" (weakness), "*phikkash*" (paleness), breathlessness, "*bhookh nathi laagti*" (loss of appetite). As one woman said "*lohi nu paani thai jay chhe*" (blood turns into water). They also mentioned that they were not able to do their household work properly due to these symptoms. One woman stated that weakness caused anemia. As she said "*kamjori hoti hai jab khoon kam hota hai*" (one feels weak when the blood volume decreases).

In the present study, none of the women had heard of the term *pandurog* (anemia), but many women reported *kamjori* (weakness) and *phikkash* (paleness) as common signs and symptoms. This was also a case in a study conducted in rural Tamil Nadu (Rajaratnam et al 1998). The women gave varied responses regarding the causes of anemia and associated symptoms, although many of them did not have knowledge about the etiology of anemia. The common response regarding the cause of anemia in three studies in India was poor dietary intake, primarily related to the quality of diet (Raina et al 1998, Rajaratnam et al 1998, Stephen 1998).

In the present study, giddiness, tiredness and weakness were among the common health problems during pregnancy mentioned by the women, and most of them did not take any medical treatment to get relief from these symptoms as they were perceived to be part of a normal pregnancy. In Tamil Nadu also, most women stated that they did not seek help when they felt weak or tired during pregnancy as they assumed it as a routine occurrence (Rajaratnam et al 1998).

When asked about the difference between an anemic and a normal pregnant woman, the women answered that an anemic woman looks pale, feels restless, giddy, cannot do her work, is disinterested in her environment, and gives birth to a weak child. According to them a normal pregnant woman is the one who looks nice and healthy with a red face and body, and gives birth to a healthy baby.

Many of the pregnant women had heard of iron tablets and some of them were consuming iron tablets procured from ICDS *Anganwadis* and health centers run by an NGO. They said that the advice given to them was to consume one tablet daily after food by which they would get strength (*shakti*). The women referred to the iron tablets as "*shakti ni lal goli*" (red strength giving tablet).

The benefits of iron tablet consumption as experienced by the women included a feeling of well being (*saru lage*), feeling hungry (*bhookh lage*), getting strength (*sharir mein shakti*), and improvement in the quality of blood (*lohi no sudharo thay*). The women also mentioned that the tablets gave them energy because of which they could eat well and do their work. Very few women complained of uneasiness, vomiting and black colored stools due to tablet consumption. All of them agreed that iron tablet consumption did have beneficial effect on their health.

Most of the women who participated in the discussion stated that there was no change in the amount of work that they did in the usual routine. Only a few of them (n=3) felt tired after doing their household work.

- **Perceptions of Pregnant Women and Their Family Members Regarding Antenatal Care Services As Assessed Through Semi-structured Interviews**

The awareness of the antenatal care services and anemia was assessed through semi-structured interviews of 40 pregnant women, and one family member, either mother-in-law or husband, of each of these 40 women. Table 4.15 sums up the major findings of these interviews.

- **Registration for antenatal care**

A majority of these women (n=36) had registered in health facilities such as government and private hospitals in their areas and their family members were aware of it. Only 4 of them had not registered as they were in first and second trimester of pregnancy and felt that it was too early to register, and were supported by their family

Table 4.15 : Perceptions of Pregnant Women and Their Family Members Regarding Antenatal Care Services

Major Responses	Pregnant Women (N=40)		Family Members (N=40)	
	n	%	n	%
• Registration for antenatal care				
Yes	36	90	36	90
No	4	10	4	10
• Accompanied for the ANC to the hospital				
Yes	34	94.4	33	91.7
No	2	5.6	3	8.3
• Accompanied by				
Husband	23	67.6	23	69.7
Mother-in-law/Sister-in-law	8	23.5	6	18.2
Mother	2	5.9	3	9.1
Neighbor	1	3.0	1	3.0
• Awareness of available services				
Receive iron tablets	17	43	20	50
Weight monitoring	26	65	18	45
Tetanus toxoid immunization	18	45	17	43
Physical examination by doctor	20	50	10	25
• Services actually received				
Received iron tablets	18	45	19	48
Weight monitoring	18	45	12	30
Tetanus toxoid immunization	16	40	12	30
Physical examination by doctor	15	38	2	5
• Importance of the various antenatal care services as perceived by respondents				
* Weight monitoring				
Know whether baby is developing	14	35	22	55
* Antenatal check-up by doctor				
# Know delivery time and for safe delivery	17	43	19	48
# Can assess health and development of the child	12	30	14	35
# To know if blood is less, then iron tablets can be prescribed	4	10	-	-
* Iron folic acid supplementation				
# Increases appetite	24	60	14	35
# Increases strength	22	55	18	45
# Can work more	10	25	5	12.5
# Improves the quality of blood	5	12.5	-	-

Major Responses	Pregnant Women (N=40)		Family Members (N=40)	
	n	%	n	%
* Vaccination against tetanus toxoid				
# Prevents tetanus	33	83	32	80
* Nutrition Health Education				
#Receive information regarding foods to be consumed during delivery	11	28	-	-
#Improves health	5	13	6	15
#Receive information regarding iron tablets which increases food intake, gives more strength and child weight also increases	5	13	-	-
# Improves diet	-	-	7	18
• Currently consuming iron tablets				
Yes	35	88	38	95
No	5	12	2	5
• Needs reminder to consume IFA tablets				
Yes	6	17	13	34
No	29	83	25	66
• Reminded by				
Husband	3	50	5	38
Mother-in-law	2	33	7	54
Children	1	17	1	8
• Special dietary care to be taken by pregnant women				
Eat everything	29	73	15	38
Eat foods such as *bajra*, green leafy vegetables, fish, mutton	30	75	21	53
Eat foods like tomatoes, guavas, *amla*	14	35	9	23
• Work performance during pregnancy				
Works more	8	20	9	22
Works less	12	30	9	22
Same as before	16	40	22	56
Same but works slowly	4	10	-	-
• Registration for delivery				
Government hospital	14	35	17	43
Private hospital	15	38	14	35

members in this regard. Some of their family members were unaware of the month of pregnancy in which the women had registered.

- **Visits for antenatal care**

There were differences in the number of visits to the antenatal care clinics during pregnancy as reported by the pregnant women and their family members, with the family members reporting a higher number of antenatal visits. The pregnant women reported that they had gone for antenatal check-up once (n=9), twice (n=13) or thrice (n=7) whereas their family members reported that the women went once (n=9), twice (n=7) or thrice (n=11). Many of the women (n=23) said that they were accompanied by their husbands for the antenatal check-ups and a few (n=4) were accompanied by their mothers-in-law or sisters-in-law. Family members' responses were similar. However, at the time of exit interviews with women held on clinic days, it was observed that most of the pregnant women had come to the clinic alone for the sole purpose of child immunization.

- **Awareness of ANC services**

The awareness of the pregnant women regarding the different ANC services was related to the actual services received by the women during their visits to the antenatal clinics. Interestingly, a higher percentage of family members were aware of the ANC services as compared to the women. The awareness of services such as weight monitoring, iron supplements, vaccination against tetanus and physical checkup was found to be higher (43-65%) as compared to services such as nutrition-health education, including dietary advice (2-3%) among the women. Women who had received TT injections were aware of immunization during pregnancy as a routine part of the ANC services.

- **Services perceived useful**

All ANC services were perceived to be useful by the women and their family members; but about half of them could not elaborate on the reason. Most of the others felt that antenatal checkup by the doctor helped to know the date of delivery and to ensure safe

delivery. About a third mentioned that the checkup helped to assess the health and development of the child.

Weight monitoring of women was stated as useful to know the development of the fetus or the health of the women. It was noticed that very few pregnant women reported that antenatal care services can help to assess 'whether blood in the body is sufficient', so that if required, iron tablets can be prescribed by the doctor.

The purpose of vaccination against tetanus toxoid to prevent tetanus in the pregnant women and the child was known to a majority of the pregnant women (83%) and their family members (80%), which is not surprising given that mother and child immunization is a major focus of MCH programs.

The awareness of the purpose of NHE was low in the pregnant women and even lower in their family members perhaps because it is a very infrequently given service. A few women mentioned that NHE is important to receive information regarding foods to be consumed during pregnancy (28%), to improve health (13%) and to receive information regarding importance of iron supplementation (13%). More than 80% of the family members could not respond when asked regarding NHE.

- **Importance of Iron Supplementation**

The importance of iron supplementation was stated in terms of increasing appetite : the awareness was higher in the pregnant women (60%) as compared to their family members (35%). As majority of the women said -

> *"Shakti ni goli bhookh lagva mate upyogi chhe"*
> (Strength giving tablets are useful to increase appetite).
>
> *"Lal goli levathi khorak saro levay, tenathi aapnu ane aapna balaknu vajan vadhe"*
> (By taking red tablets food intake increases because of which ours and our child's weight increases).

Also, a higher number of pregnant women were aware of the other benefits of iron supplementation such as increase in strength, increase in working capacity and

improvement or increase in the blood; as compared to the family members. These responses regarding the importance of the iron supplementation were associated with the actual benefits experienced by the women on consuming the iron tablets. As mentioned by them in their own words -

> *"Lal shakti ni goli niyamit levathi, vajan vadhe ne sharir saroo rahe. Lohi pan vadhe"*
> (By consuming red strength giving tablets regularly, weight increases and body remains good, the blood also increases).

Only a few of the women and their family members stated that consumption of iron tablets reduces the symptoms of anemia such as pallor and giddiness, and increases the work efficiency by increasing the strength in the body.

- **Compliance with Iron Supplementation**

A high percentage of pregnant women (88%) and family members (95%) reported that they consumed iron tablets procured mainly from ICDS *Anganwadis*, private hospitals or government hospitals, and only infrequently procured from the Family Welfare Centers. Some women said that they needed to be reminded to consume the iron tablets (n=6) but 12 of the family members said that the pregnant women needed a reminder for IFA consumption. Women were either reminded by their husbands, mother-in-law or children to consume the iron tablets.

- **Special dietary care during pregnancy**

Three-fourth of the pregnant women interviewed reported that they ate everything during pregnancy including foods rich in iron such as *bajra*, green leafy vegetables, fish and mutton. A third of the women included vitamin C rich foods such as tomatoes, *amla* (Indian gooseberry) and guavas. The awareness of the family members regarding importance of intake of iron and vitamin C rich food was less as compared to that in the pregnant women. One mother-in-law mentioned that because a *"dora"* (a sacred thread) was given by a faith healer to her daughter-in-law, she was supposed to avoid foods such as *bajra*, jaggery and brinjal. One mother-in-law did not allow her daughter-in-law to consume "Urad dal" or "Urad" (black gram *dal* or whole black gram) since it is sticky because of which she believed that the fetus might get covered

with a sticky substance. It is clear that nutrition-health education needs to be imparted not only to the pregnant women but also to their family members. Further, the earlier participatory research methods suggested that in practice, intake of iron or vitamin C rich foods was less than that stated in the interviews.

Majority of the women (40%) reported that they worked as they did household work as they did earlier which was supported by their family members (56%). About one-fourth of the women, however were able to do less work than before.

- **Registration for delivery**

Majority of the women (73%-78%) had registered for delivery at government hospitals or at private hospitals. Only two mentioned of home delivery. The remaining had not decided the place of delivery since they thought it was too early to register as they were in the first trimester of pregnancy.

- **Suggestions for improving ANC services**

Nearly half of women and the family members did not give any suggestion regarding the improvement of ANC services. The important suggestions given by some of them are mentioned below in order of frequency of responses :

- Vehicle facility to and from the health post to the slum area for antenatal check-up and to take the women to government hospitals at the time of delivery
- Home visits by the doctors in the community
- NHE to be given during the home visits by the ANMs and the doctors
- Other medicines for common illnesses such as fever, cold to be provided at the health posts and ICDS *Anganwadis*.

One interesting suggestion was that meetings should be organized with participation of pregnant and lactating women wherein the lactating women could share their experiences with the pregnant women.

In this study, the awareness of ANC services was found to be related to the actual services received by the women during their visit to the hospital/health center. These

services included weight monitoring, IFA supplementation, TT immunization and physical checkup. Compared to their family members, the pregnant women were better aware of these services and their benefits. The family members (husband/mother-in-law) also played a definite role in supporting the women to seek care during pregnancy. It has been reviewed by FCI/SMIAG (1998a) that in many developing countries, family members often take decisions regarding women's access to health services. In Nepal, mothers-in-law attended most deliveries, and additional care or help was sought only if the mother-in-law decided that such care was needed. In one study, it was found that 75% of mothers-in-law did not believe that antenatal checkup was necessary. A study in Nigeria found that in almost all cases, a husband's permission was required for a woman to seek health services, including life-saving care.

- **Behaviors of Pregnant Women Regarding Procurement and Consumption of Iron Supplements**

In a sister study carried out in the Department of Foods and Nutrition, behaviors of 36 pregnant women regarding procurement and consumption of iron supplements were assessed through open-ended interviews (Kanani and Patel 1998). The major highlights of their behavior as reported were:

- About two-thirds of the women started consuming iron supplements from the fifth month of pregnancy.
- Most of them procured iron supplements from the ICDS *Anganwadi* worker in their areas. However, a few of them (17%) received iron from the *Anganwadi* worker as well as doctors working in government and private hospitals.
- With regard to the place of procurement, the women received iron supplements at the *Anganwadi* center or through the *Anganwadi* worker's home visits.
- As regards information given to the women at the time of receiving supplements, nearly two-thirds of the women said that they received information from and the *Anganwadi* worker who told them that the tablets would give them strength, improve and increase their blood and help them improve their appetite.

- With respect to consumption of iron supplements, 86% of the women consumed them regularly. Women who consumed tablets and experienced benefits tended to be more interested in procuring them regularly. As one woman mentioned:

  "Goli levathi ane khavathi lohi no sudharo ane vadharo thay ane lohi ochhu na thay"

  (By procuring and consuming (these) tablets, our blood improves and increases and we don't have less blood (in our body)).

- The benefits of consuming iron supplements as mentioned by the women in order of decreasing frequency were:
  - Tablets give strength *("shakti aape")*
  - We can consume food regularly *("khorak levay chhe")*
  - Body remains healthy *("sharir tandurust rahe chhe")*
  - Blood improves *("lohi na sudharo thay")*
  - It increases blood in the body *("sharir ma lohi vadhe")*
  - Feel like doing household work *("kam karvanu man thay chhe")*
  - One does not feel weak *("kamjori jevu na lage")*
  - Fetus grows properly *("balak ni vrudhhi thay")*

About three-fourths of the women (72%) mentioned that they needed to be reminded to consume iron supplements by their family members such as husband and mother-in-law. In this study, many of the women interviewed had received IFA tablets during their ANC visit. The women who were consuming iron tablets described a feeling of well being *(saru lage)*, feeling hungry *(bhookh lage)*, and improvement in the quality of blood *(lohi no sudharo thay)*. The women also mentioned that the tablets gave them energy, because of which they could eat well and do their work. In a study in Haryana by Raina et al (1998), women who spoke positively about the IFA tablets noted that they gave strength *(takat deti hai)*, made blood *(khoon banati hai)*, made one feel well *(theek lagta hai)*, and helped deliver a healthy baby *(bachha sehatmand paida hota hai)*.

- **Ethnographic Decision Models for Understanding Household Level Behaviors of Pregnant Women Related to Procurement and Consumption of IFA Supplements**

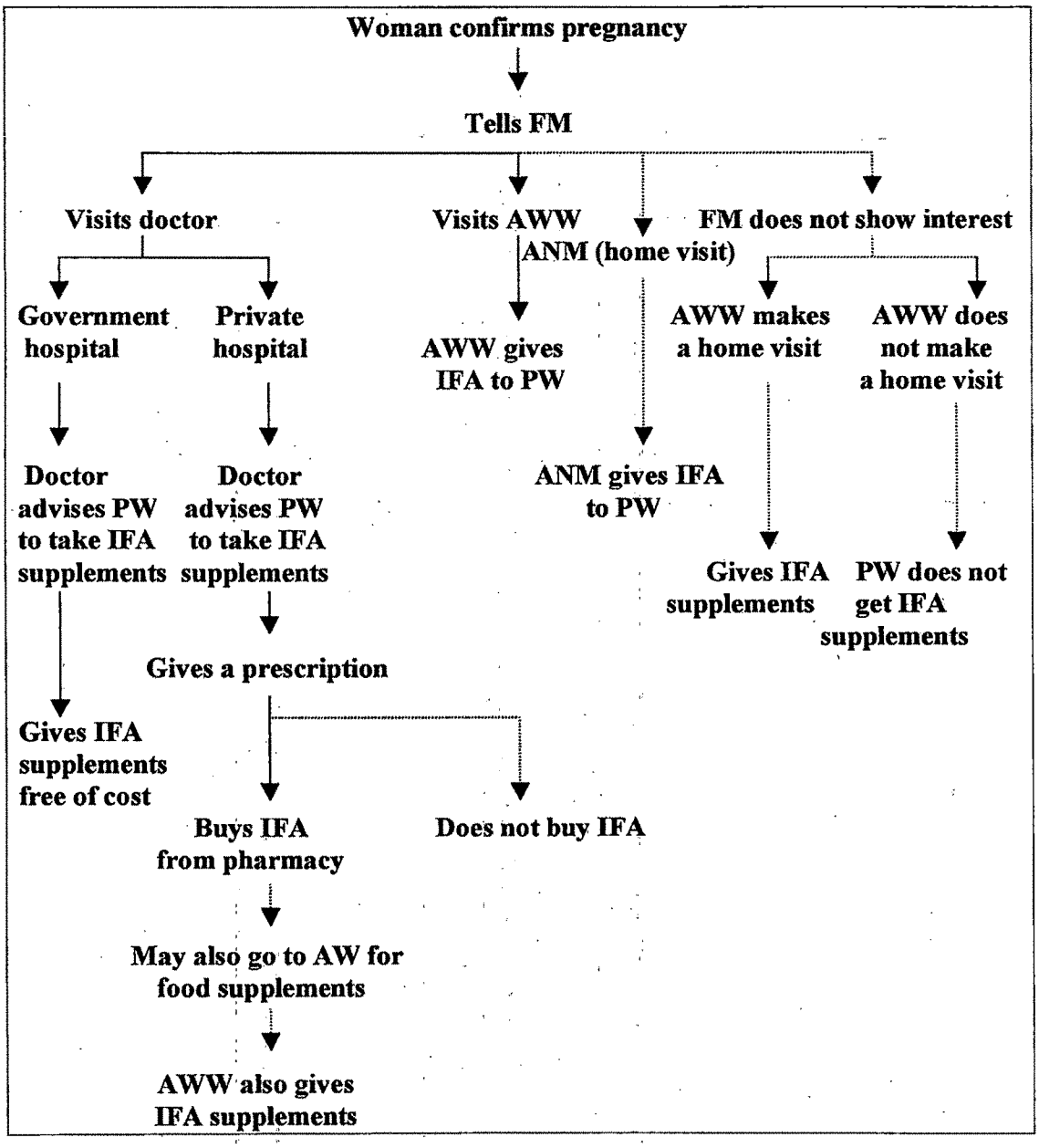
Ethnographic Decision Models (EDMs) are qualitative, causal pathways that predict what kinds of choices people will make under specific circumstances. EDMs diagrammatically display the sequential pattern of people's decision making behaviors based on research data obtained from qualitative, open-ended research tools (Based on Bernard 1995).

Based on the qualitative data obtained in this study and the sister study (Kanani and Patel 1998), EDMs were developed to understand the pathway which the pregnant women took from the time of **procurement** of iron supplements to their **consumption**. The procurement and compliance related behaviors of the pregnant women are depicted through EDMs in Figures 4.4 and 4.5.

- **Procurement Related Behaviors of Pregnant Women**

The EDM given in Figure 4.4 sums up the pathway taken by the pregnant women to procure IFA supplements from various sources. As a woman confirms her pregnancy, she tells about it to a family member - either her husband or her mother-in-law. Sometimes the family members take her to a government/private hospital or an *Anganwadi* center, or they do not show any interest; the latter happens rarely. At the government hospital and at the *Anganwadi*, iron supplements in the form of iron-folic acid (IFA) tablets are provided free of cost to the woman. At a private hospital, the doctor who examines her usually writes a prescription for iron supplements which the woman may buy from the local pharmacy or does not buy. The pregnant women who go to the *Anganwadi* for supplementary food may also receive IFA tablets or women can get the tablets when the *Anganwadi* worker makes a home visit. The women may also receive IFA tablets from the Vadodara Municipal Corporation's ANMs (Auxiliary Nurse Midwives or multipurpose female workers) when they visit the slum areas or at the maternal and child health (MCH) clinics conducted by the Corporation's Health Posts every week.

Figure 4.4 : Procurement of IFA Supplements - An Ethnographic Decision Model



Frequent responses
Infrequent responses

FM : Family Member (s)
IFA : Iron-folic acid supplements
PW : Pregnant Woman
AW : ICDS *Anganwadi*
AWW : *Anganwadi Worker*
ANM : Auxiliary Nurse Midwife

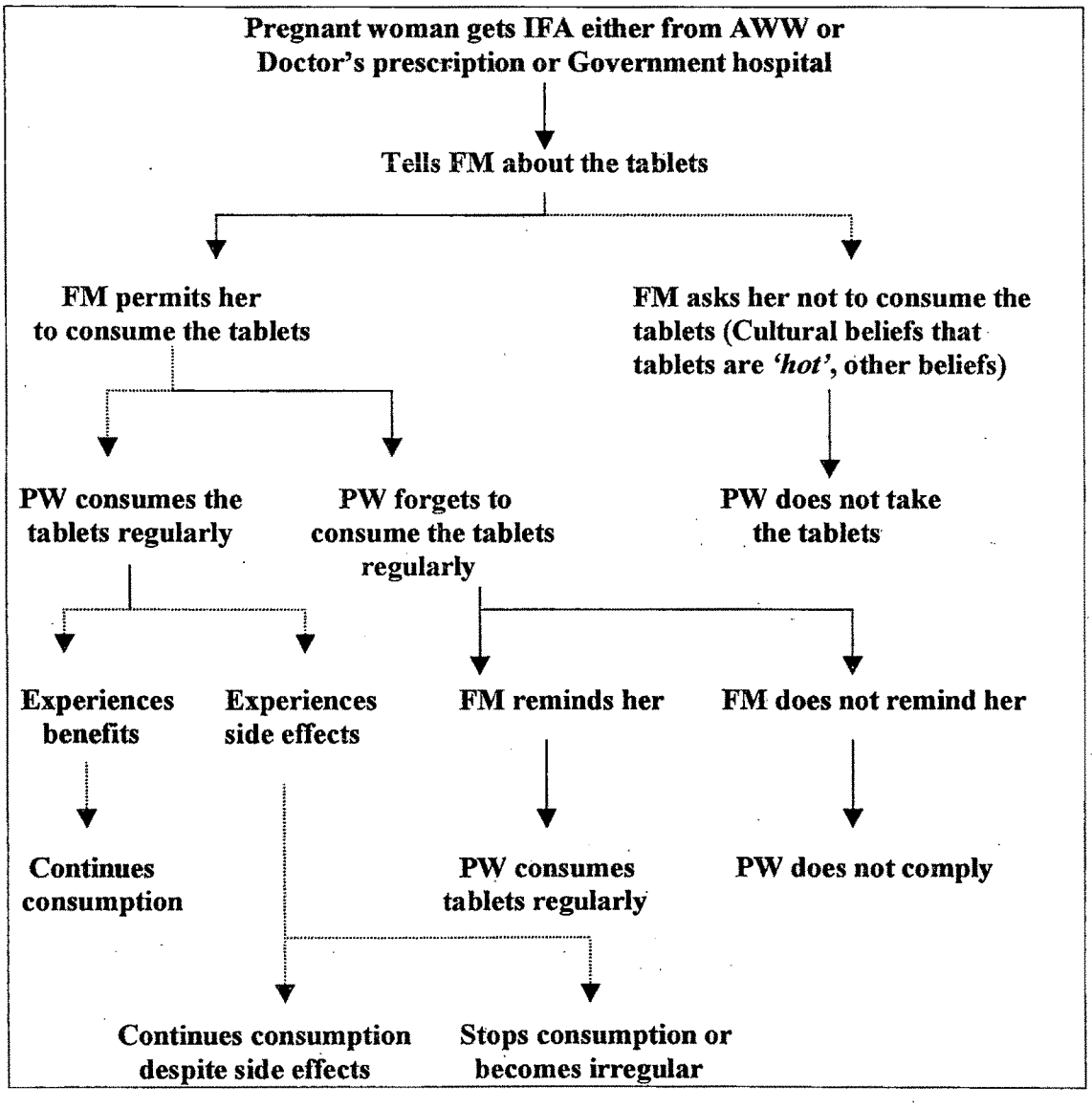
As mentioned earlier, in this study, though all the women had access to free of cost iron supplements, some women received them from government health facilities or purchased them from pharmacies as prescribed to them by private medical practitioners. Some women received iron supplements from multiple sources such as ICDS *Anganwadis*, government hospitals, and they also purchased them from pharmacies, thus often receiving many more tablets than the minimum dose of 100.

- **Compliance Related Behaviors of Pregnant Women**

The qualitative data revealed certain household level factors influencing consumption of iron supplements by pregnant women which is depicted the form of an EDM (Figure 4.5). As seen in the EDM, when a pregnant woman procures iron supplements from the sources mentioned above, her family members play a major role in permitting or supporting her to consume them. It is more common for the family members not to have any objection to the woman consuming the tablets. In a few cases, a mother-in-law might pressurize a woman not to take the supplements due to cultural beliefs such as the tablets are 'hot' and may cause miscarriage, and as a result, the woman never takes the tablets. It is frequently observed that the pregnant women who often forget to take the tablets regularly, and may stop consuming them altogether if there is no one to encourage them at home. If a woman is self motivated to consume the tablets regularly, she may experience benefits or side effects, which would ultimately make her decide whether to continue or discontinue taking the tablets. Experience of benefits motivates the women to continue with the iron supplementation.

The data of this section as well as other studies in literature highlight the need for conducting a comprehensive situational analysis of a program within a health system including perceptions of health service providers and their clients so that relevant corrective measures can be taken to improve the quality of implementation of the program.

Figure 4.5 : Consumption of IFA Supplements - An Ethnographic Decision Model



Frequent Responses
Infrequent Responses

PW : Pregnant Woman
FM : Family Member (s)
AWW : *Anganwadi Worker*

SECTION II
PHASE B

IMPROVING THE HEALTH SYSTEM FOR BETTER QUALITY OF IMPLEMENTATION OF NUTRITION RELATED ANTENATAL CARE SERVICES IN URBAN VADODARA

The **overall objective** of this phase of the study was 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.

The situational analysis carried out in Phase A brought to light several lacunae in the health system. Table 4.16 summarizes the drawbacks observed in the health system and the interventions planned to address them.

The low priority given to the antenatal care package of services, in particular, the nutrition related antenatal care services including the anemia control program, was reflected in the inadequacy of training of health functionaries, lack of clarity in job functions, irregular supply of IFA tablets, lack of an effective distribution system for IFA tablets, virtually absent IEC and counseling activities and absence of monitoring the nutrition service activities except for recording number of women given IFA tablets and weight of women visiting the MCH clinics for antenatal checkup.

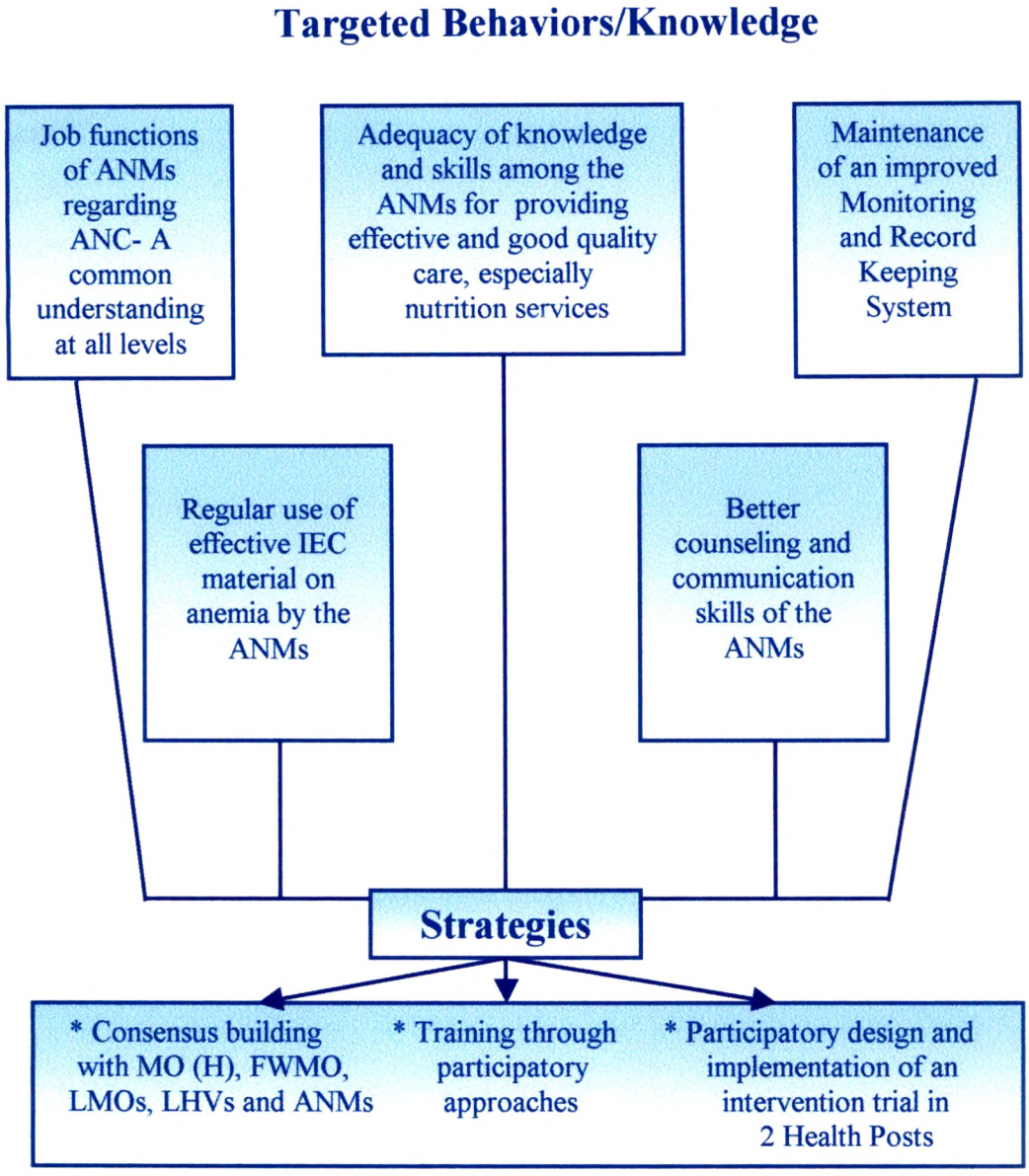
The data obtained in the situational analysis helped to facilitate and initiate changes in the health system, which were based on the principle of behavior change as illustrated in Figure 4.6. Each box in this figure indicates a specific behavior or knowledge area which was attempted to change in a positive direction. The targeted behaviors of the Health Service Providers included :

- a common understanding of job functions of ANMs with regard to the antenatal care services at all levels
- their knowledge and skills for providing these services
- an improved monitoring system for ANC service provision

Table 4.16 : Lacunae in the Health System and Interventions Implemented to Address Them

Lacunae in the Health System	Interventions Implemented
• Lack of clarity regarding job functions for ANC at all levels	▪ Formulation and dissemination of specific job functions by the health authorities to the health functionaries
• Low priority accorded to ANC services in the government health system	▪ Training to increase awareness and to highlight the importance of nutrition related ANC services along with the other ANC services for pregnant women ▪ Intensified monitoring of ANC services by senior health officials
• Virtually absent supervision and lack of monitoring of the nutrition care services	▪ Changes in the workload of supervisors by health officials to enable better supervision ▪ Simple modification of the ANC and Home Visit registers to incorporate data on nutrition counseling, and distribution as well as consumption of IFA tablets by the pregnant women
• Unplanned distribution of iron supplements and infrequent home visits by the functionaries	▪ Streamlining the distribution system: a combination of clinic and home based approach. Minimum 3 visits and 100 IFA tablets to each pregnant woman were emphasized
• Absence of IEC material on nutrition services in the government health system	▪ Production of IEC material on nutrition services, especially pregnancy anemia ▪ Training of ANMs and their supervisors in counseling skills ▪ Incorporation of the use of IEC material in the routine job functions of the ANMs

Figure 4.6 : Strengthening Capacity of Health Workers Based on the Principle of Behavior Change



- more frequent and effective use of IEC material by the ANMs on ANC services, particularly nutrition care and anemia related services
- better counseling and communication skills of the ANMs

The strategies conceptually chosen for improving these behaviors were - consensus building with the Corporation's Health Department officials/employees, training of LHVs and ANMs through participatory approaches, and participatory design and implementation of a trial in the two selected Health Posts A and B.

- **Job Functions of Health Functionaries**

When the current job functions of the ANMs and LHVs were reviewed (Table 4.3), it was seen that the job functions mainly covered immunization and family planning related services but even these tasks were not adequately explained. The job functions did not cover specific MCH and ANC services. Functionaries were expected to fill and update various registers for 4 hours every day after doing their field work. No time scheduling (weekly or any other) was evident for carrying out specific job functions. The stated job functions of ANMs and LHVs were the same. Though the LHVs were expected to monitor and supervise the work of the ANMs, this was not clearly specified in their job tasks. In view of this, a list of job functions was drawn up jointly with the Corporation officials related to the antenatal care services (Table 4.17). Care was taken to see that nutrition related services received adequate attention. The FWMO welcomed this step of specifying the job functions regarding antenatal care including the nutrition services as she believed that this clarity of job functions would facilitate the health functionaries to do better, and perform tasks they were already expected to do. She circulated the job functions to the health staff as new guidelines by the Vadodara Municipal Corporation.

- **Training of Corporation Functionaries**

As revealed through the situational analysis, training was one of the weakest components in the health system of the Vadodara Municipal Corporation. The grassroots level functionaries were not given practical training with regard to effective

Table 4.17 : Job Functions of ANMs and LHVs (Modified and Improved)

I	**Survey cum home visit** (1 day every week area wise)
1.	Monthly registration of pregnant women through home visits before 16 weeks of pregnancy (except in ICDS areas)
2.	Noting high risk pregnancy and newborn during home visit.
3.	Giving nutrition counseling, giving iron tablets or follow up of iron supplements, advice for referral during the home visit.
II	**Antenatal Clinic** (1/2 or 1 day every week at the center)
1.	Assist the medical officer in the checkup.
2.	Take weight and give iron tablets and TT vaccination.
3.	Advise the women to consume the iron tablets, improve their diet and rest using IEC material.
4.	Advice for spacing method.
III	**Health-Nutrition Education** (1day per week in different areas)
1.	Organize *mahila mandal* meetings weekly.
2.	Organize a health exhibition , competition, etc. once in 2 months.
3.	Give NHE on every home visit; using IEC material, especially to high risk and anemic pregnant women.
IV	**Monitoring and Supervision**
1.	Both LHVs and ANMs to maintain records showing both quantity and quality of care in ANC.
V	**For LHVs**
1.	To guide ANMs
2.	To maintain supervision registers.

implementation of the antenatal care services, especially nutrition related services at the community level. Many were not aware of the seriousness of the problem of anemia and the exact importance of weight monitoring and nutrition counseling during pregnancy. Even those who wished to give it more attention could not do so because of other competing priorities. Therefore, a training program was organized to update the knowledge of the health functionaries of the Corporation regarding antenatal care services in general and nutrition services in particular. The functionaries were also oriented to their specific job functions.

Though all functionaries of the Corporation participated in the training, the functionaries of the Health Posts A and B under study, were given more intensive training.

The methodology for training included lectures by experts, group discussions, a slide show and role plays.

Resource material in the form of an illustrated booklet in *Gujarati* was developed and given to all the participants during training. It was titled as "The New Family Welfare Program - Let Us Make Antenatal Care Services More Effective (A Guide for the Auxiliary Nurse Midwives)". This booklet included the following topics:

- Early registration of pregnant women.
- Health check up
- Identification of 'high risk' pregnancies and referral services
- IFA supplementation to control pregnancy anemia
- Monitoring of weight gain during pregnancy
- Immunization against tetanus
- Health and nutrition education
- Home visits for follow up care and counseling

Under each of these topics, basic information was given along with what the ANM was supposed to do under each service.

As mentioned earlier, the functionaries did not have scheduled timings for carrying out their various job functions. During the training workshop, emphasis was given on carrying out the job functions more effectively for better implementation of the antenatal care services. Services such as early and 100% registration of pregnant women in their allotted field areas, detection of high risk pregnancies, control of nutritional anemia through iron supplementation and dietary modification, immunization against tetanus, monitoring of weight gain during pregnancy and nutrition health education were reinforced. The functionaries were explained about the importance of follow up home visits for continuity of care.

As regards monitoring and supervision, the ANMs and LHVs were asked to maintain records reflecting both the quantity and quality of care provided to the beneficiaries. The LHVs were to guide the ANMs in this process. The functionaries were also trained to use the IEC material to counsel pregnant women regarding anemia and dietary modification during pregnancy.

Since the focus of this study was on quality of implementation of nutrition related ANC services, these strategies are further described below.

- **Distribution and Monitoring System of IFA Tablets**

Distribution of iron tablets to pregnant women was unplanned and haphazard; home visits by the ANMs to these women's houses were infrequent. To improve upon this, an attempt was made at streamlining the system of distribution of iron tablets using a combination of clinic-based and home-based approach. It was emphasized in the job functions that the ANMs should make at least 3 visits to a pregnant woman's house and give her minimum 100 IFA tablets. In view of the large population per worker, it was stressed that the primary focus of the visits should only be in the slum areas and not well-to-do housing societies. At the MCH clinics, pregnant women should be

given IFA tablets and counseled regarding the importance of consuming iron tablets during pregnancy.

Current antenatal care service registers and records were reviewed as reported earlier in the situational analysis. The ANMs did not monitor compliance of the women with iron tablets and did not have records to incorporate the information on distribution and consumption of iron tablets. Therefore simple modifications in the ANC register and the home visit register were made with participation of the FWMO of the Corporation as seen in Table 4.18. There was no problem of supplies of IFA tablets in the Corporation. It was encouraging that after a gap of several months, the current supply of iron tablets was adequate.

- **Supervision**

There was virtual absence of supervision at all levels. The LHVs who were the designated supervisors of the ANMs actually performed the same tasks as the ANMs and had the same population coverage. Both the time and the skills for supervision were inadequate. Hence, after discussions, the Medical Officer (Health) of the Corporation agreed to reduce the expected population to be covered from 10,000 to 7,000 for the LHVs and to re-distribute the remaining population to the ANMs. In the training workshops, supervisory skills of LHVs were focused upon.

- **Information-Education-Communication (IEC)**

It was noted that very little IEC material was available with the Corporation on the nutrition related antenatal care services. In particular, they did not have any IEC material on maternal anemia. Hence a set of colorful flipcharts with a simple storyline was developed for the ANMs for use as a counseling aid. To ensure that the pregnant women received and consumed at least 100 iron tablets during pregnancy, a transparent plastic bottle with a slogan in *Gujarati* on the importance of iron tablet consumption was given to each pregnant woman in the study areas. She was told that these airtight bottles were to be used for storing IFA tablets and were to be shown to ANM/LHV or the investigator for tracking compliance through tablet counts. These bottles were of

Table 4.18 : Modified Columns of ANC Register

Sr.No.	Record No. and Date	Name and Address	Age	Gravida Para	Age of Youngest Child	LMP and EDD
1	2	3	4	5	6	7

Month of Pregnancy	Medical Checkup	Weight in kg	Urine Test	B.P.	T.T.		
					Ist	IInd	Booster
8	9	10	11	12	13	14	15

Whether High Risk		If Yes, Reasons for High Risk	Iron Tablets		Remarks
Yes	No		Provided	Consumed	
16	17	18	19	20	21

convenient size to enable them to be used for several purposes later, e.g. to store spices. Secondly, a compliance diary to mark the number of tablet(s) consumed every day was developed and given to each woman. Before deciding on the compliance diary, women in the selected slums were randomly asked regarding which would they prefer for marking off the dates on which they took IFA tablets - a calendar hung on the wall or a diary with multipurpose uses. Almost all the women preferred the diary. The flipchart was pre-tested with several groups of women to assess the communicative effectiveness of each visual and the text. The design and production of the flipchart is explained in Figure 4.7, based on a framework suggested by Mody (1991). The ANMs and LHVs were trained in communication and counseling skills, as described.

Figure 4·7 : Designing and Pre Testing the Flip Chart Set

Steps in the Process	Its Application in the Present Study
Decide upon the topic	Control of anemia during pregnancy
Learn everything possible About the topic	Review of available literature: findings of previous research and situational analysis
Analyze lifestyle and communication preferences of the audience	Poor women with low literacy level preferred that someone talked to them with some visual aids
Access audience needs and decide Campaign/message topic	Adverse consequences of anemia during pregnancy and importance of iron tablet consumption
Write specific measurable goals	* Targeted pregnant women become aware of anemia and the modes of its prevention * Pregnant women procure iron tablets from various sources such as government hospitals, private clinics, *anganwadis* and pharmacies * Pregnant women consume iron tablets regularly * Pregnant women incorporate iron and vitamin C rich foods in their diets, and increase the quantity of food intake
Select media	One to one and group counseling
Agree on creative-persuasive strategy	A set of flip charts on anemia prevention during Pregnancy was developed
Write message specifications	* Eat one iron tablet every day for at least 100 days * Include green leafy vegetables, citrus fruits, sprouts, legumes and jaggery in your daily diet
Pre test	Visuals and storyline of flip charts were pre tested pregnant women in slum communities
Modify messages and proceed with production	Suggested changes by the women were incorporated to make the messages more understandable
Monitor exposure	The ANMs were contacted to ensure that they followed specific guidelines/instructions while using the flip chart
Get feedback from the user and the target audience	Received feedback from the ANMs and the pregnant women about the appropriateness and understanding of messages

Adapted from : Mody (1991)

IEC Material

Storage bottle and Compliance diary

Flip chart on Anemia

SECTION III
PHASE C

RESPONSE OF THE HEALTH SYSTEM TO THE INTERVENTIONS FOR IMPROVING THE QUALITY OF IMPLEMENTATION OF NUTRITION RELATED ANTENATAL CARE SERVICES - A PROCESS EVALUATION

The **overall objective** of this phase was 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. The focus of this phase was primarily to observe whether there was an improvement in the execution of job functions by the ANMs and LHVs towards better implementation of ANC services, especially nutrition care services.

Methods Used for Process Evaluation of the Intervention Strategies

The methods used for process evaluation are given in Table 4.19. These included follow up visits at the selected Health Posts and at the pregnant women's houses, direct observations of the health service providers work, and exit interviews of women visiting the maternal and child health clinics at the two Health Posts. The quantitative methods used included assessment of weight gain and hemoglobin levels of the pregnant women and birth weights of their newborn.

The Health Service Provider Group

- **Follow up Visits**

Principle: Follow up of any activity is essential to assess whether the activity is being implemented as planned and to ensure its sustained implementation.

Purpose and Method: Follow up visits were made to the two Health Posts on a weekly basis for a year during the course of the study. This was done in order to assess whether the modified strategies worked towards improving the implementation of the nutrition services within the context of the overall job responsibilities and the health system in which the health service providers worked. These visits included

Table 4.19 : Qualitative Methods Used in the Process Evaluation

Method	Informants	Number	Information Sought
• Follow up visits	* Health service providers at the Health Posts * Pregnant women in the slums	Once weekly throughout the study period	▪ Field level implementation of nutrition services as a part of ANC services, time spent on the services, quality of care
• Direct observations	* Health service providers on clinic days * Health service providers at the Health Posts	8 days 2 weeks	
• Exit interviews	* Women visiting the Health Posts	148	▪ Utilization of antenatal care and MCH services

constant interaction with the providers, observations of their work, and checking of their records.

- **Direct Observations**

Principle: When one wants to know about what people actually do, there is no substitute for watching them or observing their behavior. In direct continuous monitoring, you watch a subject, or group of subjects and record their behavior. Continuous monitoring is used in assessing work situations and is a common method of data collection in many fields. Training of people for direct, continuous observation helps in reducing observer bias to make them more accurate and reliable (Bernard 1995).

Purpose and Method: In this study, direct observations of the quality of care in service delivery aimed at assessing whether the health post staff could operationalize the modified strategies for improving the implementation of the nutrition services (for which they had been trained) within the context of their overall responsibility and the health system in which they worked. During the follow up visits to the Health Posts, informal conversations were carried out with the ANMs and their supervisors. Direct, continuous monitoring observations of the health service providers were carried out for a total of 8 clinic days to observe the actual implementation of the nutrition services at the time of the maternal and child health clinics. The service providers were also observed for 7 continuous days at each of the 2 Health Posts. The observations were recorded manually in a notebook. Before the observations, good rapport had already been built up with the subjects and this helped to minimize the Hawthorne effect i.e. change in behavior of the health functionaries due to the observations.

- **Exit Interviews**

Principle: Exit interviews are usually conducted to see people's response to certain situations e.g., interviewing people after their visit to a doctor to know about the kind of services provided to them without observing the actual process (Anker et al 1993).

Purpose and Method: A total of 148 pregnant and lactating women who attended the

maternal and child health clinics for antenatal checkup or child immunization at the 2 Health Posts were interviewed using this method. A pretested structured questionnaire was used to obtain data on services provided to them at the clinics and advice given by the Medical Officers on IFA supplementation and nutrition.

RESULTS

Health Service Provider Group

- **Follow up visits to the 2 Health Posts and Direct Observations of health functionaries at work: Did the job functions really improve?**

The frequent responses of the health functionaries obtained through the interaction with them during the process evaluation are summarized below, with the investigator's comments in parentheses.

- *We have a lot of work such as surveying our areas, filling up various registers (Table 4.4); visiting slums for distribution of iron tablets, ORS (oral rehydration salts) sachets, oral pills and condoms and immunizing children. We have a large population (approximately 10,000 per worker) to cover, and unless it is reduced, it is impossible for us to do good quality work and achieve the family planning targets. In fact, clarifying our job functions has increased our work.* (This statement was made despite the fact that the LMOs and the FWMO herself reiterated to them several times, "These activities (in ANC and ACP) are nothing new ... you are any way expected to perform them").

- *We are constantly busy with so many unexpected, unplanned activities to perform in between our routine work because of a number of vertical campaigns or other programs such as pulse polio campaign, school health program, malaria control program, and leprosy elimination campaign. These programs take up a lot of our time as we have to plan before for the program and do pre-program preparation. During the implementation all our time is devoted to it and after the program gets*

over we prepare the reports. Also, we have our routine activities such as completion of family planning targets, arranging medical camps, and routine immunization work. So where is the time to use the flip chart on anemia or to write in the daily diaries? We cannot make any schedules for our work. We do not even remember what we did last week. Why don't you see our movement register? Our daily diary jottings are also transferred to the register. (The movement register was supposed to be filled every time the ANMs/LHVs went out of the Health Post for some work. This included visits to their respective field areas and to private practitioners' clinics/hospitals for taking down the number of family planning operation cases. In the movement register, it was noted that the health functionaries had put their names against the date, time and the place where they were to go along with the purpose. Sometimes only the name of the area was filled and purpose of visit was missing. Further, usually the time when they returned to the Health Post was not filled in any entry. The observations revealed that many a times an ANM asked another ANM to fill the movement register for her).

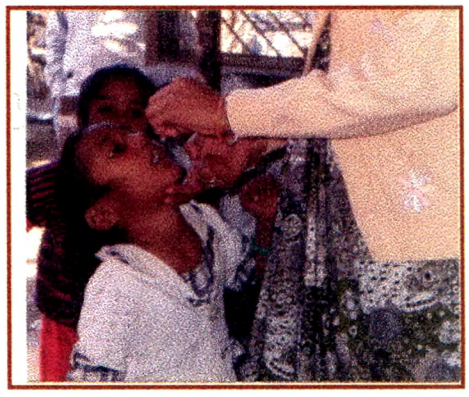
- *Pregnant women in the slums do not consume the iron tablets even though we make visits to their houses. Some women do not take iron tablets at all because they are ignorant, have cultural beliefs and sometimes their mothers-in-law do not permit them to take the tablets.* (However, though this was partly true, as direct observations of functionaries and interaction with women, described later, revealed that contacts with women and counseling efforts were few and far between).

The ANMs also mentioned a lot of vertical campaigns which came off and on and disturbed their routine work (Table 4.20).

Table 4.20 : Vertical Campaigns and Major Health Care Activities Carried Out Over a Year by the Health Functionaries

Month	Vertical Campaign
January	• Pulse Polio National Program for vaccination of children against polio
February - March	• Completion of family planning targets as the year ends on March 31
April- July	• Mid-April till end of July - Updating survey for enrolment of eligible couples
August (1st week) **15-30 August**	• Preparation of action plan (prediction of antenatal care, postnatal care, family planning and immunization targets) • Various health care activities to celebrate Indian Independence
September	• School health program
October	• Visits to schools for giving payments to the teachers
November	• Malaria Control Program
December	• Pulse Polio; Preparation for the program in the first week of December
January	• Pulse Polio; Modified Leprosy Elimination Campaign in late January to early February

Too Many Vertical Campaigns – Poor MCH Services



Pulse Polio Campaign

Leprosy Elimination Campaign

- **Direct Observation Method for Time and Activity Patterns of the Functionaries**

Direct observations helped to verify reported data and also gave additional insights regarding the work organization and time scheduling of the functionaries and the importance given to antenatal care and nutrition related activities in their routine work. The observations were carried out in 2 weekly cycles.

The observations threw light on the nature of functioning of LMOs, LHVs and ANMs as summarized below.

- Many of the health functionaries (ANMs, LHVs and LMOs) did not come on time (9 a.m.) to the Health Post. On most days the LMOs did not come at 9 a.m. and they left early. The ANMs and LHVs left at 5 p.m. on almost all days but often during the afternoon they did not do any work and chatted with each other till 5 p.m. All the Health Post staff took at least a day's leave during the week long observation period. A typical day of an ANM in between vertical programs is discussed in Table 4.21. It can be noted from the table that out of the 8 hours for which the functionaries were expected to carry out their job functions, on an average, only 3 hours were spent on productive, official work, which mostly consisted of completing the registers if the functionaries remained at the Health Posts.

- One Health Post suffered from staff shortage as 2 ANMs were transferred to another Health Post. The ANM who was transferred to this Health Post was not familiar with the field area so had to spend time in building rapport with the community.

- Considerable time was expended in completing entries in a lot of registers, with ANMs often transferring beneficiaries' names from one register to another. In one Health Post, the staff spent an entire week preparing their monthly report. As their

Table 4.21 : A Typical Day of an ANM in Between Vertical Programs/Campaigns

Time	Activity
9.00 to 9.20 a.m.	• Health Post locked
9.20 a.m.	• Helper/ ANM/ LHV opens the Health Post
9.30 to 10.00 a.m.	• All staff arrive and start chatting; also talk about family planning operations
10.00 to 10.30 a.m.	• Tea Break
10.30 to 11.30 a.m.	• LMO arrives, discusses routine work, leave to be taken, and the upcoming Leprosy Campaign
11.30 a.m. to 12.30 p.m.	• Fill registers such as Copper T, family planning operation, MCH registers and chat about household problems
12.30 to 1.00 p.m.	• Lunch
1.00 to 2.00 p.m.	• Sit idly, chatting, reading newspaper
2.00 to 3.00 p.m.	• Continue register work - update and fill registers
3.00 to 3.30 p.m.	• Health workers from nearby NGO come to collect vaccines, ORS packets, and contraceptives
3.30 to 4.00 p.m.	• Tea break again!
4.00 to 5.00 p.m.	• Continue register work; discuss about field areas to be covered by each worker during the Leprosy Campaign, leave for home.

LMO was absent, the ANM tried to prepare the report but got confused about what to fill in and hence she asked for advice from her colleagues, and filled in whatever she could; in places entering incorrect information.

- The opinion of some ANMs regarding the new target free approach (TFA) was "TFA *toh matha ni dava chhe*" (TFA is a headache to us). This was because they were not given any training regarding what RCH was all about and were still expected to prepare their action plans, for the TFA approach.

- At the Health Post where the vaccinator did the vaccination, he came only for 2 hours during the vaccination period and the ANMs were dissatisfied that nobody said anything to him despite the fact that he did not come for the specified period of time.

- In one instance, a woman from nearby slum came for IUD (intra-uterine device) insertion. Because the LMO was absent the LHV inserted it and told us that she would write it for the doctor as the LHV was not supposed to do it in the doctor's absence.

- As regards iron tablet distribution, iron tablets were observed to be given to women only during the MCH clinic and rarely through home visits.

Observations were also carried out at the 2 Health Posts during two campaigns. These were Pulse Polio Campaign and the Modified Leprosy Elimination Campaign. These are narrated in Boxes 1 and 2.

- **Direct Observations of MCH Clinics**

Direct observations were carried out during 8 MCH clinics in operation for 8 days at the 2 Health Posts. These weekly clinics lasted for about 3 hours from 9 a.m. to 12 p.m. It was observed that women mostly came to the clinics for immunizing their

Box 1 : Pulse Polio National Program: Intensive Work But Little Supervision

For the campaign, the ANMs had received a list of area centers and a list of private practitioners in their areas. On the previous day of the program, the ANMs went to the private medical practitioners' places and gave them oral polio vaccine (OPV) bulbs according to their requirements. They also stuck area wise labels on the vaccine carriers. The next day they came at 6 a.m. in the morning, filled up the vaccine carriers with OPV bulbs and ice packs. These along with pulse polio banners and tally sheets were given to volunteers who were sent to various centers in a vehicle under the supervision of the LHV. Two ANMs went to their field areas and two others waited at the Health Post. They had to go and call children from nearby areas for vaccination.

The LMO of the Health Post along with 2 LMOs from other areas remained inside the Health Post not engaged in any useful activity. They did not supervise or check the progress of the vaccination camp which lasted till 5 p.m.

The next day the LMO was on leave. The ANMs did nothing in particular for a longtime, and later on they emptied the vaccine carriers; and put together the tally sheets. The remaining days of the week were spent on compiling the monthly report. The LMO was on leave for all the remaining days.

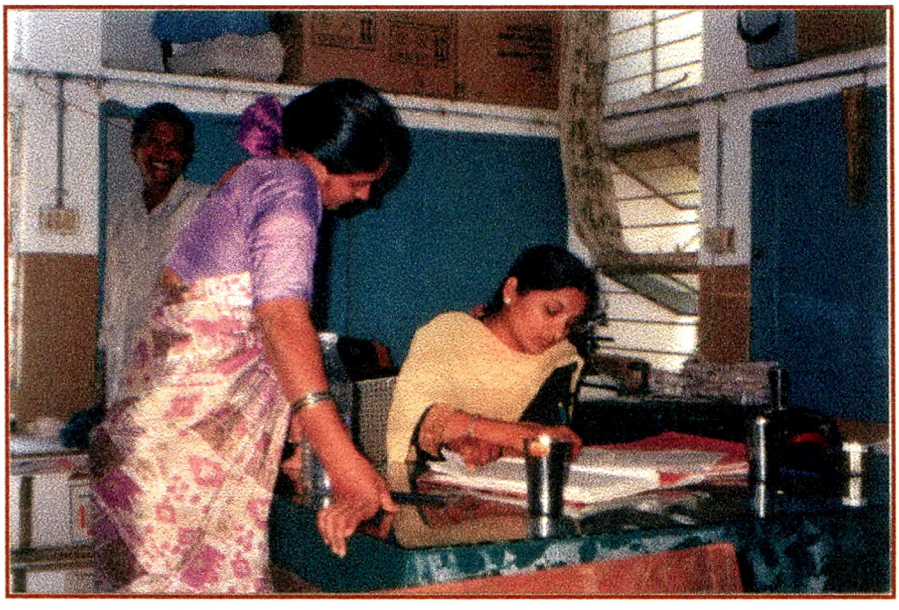
Box 2 : Modified Leprosy Elimination Campaign: They Have to Do it But How?

On the day prior to the commencement of the program, the LMO of the health post was on leave. Hence the LMO of some other Health Post came to discuss about the areas to be allotted to each health worker which led to confusion among the ANMs. The ANMs had not been given any training on identifying people affected with leprosy, yet they were asked to identify and refer cases for treatment. As one ANM said ironically, "Amne badhu j aavde chhe" (We know everything).

On the actual day of the campaign the LMO was present but 2 ANMs were absent. Also, only 3 instead of 10 sanitary inspector course students came to help the ANMs. These students were from South India and did not know the local language, Gujarati or even Hindi, hence as one ANM said, they were of no help to them. As she said - "Putla ni jem mari sathe ubha raheshe" (They will stand like statues with me). She added that people fluent in the local language and accustomed to surveying slum communities should be assigned for the job as the issue of leprosy was very sensitive.

The ANMs were given picture booklets to help them identify the signs of leprosy. They were also given certain pro formas to fill. The ANMs had to go to ICDS Anganwadis of different areas from where the ICDS AWW and the helper were to take them to the community. As the ANMs did not know the locations of the Anganwadis and the AWWs, they had to depend on the ICDS supervisor. The areas allotted to the ANMs for the leprosy survey were not the same in which they usually worked. So they were not familiar with these different communities and had to depend on the AWWs and helpers for their work.

Too much register work?



Supervision: Is checking of registers enough?

children. Only a negligible number of women came to the clinic for antenatal checkup and those who did, came mainly for taking the anti-tetanus toxoid injection. The main reason why women did not visit the clinic for antenatal checkup was that they were not aware that this facility was available at the Health Post. Most of them went to private practitioners for antenatal care. This became more evident in the exit interviews of the women.

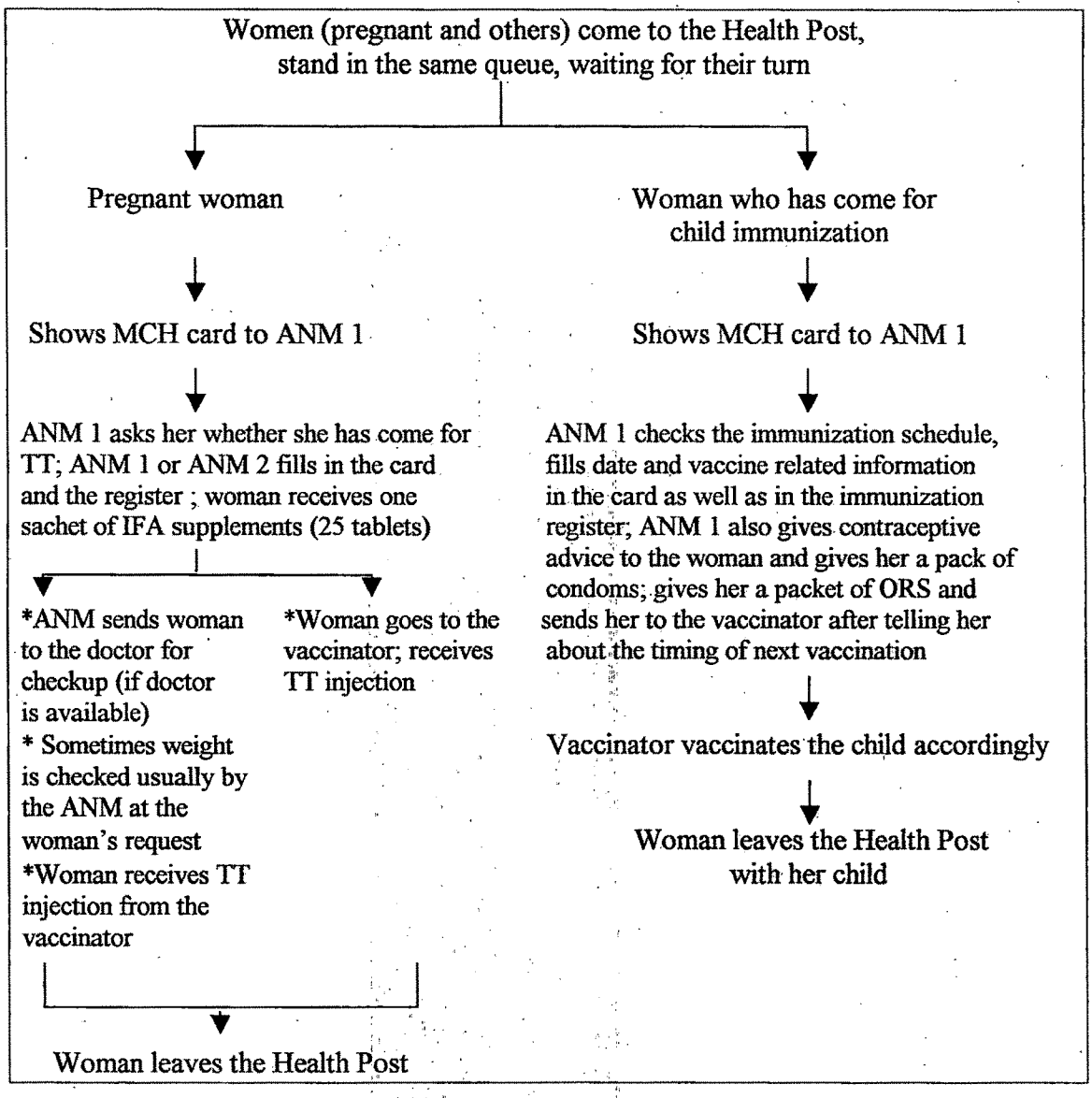
As shown in the flow chart (Figure 4.8), when a woman visited the clinic, the ANMs gave a packet of iron tablets containing 25 tablets, a packet of ORS, and a pack of condoms. They did not give any advice regarding iron tablets. Most of the conversation focused on contraceptive use and advice.

Although the pregnant women visiting the MCH clinics were weighed, they were just told about their weights and whether it was appropriate or less. In case of underweight women, the advice given was just to put on more weight but they were not explained about why they should put on more weight and how.
At one Health Post, the vaccinator administered the vaccines whereas in the second Post, the ANMs took turns to vaccinate the children. They complained that they had to do the vaccinator's job.

- **Supervision and Monitoring - Checking of records and registers maintained by the ANMs and LHVs and observations of the monthly meetings at the Family Welfare Bureau**

As mentioned earlier, the ANC register was slightly modified to include information on distribution and consumption of iron tablets. Columns of ANC register are given in Table 4.18. However, during the observations and follow up it was found that the ANC register columns suggested by the investigator and the Corporation health authorities were not filled. They only mentioned that iron tablets were given to a particular pregnant or lactating woman, but did not specify the number of packets/tablets given to the women. Weights of the women were entered periodically. However, if the woman was visited at home by the health worker, her weight was not

Figure 4.8: Flow Chart of Sequential Activities Taking Place At the Weekly MCH Clinics Conducted at the Health Posts



Advice Received: About IFA supplements- This is *'shakti ni goli'* (strength giving tablet); take one tablet every night after dinner. No advice is given regarding diet.	**Advice Received:** Mainly regarding family planning. Sometimes ANMs give women pediatric iron tablets for their children. They also tell them about the preparation of ORS in case the child has diarrhea.

taken and hence not entered in the register. There was hardly any mention in the register on nutrition advice given.

- **Observation of Monthly Meetings**

The staff of all Health Posts attended a meeting on the second of every month at the Family Welfare Bureau. The purpose of these meetings was the assessment of work carried out by the Health Posts in the previous month. They also received their salaries on this day. We observed that the Family Welfare Medical Officer asked LHVs of each center only about their performance regarding family planning activities and survey of households in their respective areas. She did not ask about other MCH activities, especially distribution of iron tablets to pregnant women. Regarding immunization she told them to vaccinate children and women. One ANM angrily commented *"Kitna bhi kiya to daant milti hain. Sab FP ka hi dekhte hain. Kitna clinic kiya, kitna iron diya, koi nahin poochhta"*(How much ever (work) we do, we get scolded. Everybody asks (only) about family planning targets achieved. No one asks about how many (ANC) clinics we have conducted or how many iron tablets we have distributed).

In one such meeting towards the end of the financial year, review of the activities of the health workers during the year was done. Statistics regarding total number of IUD insertions and family planning operation cases, and total number of oral pills and condoms distributed were presented and discussed. No statistics were mentioned regarding distribution of iron tablets or about the number of pregnant women whose weight was monitored during the MCH clinics. The FWMO remarked to the workers that the level of family planning activities carried out during the past 10 months was very less. She instructed the workers to increase the activities in the months of February and March. She also stated that higher authorities were not pleased with the statistics of the family planning activities carried out. Further, she mentioned that according to the reports obtained from the investigator, the monitoring was poor. Hence she emphasized that monitoring should be stressed upon. In her words,

"Monitoring is missing from the top level. I have reduced the workload of LHVs from 10,000 -12,000 families to 6000-7000 families, yet the LHVs are not monitoring the activities of the ANMs."

Meetings such as these made it amply clear that despite the 'target free approach' and the interventions put in place to improve maternal nutrition care services, the focus continued to be on family planning.

- **Moving Ahead : Evolving systematic work plans for the ANMs jointly with the FWMO of the Vadodara Municipal Corporation**

As the ANMs were not making the appropriate number of visits to their allotted field areas, and not performing several of their functions for various reasons, a need was felt to have work plans for the ANMs which ensured a proportionate distribution of their time for major tasks so that they could give balanced attention to all their respective job functions, including antenatal care, iron tablet distribution and nutrition counseling (Table 4.22). The plan was made by the investigator, jointly with the LMOs, on the basis of the ANMs' weekly workload which comprised approximately 40 hours. Out of these 40 hours, it was stated in the plan that 50% of the time be allotted to providing various services, 20% to community surveys, 10% to record keeping and the remaining 20% of time was kept for miscellaneous work such as meetings, campaign programs and health camps. The ANMs were asked by the LMO of the Health Post to make their individual plans and implement them. The FWMO supported this endeavor. It was encouraging to note that even after allowing for various monitoring related tasks and unexpected programs, about half of the time of health workers could still be devoted to delivery of services to the target groups.

Table 4.22 : Work Plan for the ANMs

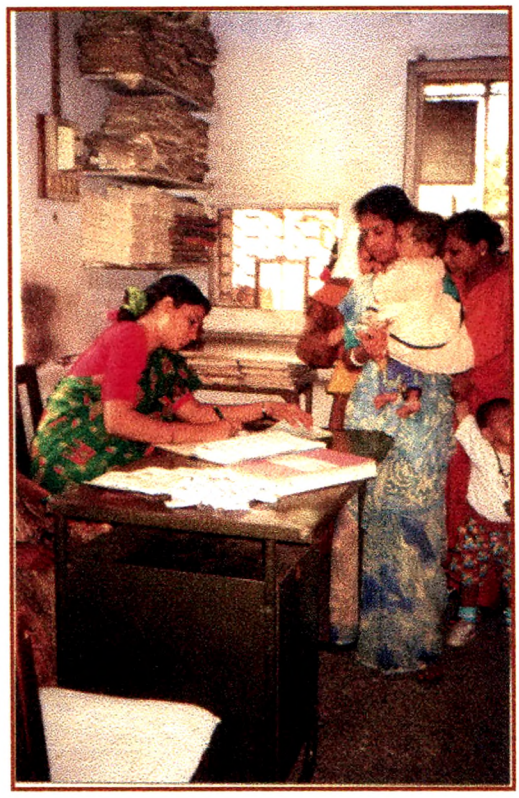
ANMs' workload : Approximately 40 hours/ week

Suggested proportionate time distribution :
Records : 10% (4 hours)
Community survey : 20% (8 hours)
Other miscellaneous work : 20% (8 hours)
Providing services : 50% (20 hours)

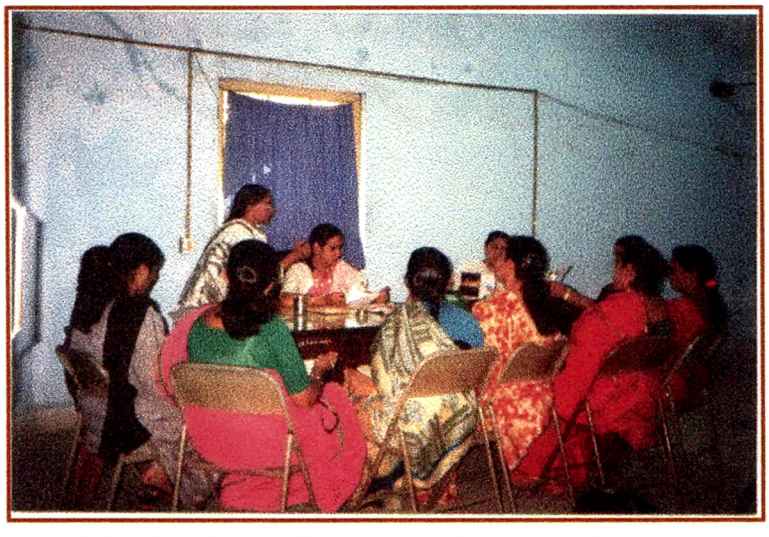
Major services :
Family Planning activities
Visits to unprotected/ eligible couples, counseling for temporary/ permanent family planning methods

Activities for pregnant and lactating women
ANC services : Early antenatal registration, check up (abdominal examination), TT, iron- folic acid distribution, monitoring of compliance with iron, dietary advice, history of high risk factors, referral services
PNC services : Advice regarding breast feeding (especially colostrum) and weaning, iron-folic acid supplements, high risk infant

Activities for infants and pre-school children
Immunization, vitamin A and iron supplements
Can make week wise or month wise plan taking care of all the activities mentioned above. LHVs to motivate and supervise the ANMs. Overall supervision and guidance by the Lady Medical Officers.



An MCH clinic in progress –
Child immunization is the focus



Monthly review meeting at the Family Welfare Bureau, VMC

The Beneficiaries

The earlier section described the implementation of antenatal care services in the urban health system of the Vadodara Municiapal Corporation. This section presents the client perspective.

- **Receipt of Services by Pregnant Women in Slums**

Fortnightly visits made by the investigator over one year to the pregnant women's houses who were enrolled in the study revealed that the ANMs and LHVs rarely visited nearly half of the study areas. In 3 areas, the women did not even know the name of the ANM visiting their areas.

- **Antenatal care**

Nearly half of the women visited government hospitals or private practitioners for antenatal checkup and some of them did not visit the doctor at all. As evident from the interviews in the situational analysis, most women and their families consider that registration of pregnancy with a health facility is necessary only for delivery purposes; very few believe regular antenatal care is important. Many women said in the exit interviews (discussed later) that they were not aware of this facility being available at the Health Posts, and that they visited the Health Posts chiefly for immunizing their children.

Regarding the receipt of iron tablets, women in four of the areas surveyed received tablets from the ICDS *Anganwadi* Worker. As discussed in the preceding pages, the ANMs did not give any IFA tablets in the other four areas to replenish the ones which the investigator had given in the first visit to the pregnant women through home visits made along with the ANMs. Most of the women did not fill up the diary which was given to them as a reminder to consume IFA every day as well as to record the number of tablets consumed by the women. The women either forgot about it, or did not feel the need. The ANMs did not do any kind of follow up regarding this to remind and counsel the women to continue taking the tablets.

- **Exit Interviews of Pregnant and Lactating Women Who Visited the MCH Clinics**

In order to assess the type and quality of antenatal care given through the Health Posts, a total of 148 exit interviews were conducted with pregnant and lactating women who visited the MCH clinics at Health Posts A and B. Specifically the purpose of these exit interviews was to elicit information from the women regarding the types of services and advice received by them at the clinic especially with regard to ANC services and IFA supplementation.

After a few interviews, it became evident that rarely do pregnant women come to the clinic but several lactating women come for their child's immunization. Hence it was decided to conduct exit interviews with lactating women also to find out what services they received during their last pregnancy. Results of the exit interviews are summarized below.

Out of the 148 women interviewed, 14 were visiting the Health Post for TT immunization during their current pregnancy and the rest (> 90%) were mostly lactating women who came for vaccinating their children. Of the total lactating women (having children below 1 year of age), only 11 had visited the Health Post during their pregnancies. Thus out of the 148 women interviewed only 25 (17%) women visited the Health Posts during pregnancy for TT vaccination (n=12), for checkup and TT vaccination (n=12), and for checkup only (n=1). Of these 25 women, a majority (n=11) had visited the clinic only once, 8 twice, and 6 of them came to the clinic three or more times. The women visited the MCH clinic mostly during late second trimester or third trimester. Many of them did not know that antenatal checkup was done at the MCH clinics, as evident from their own words :

" Ahi tapas thay chhe aevu khabar j nathi, balak ni rasi muke chhe, etli khabar chhe"

(I did not know at all that ANC checkup is done here, I only knew that child immunization is done).

The exit interview data clearly reveal that the weekly MCH were actually child immunization centers where care of women was neglected. The community perceived these clinics as a place where children were supposed to be brought for immunization. Of the few women who were aware that antenatal care is a function of the clinics, many did not come for reasons such as temporary absence from home as women go to their parents' place for delivery, or, preference for private health care due to its better quality. A few women in the exit interview did say however that ANMs and LMOs asked them to come to the center for ANC checkup, immunization and IFA tablets. Box [3] lists down the reasons for why the pregnant women did not seek antenatal care at government clinics.

With regard to MCH clinics as a source of IFA tablets, women who come to clinics did receive the tablets (Table 4.23) but rarely the full course, firstly because they did not make the requisite number of clinic visits and secondly home visits were infrequently made by the ANMs. Shortage of supply of IFA was a problem but was less significant as compared to the erratic distribution because of low priority given to this program. Among the women who received tablets, consumption of tablets varied from 'negligible' to 'the full course' (Table 4.23). One reason could be the several misconceptions regarding the tablets and lack of counseling as evident from exit interviews.

> *"Mane kidhu ke shakti ni goli chhe, ratre jamya pachhi levani"*
> (I was told that they are strength giving tablets, to be consumed after dinner).
> *"Koi salah nathi aapi, lakhwama padya chhe"*
> (No instructions were given, they were busy writing).
> *"Khali goli aapi, kasu kahyu nathi"*
> (They just gave tablets, didn't give any instructions).

Direct observations of the MCH clinics described in the earlier pages corroborated the data of the exit interviews.

Box 3 : Reasons why women do not come for antenatal care to the Government clinics - Their voices

- *"Khabar hati ahin tapas thaay chhe, pan gamde suvavad mate gayi hati"*
  (Knew that ANC services are provided but I had gone to my village for delivery).

- *"Private mein kabhi bhi ja sakate hai, yahan time to time aana padta hai, aur line bhi hoti hai, kaun baithe itni der tak?"*
  (In private clinics we can go any time, here [health post] we have to come at a specified time, also we have to stand in queue, who will wait for so long).

- *"Khangi ma saroo chhe, dhyan aape chhe"*
  (It is good in private, they pay attention).

- *"Bahoo dur chhe, aava javama bahoo paisa jaye chhe"*
  (The health post is very far, so it becomes expensive coming and going to the health post).

- *"Kasuvavad bahu thayi, etle khangima tapas mate gayi hati"*
  (Had many miscarriages, so went to a private hospital for my checkup).

Table 4.23 : Receipt and Consumption of IFA Tablets by Pregnant Women

Receipt of IFA Tablets from Health Workers by the 25 Women who came for Antenatal Care		
	n	**%**
▪ **Received IFA tablets**	22	88
• Received 25 tablets	7	32
• Received 50 tablets	8	36
• Received 75 tablets	4	18
• Received 100 tablets	3	14
▪ **Did not receive IFA tablets**	3	12
Consumption of IFA Tablets by the 22 Women Who Received IFA at the MCH Clinics		
	n	**%**
• Consumed negligible number of tablets	10	45
• Consumed 25 to 100 tablets	12	55
• Completed the full course of 100 tablets	0	0

- **Compliance With IFA Supplementation**

Fifty women were followed up till delivery through regular home visits every 15 days. These women had been, on enrolment, provided with fifty iron tablets (half of the recommended dose) in a plastic bottle with a message on it along with a compliance diary for recording the number of days IFA was taken. On the first visit, data were collected on the number of tablets consumed by the women thus far. According to the specified job functions and training imparted on antenatal care, regular visits to these women were expected to be done by the selected Health Post ANMs for giving IFA regularly and for counseling and motivation to the women to consume them. However, the ANMs were involved in a number of vertical campaign programs and surveys as described earlier, and hence they made infrequent field visits to pregnant women. The investigator however visited these women to collect data on the number of tablets available and consumed till 32+ weeks of gestation. As seen in Table 4.24, the mean number of iron tablets consumed by the women increased with gestation. The mean intake at enrolment (20-24 weeks of gestation) was only about 13 iron tablets and it increased approximately to 60 iron tablets till the final follow up. The increase in compliance with iron supplementation might have been due to the fact that the women received these tablets at the homes and also due to the motivational slogan on the bottle given for storing the tablets.

In the present study, majority of the women (56%) reported that they had consumed all the 50 iron tablets provided by the investigator. The ANMs were supposed to provide iron tablets to the women during the home visits. In absence of this, only 24% of the women consumed more than 80 iron tablets by procuring the remaining dose of iron tablets from different sources such as *Anganwadi*, private hospitals and Government hospitals. Among the women consuming more than 50 iron tablets, the major source of procurement was *Anganwadis* and health centers run by a non-governmental organization. Out of the ten women who had consumed twenty iron tablets or less, eight of them had gone out of station to their parental homes during the second and third trimesters and two of them had stopped consuming iron tablets due to side effects such as vomiting, nausea and constipation.

Table 4.24 : Consumption of IFA Tablets as Reported by the Pregnant Women (n=50)

Sr. No.	Number of Tablets Consumed	Pregnant Women Consuming the Tablets					
		At enrolment		At follow-up		Throughout the pregnancy	
		n	%	n	%	n	%
1	1 - 20	37	74	15	30	10	20
2	21 - 40	6	12	7	14	5	10
3	41 - 60	5	10	13	26	14	28
4	61 - 80	1	2	10	20	9	18
5	81 - 100	1	2	4	8	6	12
6	>100	-	-	1	2	6	12
Mean number of tablets consumed (Mean±SE)		13.26±3.19		44.22±4.86		57.48±5.48	

Nutritional Status of Pregnant Women in the Study Areas

- **Prevalence of Anemia**

Fifty women were followed up till delivery through home visits. There was only a marginal increase in the mean hemoglobin from 9.07 g/dl at enrolment to 9.56 g/dl towards the end of pregnancy which was found to be non-significant (P>0.05). The poor impact of IFA supplementation is not surprising, given the fact that after the initial supply of 50 tablets, the ANMs or LHVs did not ensure continuity of supply. Women procured tablets from multiple sources but given the lack of counseling, IFA compliance was not satisfactory.

The consumption of different number of iron tablets by the women was compared with the hemoglobin levels as represented in Table 4.25. In each group of women consuming different number of iron tablets, there was a rise in mean hemoglobin of about 0.5 g/dl at follow up as compared to that at enrolment, except in one group (consuming 61-80 iron tablets). The small increment in hemoglobin of all the women (N=50) at follow up was not significantly higher than that at enrolment. It is evident that an average intake of around sixty iron tablets was not sufficient to improve the hemoglobin levels of the women. Though the overall prevalence of anemia remained the same (Table 4.26), there was an upward shift in hemoglobin levels, i.e., the proportion of severely anemic women reduced and that of mildly anemic women increased.

In a smaller study conducted in this department on 20 pregnant women, it was found that regular fortnightly visits and counseling using flip charts, not only improved procurement and compliance but also significantly improved the hemoglobin level of these women (Kanani and Patel 1998).

- **Weight Gain During Pregnancy and Birth Weights of Newborns**

Table 4.27 shows the anthropometric measurements of the pregnant women at enrolment and follow up. Weight gain during pregnancy reflects the nutritional status

Table 4.25 : Mean Hemoglobin Levels of Pregnant Women Consuming Different Number of IFA Supplements (n=50)

Sr. No.	Number of Tablets Consumed	Pregnant women consuming the supplements		Hemoglobin (g/dl) (Mean±SE)	
		n	%	At enrolment	At follow up
1	1 - 20	10	20	8.73±0.50	9.23±0.20
2	21 - 40	5	10	9.39±0.79	11.14±0.55
3	41 - 60	14	28	8.90±0.45	9.20±0.40
4	61 - 80	9	18	9.28±0.41	9.27±0.60
5	81 - 100	6	12	9.52±0.62	10.16±0.55
6	>100	6	12	9.05±0.72	9.44±0.22
Mean Hb ± SE				9.07±0.21	9.56±0.19
't' value				1.85 NS	

NS - Non significant

Table 4.26 : Severity of Anemia and Mean Hemoglobin Levels of the Pregnant Women at Enrolment and Follow up (n=50)

Severity of Anemia	Enrolment		Follow up	
	n	%	n	%
Mild[1]	23	46	31	62
Moderate[2]	14	28	13	26
Severe[3]	7	14	-	-
Overall anemia prevalence	44	88	44	88
Normal[4]	6	12	6	12
Hb levels Mean ± SE	9.079±0.217		9.561±0.197	
't' value	1.85^{NS}			

^{NS} - Non significant

[1] Mild anemia : Hb - 10.00 to 10.9 g/dl
[2] Moderate anemia : Hb - 7.00 to 9.9 g/dl
[3] Severe anemia : Hb - < 7.00 g/dl
[4] Normal : Hb - ≥ 11.00 g/dl

Table 4.27 : Anthropometric Profile of the Pregnant Women at Enrolment and Follow up, Weight Gain and Birth Weight of Newborns (n=50)

Measurements	Enrolment		Follow up	
	n	%	n	%
Weight				
<40	10	20	3	6
≥40	40	80	47	94
Mean Weight ± SE	47.40 ±1.369		51.770 ±1.444	
BMI				
<18.50	17	34	6	12
≥18.50	33	66	44	88
Mean BMI ± SE	20.720 ±0.542		22.660 ±0.573	

Weight Gain (Kg)	n	%
<5	28	56
5-6.9	14	28
7-8.9	6	12
≥9	2	4
Mean weight gain (Mean ± SE)	4.540±0.318	

Birth Weight of Newborns (Kg)	n	%
< 2.50	10	20
2.50	10	20
>2.5	30	60
Mean birth weight (Mean ± SE)	2.872 ± 0.91	

of the women and is also an important determinant of pregnancy outcome. A majority of the pregnant women (56%) had total weight gain of less than 5 kg after enrolment. The mean weight of the pregnant women at enrolment and follow up was 47.40 kg and 51.77 kg respectively, an average gain of 4.3 kg which is extremely inadequate. However, very few women were below 40 kg which is the cut off level used to indicate obstetric risk (Krasovec and Anderson 1991). The mean BMI increased at follow up from 20.3 to 22.4 and proportion of women having low BMI values also decreased as seen in the table. Overall, undernutrition was a major problem in pregnancy needing urgent attention. In view of the continuing high prevalence of anemia and poor weight gain in pregnancy, it is not surprising that 40% of newborn babies had birth weights of 2.5 kg or less.

Summing up the data on nutritional status profile of pregnant women in the study areas, it emerges that not much improvement took place in the hemoglobin or weight gain values towards the end of pregnancy which is a cause for concern. Improvement in nutritional status cannot be expected to take place without the active intervention of the health service providers, which was found to be missing in the study.

DISCUSSION

Varied experiences have been reported in literature regarding planning and improving the quality of implementation of maternal care services for pregnant women. Further, safe motherhood program evaluations have reported mixed outcomes and partial successes.

In an effort to enhance the quality of maternal health services in Bolivia (MotherCare 1997a), the MotherCare team with participation of the health authorities trained health service providers in maternal and obstetric care, interpersonal communication and counseling skills. The study also sought to improve iron supplement coverage through alternative means of distribution using community-based personnel and also through the use of IEC materials such as a flipchart for health workers focusing on the importance of iron supplementation, and a radio soap opera emphasizing appropriate use of iron tablets and the importance of controlling pregnancy anemia. The strength of this study was in the integration of key components into reproductive health service delivery and the recognition of the need to involve communities, health providers and policymakers at all levels.

In a study carried out for improving quality of care in Guatemala (MotherCare 1997b), community mobilization emerged as the key factor in its success. It was observed that communities possessed a tremendous amount of ability to mobilize resources and create solutions to overcome the barriers to maternal health. In one health area, a community came together and requested the services of a hospital resident at a Community Maternity. The hospital and the community worked together to provide an alternative to hospital and home deliveries by sensitizing TBAs. An attempt was made to build on this innovative effort by establishing one demonstration Community Maternity in six health areas, providing quality prenatal, delivery, postpartum and gynecological services in the community. Here again, policymakers, health providers and the community worked together toward the mutual goal of safe motherhood.

Another MotherCare study (MotherCare 1998) in Bangladesh assessed maternal health services in 7 districts using qualitative research tools and secondary data review. The major gaps and barriers identified in the services, including ANC services were : poor training, lack of focus on behavior change communication, inadequate monitoring, inadequate supplies and equipment, poor maintenance, and lack of necessary technical and interpersonal skills of the functionaries leading to poor service delivery. The key recommendations made included :

- Creating awareness of healthy behaviors during pregnancy, delivery and postpartum period among the clients, and generating demand for the use of maternal health services
- Encouraging client-sensitive behaviors among health service providers
- Expanding and improving the quality of normal delivery at home by trained providers and introducing postpartum visits
- Expanding and improving the quality of essential obstetric care
- Establishing effective linkages between community and health facilities for referral
- Developing an effective MIS; and
- Providing technical guidance to the design, implementation, monitoring and evaluation of maternal health programs from the national level.

In an evaluation of the CSSM program carried out in 3 Indian states, Huque et al (1996) observed that despite the comprehensiveness of the CSSM care package, certain significant gaps and barriers remained. Child survival took priority over safe motherhood initiatives. The major lacunae were observed to be in the areas of training, IEC and monitoring and evaluation. The CSSM training did not include hands-on experience related to the job functions of the health service providers. The evaluating team made key recommendations such as clarifying conceptual and operational issues related to essential obstetric care, including clinical midwifery (for normal delivery) and counseling skills in the training, procuring adequate drugs and quality equipment, and strengthening monitoring and evaluation of the Safe Motherhood component. The CSSM program aimed at shifting its strategy from a

vertical to an integrated one, and attempted to scale-up to a nationwide program, thus succeeding in systematically changing its approach to providing MCH services despite its shortcomings.

In order to improve the coverage and quality of MCH services at the PHC level in India, the ICMR initiated an eight-center study in 6 Indian states (ICMR 1994). A "Comprehensive MCH Care Package" of interventions was developed for mothers and infants, utilizing the 'high risk approach' strategy. The interventions included: reorientation training of medical and paramedical functionaries to improve their technical and supervisory skills, community education to create awareness regarding the utilization of MCH services and the high risk factors, development of better data recording system for monitoring and evaluation, and a feasible referral system. This package resulted in a significant improvement in the quality and coverage of MCH services. For example, there was a progressive increase in registration of pregnant women over two years. There was also an increase in early registration (< 19 weeks of pregnancy). The number of home visits by the service providers increased. The IFA distribution also showed a rise from 53% to 71%.

A few studies in literature have demonstrated the effectiveness of IEC interventions addressing critical behaviors. An IEC campaign of IFA tablets in Indramayu, Indonesia (MotherCare 1997c) promoted an understanding among pregnant women, their families, and their traditional and formal health care providers of the importance of taking IFA tablets, how to take them and where to get them. All campaign materials featured a healthy pregnant woman who consumed IFA every day. Women recognized and responded positively to this symbol. Messages also included instructions on IFA use, management of side effects, and supply sources, including the promotion of TBAs as distributors. The campaign used a counseling flipchart, take-home action cards as reminders, posters, banners, stickers, tin plates and balloons as special event promotional items, radio messages, repackaging of tablets in small plastic sealable bags, and community awareness meetings to maximize the impact. This program has significantly contributed towards an improved

understanding and design of social marketing programs and health/nutrition communication materials, and has emphasized the use of formative qualitative research in defining the overall program strategy.

Management of Health Services

According to Afo et al (1991), poor management was found to be a significant limiting factor in the development of Papua New Guinea's health services. In order to strengthen management capabilities of the health staff, in-service training courses in the areas of information system development, planning and supervision were provided to 184 health functionaries. It was found that efforts directed at improving the information system were more successful than those aimed at planning and supervision.

According to Taylor (1983), a major problem with the way in which health services have developed in most countries is the tendency for separate vertical programs to become firmly established and to resist integration even when the initial justification for a focused effort no longer exists. The vertical programs and campaigns implemented all round the year in the present study frequently diverted the attention of the health functionaries from their primary responsibilities. Eventually, the cumulative result of the frequent vertical campaigns (which took up as much as 50% of the functionaries' time annually) was a neglect of the quality of implementation of maternal nutrition and health services.

It was also observed in the present study that the health workers spent less than 50% of their time on productive work every day. Productive work included all tasks having a direct or indirect bearing on their job responsibilities. Non productive work included personal work unrelated to official duties, chatting and idle conversations with others, and reading newspaper. In a study carried out in Indore, Madhya Pradesh, Khanna and Kanani (1994) found that rural ANMs spent more time doing productive work than their urban counterparts. The average working hours per day for the rural ANMs were 4.6 (57.5% of their 8 hour schedule) and for the urban ANMs

were 4.5 (56% of their 8 hour schedule). However, the minimum working hours on any day by the rural and urban ANMs were as less as 2.9 (36.2% of their total official working hours). It was also found in the same study that nutrition services were the most neglected, and family planning and immunization were given priority.

Bryant and Essomba (1995) carried out a time-motion study in Cameroon to determine how health workers at rural health centers utilized their time. The study used direct observations made on 64 health workers in 20 health centers. It was found that only 27% of the health workers' time was spent on productive, health related activities, and of this time, the largest proportion was spent on curative, clinical work. Less than 1% of the workers' time was spent on preventive and outreach activities. Such studies are important to determine how health related activities are carried out in any health facility. If changes in the health service delivery structure are to be made, such studies would help establish the discrepancy between expected and actual behavior, and provide an important baseline for the evaluation of the effectiveness of any changes that are introduced within the system.

In Tanzania's Dodoma region, an evaluation carried out by Ahmed et al (1991) to identify problems of health care delivery revealed low staff motivation as the main problem limiting the quality of health care. Other problems identified in the urban area included lack of community awareness on health, poor supervision, poor equipment and lack of transport facilities. The major problems in the rural area included poor supervision, poor transport, low staff motivation, inadequate equipment, and shortage of trained personnel. In the present study also, the HSR approach clearly highlighted that low staff motivation and poor supervision were the key obstacles which hampered the implementation of suggested intervention strategies which were put in place to improve the quality of implementation of nutrition care services for pregnant women.

SECTION IV

A SITUATIONAL ANALYSIS OF THE STATUS OF ANTENATAL CARE AND NUTRITION CARE SERVICES FOR PREGNANT WOMEN IN THE RURAL PRIMARY HEALTH CENTER AND ITS COMPARISON WITH THE URBAN SCENARIO

The **major objective** of this part of the study was to review the status of the antenatal care services provided by the rural health system of a PHC and compare it with the antenatal care services provided by the urban health system of the Vadodara Municipal Corporation, with special reference to nutrition care services.

The **specific objectives** were:

- To study the antenatal care program of the rural health system, i.e. the PHC, with respect to its structure, job functions of the health functionaries, and the availability of IEC material on antenatal care services at the PHC.
- To assess the perceptions of the health functionaries (both female and male) with respect to the 3 nutrition related antenatal care services.
- To assess the perceptions of pregnant women and their family members residing in the areas near the PHC, with respect to antenatal care services, especially receipt and utilization of nutrition services.
- To assess the behaviors of pregnant women regarding procurement and consumption of IFA supplements.

Qualitative Methods Used

The qualitative methods used included semi-structured interviews, matrix ranking/scoring exercise, review of records and registers maintained at the PHC, observations of MCH clinics and exit interviews of women visiting the MCH clinics (Table 4.28). These methods have been discussed in the previous sections. Appendix 5 gives the various question guides used for data collection.

Table 4.28 : Qualitative and Participatory Methods Used in the Rural Evaluation

Method Bernard (1995)	Informants	Number	Information Sought
• Semi-structured Interviews	* Health functionaries of the PHC (female and male)	16	▪ Perceptions regarding health problems during pregnancy, ANC and nutrition care services provided by the PHC
	* Pregnant women and family members	15 pairs	▪ Perceptions regarding ANC services
	* Pregnant women		▪ Behaviors of PW regarding utilization of nutrition services, especially anemia control services
• Matrix Ranking/Scoring Exercise	* Health functionaries	16 partici-pants	▪ Availability, utilization and benefits of ANC services to pregnant women
• Secondary data review	* Medical Officer	-	▪ Vertical programs implemented at the PHC
• Direct Observations	* Health functionaries at MCH clinics at the PHC and at two sub-centers	4 at the PHC, 2 at the sub-center	▪ Field level implementation of nutrition services as a part of the ANC
• Exit Interviews	* Women visiting MCH clinics	30	▪ Utilization of ANC and MCH services

RESULTS AND DISCUSSION

The results of the implementation of ANC services at the PHC are presented as under:

- **Current implementation** of antenatal care and nutrition care services in the rural health system.
- **Vertical campaigns** implemented at the PHC through **secondary data review**
- **Perceptions of the rural health functionaries** regarding health problems during pregnancy including anemia and nutrition related antenatal care services.
- **Perceptions of the rural health functionaries** regarding ANC services through matrix ranking/scoring exercise.
- **Perceptions of pregnant women and their family members** (husband/mother-in-law) regarding ANC and nutrition services during pregnancy
- **Behaviors of pregnant women** related to procurement and consumption of IFA supplements
- **Direct observations** at MCH clinics to get an insight into the field level implementation of nutrition related ANC services
- **Exit interviews of women** visiting the weekly MCH clinics and utilizing various services.

Current Implementation of Antenatal Care services

According to the CDHO, the health services were better implemented in the rural areas as compared to the urban areas, as the rural areas had better outreach services. In the urban areas, the health service delivery was mostly institution based unlike rural areas where home visits were more frequent.

- **Expected Job Functions of the Health Functionaries**

Several tasks were expected of both the male and female health functionaries working at the PHC. A detailed job list was given in the home visits-daily diary of the functionaries both for the male and female workers. Table 4.29 gives the major themes under which the job functions of the male and female health supervisors were described. It can be noted that as compared to the expected job functions of the urban health functionaries, the job functions of the rural functionaries were clearly specified

Table 4.29 : Job Functions of Rural Health Functionaries

Job functions of Health Supervisor (Male)

1. Observation and guidance
2. Team work
3. Supply and materials
4. Records and reports
5. Malaria
6. Contagious diseases
7. Leprosy
8. Tuberculosis
9. Environmental sanitation
10. Comprehensive disease prevention program
11. Family planning
12. Nutrition
13. Prevention of blindness
14. Registration of births and deaths
15. Primary referral care
16. Health education

Job functions of Health Supervisor (Female)

1. Observation and guidance
2. Team work
3. Care of supply, materials and sub-centers
4. Records and reports
5. Training
6. Maternal and child welfare
7. Family planning
8. Nutrition
9. Comprehensive disease prevention program
   - Respiratory diseases
   - School health
10. Primary referral care
11. Health education

and gave details of what was expected from them and their supervisors. The job functions of the urban workers, on the other hand, as given in the VMC's records (Table 4.3), were incomplete and unclear, mentioning only a few services such as "doing field work" and "carrying out MCH activities".

With respect to nutrition services, the rural health functionaries were expected to distribute IFA supplements to pregnant and lactating women and preschool children, educate women and increase their awareness regarding MCH services, nutritious food, breastfeeding, and other national health campaigns. The female health supervisors needed to conduct MCH clinics once a week at all the sub-centers with the help of the ANMs.

With respect to supervision and monitoring, the supervisors were expected to visit the ANMs at their respective sub-centers at least once a week to monitor their activities and give them guidance to carry out their job functions effectively. The supervisors were also expected to check the records maintained by the ANMs and to ensure that each sub-center had an adequate supply of medicines and other essentials.

- **Training Received by the Health Functionaries**

The duration of training received by the rural female health functionaries depended on their position in the hierarchy of the system or designation. All of them obtained training after finishing secondary school (Class X). The ANMs received training for 2 years, the FHWs 1½ years, the LHVs for 2½ years and the FHSs were trained for 2 years. The training curriculum was similar to that of the urban functionaries. The training was imparted at a nurses' training hospital in Vadodara and at the Rural Health Training Center at Padra in Vadodara district. The male workers had been trained as Sanitary Inspectors at Vadodara.

The on-the-job training was sporadic and organized periodically only in relation to the specific vertical programs such as leprosy elimination and other health programs like the target free approach and the RCH program. The training for these programs

was of short duration, ranging from 2 to 3 days. The health functionaries had not received any kind of specific refresher training on antenatal care.

- **Nutrition Related Antenatal Care Services Provided at the PHC**

The 3 nutrition related antenatal care services provided at the PHC consisted of weight monitoring of pregnant women, anemia control by means of IFA supplementation and nutrition-health education and counseling.

- **Monitoring of weight gain during pregnancy**

Pregnant women visiting the PHC were weighed during the MCH clinics held once a week. They were asked to come for antenatal checkup every 15 days during which the ANMs weighed the women and recorded the weight on the Mother's card and in the ANC register. However, according to the ANMs, all the sub-centers did not have a weighing scale. Also weight monitoring was not done during home visits. But the health functionaries were aware of the importance of monitoring of weight gain during pregnancy. One ANM said that the pregnant women themselves were very enthusiastic and asked the ANMs to check their weight during the MCH clinics.

In contrast, in the urban health system, very few pregnant women came to the MCH clinics for weight monitoring; the other women who visited the clinics, came mainly for the purpose of child immunization. Thus, the function of weight monitoring was attached more importance in the rural area.

- **Anemia control program**

The PHC's anemia control program for pregnant women was similar to that of the Health Posts, wherein all pregnant women were expected to receive IFA supplements (100 mg elemental iron + 0.5 mg folic acid) for at least 100 days. The women were asked to consume one IFA tablet every day. However, the PHC faced problems with the supply of the supplement as the IFA tablets had not been available for over a year, after which the supplements were made available to the PHCs by the State government.

When available, the IFA tablets were distributed to women, packed in polythene sachets of 25 tablets each, either at the PHC during the MCH clinics or through home visits. Later, the new stock of tablets came in the form of blister packs of 10 tablets each. Three of these packs (30 tablets) were given to the pregnant women in each offtake. The number of tablets given was recorded in the Mother's card by the ANMs. No record was maintained about compliance with the IFA supplements; the women were only verbally asked whether they consumed the tablets.

The columns of the ANC register related to IFA supplementation are listed below.

Sr. No.	Date of Registration	Name	Age	IFA Tablets	
				Date of starting the supplement	Date of completing the supplement

Though the information on the dates of starting the receipt of the supplement and of completing the supplement id appear in the register, there was no column on the actual number of tablets consumed. In case of the urban records also, the number of iron tablets received by the women along with the respective dates of receipt of the tablets were mentioned, and the record related to the consumption of the tablets was not kept. Further, dates of starting and completing the supplement do not appear in the corresponding urban register.

Besides IFA supplementation, anemia detection and diagnosis was carried out at the PHC by means of biochemical estimation of blood hemoglobin levels using Sahli's method. This facility was not available at the urban Health Posts. The hemoglobin testing was done for all pregnant women during their first visit to the MCH clinic for antenatal checkup and thereafter on recommendation by the Medical Officer. Thus, hemoglobin levels were tested at least once for all the pregnant women visiting the PHC, unlike the urban centers where neither clinical nor biochemical assessment for anemia diagnosis was made.

- **Nutrition-health education and counseling**

According to the Medical Officer, who was the overall in-charge of the PHC, and as mentioned in the job functions of the health functionaries, the FHS with the help of the FHWs was expected to impart nutrition-health education to pregnant women on topics such as MCH, family planning, diet and nutrition, immunization, child malnutrition, IFA tablets (for pregnant and lactating women), vitamin A supplements (for < 5 children), breastfeeding and other national health programs. The male health workers were to educate people about control of infectious morbidities, environmental sanitation, MCH, family planning, diet and nutrition, immunization, dental care, child immunization, IFA and vitamin A supplementation, and other national health programs. It was expected of the health functionaries to educate people through community group meetings with the cooperation of local *mahila mandals,* teachers and community leaders, as well as through home visits. However, no records were maintained regarding the content of nutrition counseling given to women.

- **Availability of IEC Material on Nutrition Related Antenatal Care Services**

Unlike the urban Health Posts, the rural PHC had considerable IEC material on antenatal care and MCH services. The material included booklets on varied topics such as family planning and contraceptive use, immunization, child care, childhood diarrhea, lactation and colostrum, vitamin A deficiency and blindness, iodine deficiency disorder and goiter, and morbidities such as dengue, malaria, plague and leprosy; flip books on MCH (ANC, antenatal checkup, diet during pregnancy, high risk factors during pregnancy, safe delivery, weight of the baby, complementary foods, immunization, diarrhea) and family planning, care of the girl child, a flip chart with information on balanced diet, anemia, vitamin A deficiency, malaria, diarrhea, worms, scabies, and immunization; charts on common childhood illnesses including micronutrient deficiencies (anemia and night blindness), anemia (definition, causes, symptoms, treatment and prevention), cataract, polio, tuberculosis, diabetes, AIDS, ORS, feeding during diarrhea, leprosy, malaria, care of the newborn, immunization, and on content of the first antenatal visit (registration and weight monitoring). Most

of the material was in the local language, *Gujarati*, and was displayed on the walls of the various rooms in the PHC, except the booklets and flip charts, which were stored inside a cupboard. However, the material was not observed to be used for counseling women during the times the investigator visited the PHC. The major reason given by the PHC staff was lack of sufficient time due to other tasks and multiple health campaigns.

- **Records and Registers Maintained at the PHC**

Table 4.30 gives the list of various records and registers maintained at the PHC. Nutrition relevant information entered in these registers is summarized below.

- The home visits register contained columns for recording information about visits made to the houses of pregnant and lactating women, and preschool children.
- The survey register contained information regarding eligible couples for family planning.
- The third register was family planning services register and contained information on contraceptive use.
- Register No. 4 was ANC register, which had information on procurement and consumption of IFA tablets by pregnant women, antenatal visits, TT immunization, delivery type and place of delivery, and birth weight of the newborn.
- The infant care and immunization register had columns on child immunization and the child's nutritional status.
- Register No. 6 was on malaria, No. 7 was stock register, and No. 8 contained demographic information on vital statistics such as births and deaths.

- **Vertical Programs/Campaigns Implemented at the PHC**

Data regarding the various vertical programs/campaigns implemented at the PHC collected through secondary data review revealed that similar to the urban areas, the rural health functionaries also had to look after a host of vertical campaigns. A list of these campaigns is given in Table 4.31. According to the Medical Officer, these campaigns though well meant, took a lot of the health workers' time, and their basic

Table 4.30 : List of Records and Registers Maintained at the PHC

Register No. 1	Home visits - Daily diary
Register No. 2	Survey register for family planning
Register No. 3	Family planning services register
Register No. 4	Antenatal and postnatal care register
Register No. 5	Infant care and immunization register
Register No. 6	Malaria register
Register No. 7	Stock register
Register No. 8	Birth, death and still birth register

Other registers : Master register, Delivery register, Attendance register

Table 4.31 : Vertical Campaigns and Major Health Care Activities Carried Out Over a Year by the Rural Health Functionaries

Month	Vertical Campaign
January	• Pulse Polio National Program, Leprosy elimination campaign
February-March	• Survey in the areas, completion of family planning targets
April	• Survey for 15 days, updating survey for enrolment of eligible couples, preparation of action plan for the PHC and its sub-centers, Celebration of World Health Day
May, June, July	• Chlorination of water for prevention of diarrheal epidemic and cholera in villages under PHC, *Jeevan Raksha Yatra* in May
September	• School health program
October	• Two medical diagnostic camps, Campaign against AIDS, *Maa Raksha Mahotsav* (training of TBAs for better delivery services)
November	• Malaria Control Program, Special school health program
December	• Pulse Polio; Preparation for the program in the first week of December
January	• Pulse Polio; Modified Leprosy Elimination Campaign in late January to early February

job functions were totally ignored when a campaign was actually being implemented in their work areas. For example, for one day's pulse polio program, an entire week prior to the actual campaign day was spent on surveying children below 5 years of age; 3 days before the program, the mothers of these children were given immunization cards which were to be filled in on the day of the campaign by the health workers. In case of the school health program, a time of about two months was spent.

Perceptions of the Rural Health Functionaries

- **About health problems during pregnancy :** As displayed in Table 4.32, according to the LHVs, ANMs and male workers, the common health problems during pregnancy included nausea and vomiting, giddiness, anemia, hypertension, edema on feet, loss of appetite and increased frequency of urination. The major reasons given for these problems included anemia, poor food intake, infrequent antenatal checkup and poverty. Two ANMs mentioned hormonal changes as the reason for these problems. The treatment for anemia mainly included IFA supplementation. For problems such as giddiness, nausea and vomiting, loss of appetite, hypertension and edema, the health workers felt that the women should consult a doctor.

- **About anemia :** The LHVs and ANMs both estimated the prevalence of pregnancy anemia in their area at 50%. However, the male workers gave a range of 40-80%. Anemia detection was done by the health functionaries both through hemoglobin estimation and checking for clinical signs such as paleness of conjunctiva, nails, tongue and lips. The common causes of anemia mentioned by the LHVs included poor nutrition and irregular consumption of IFA supplements. In addition, the ANMs felt that anemia was also caused due to poor nutritional status of the mother, low intake of green leafy vegetables in the diet, repeated pregnancies, malaria and poverty. One of the male workers mentioned low body iron stores as the cause of anemia during pregnancy.

Table 4.32 : Perceptions of Health Service Providers Regarding Health Problems During Pregnancy

Major Responses	LHVs (N=2)	ANMs (N=9)	Male Workers (N=6)
	Number of Respondents		
• Common health problems during pregnancy			
▪ Anemia	2	4	2
▪ Hypertension	2	3	3
▪ Nausea and vomiting	1	7	3
▪ Edema on feet	1	4	2
▪ Giddiness	NR	7	2
▪ Loss of appetite	NR	2	2
▪ Increased frequency of urination	1	4	NR
• Reasons for these problems during pregnancy			
▪ Anemia	2	2	5
Poor nutrition and inadequate food intake	1	2	2
▪ Infrequent antenatal checkup	2	2	1
▪ Poverty	NR	1	NR
▪ Hormonal changes	1	2	NR
• Treatment for common health problems during pregnancy			
▪ Anemia			
★ IFA tablets	2	5	4
★ Increased intake of GLVs in diet	NR	2	2
★ Nutritious diet	2	2	NR
	NR	1	NR
▪ Giddiness			
★ Medicines	NR	1	NR
★ Doctor's advice	NR	2	NR
▪ Nausea and vomiting			
★ Doctor's advice	NR	2	NR
★ Rest	1	NR	NR

NR = No Response

Major Responses	LHVs (N=2)	ANMs (N=9)	Male Workers (N=6)
	Number of Respondents		
▪ Loss of appetite			
★ Doctor's advice	NR	1	1
▪ Hypertension			
★ Doctor's advice	NR	2	NR
★ Reduction in salt intake	NR	NR	1
▪ Edema			
★ Reduction in salt intake	1	NR	NR
★ Nutritious diet	1	NR	NR
• Causes of anemia during pregnancy			
▪ Poor nutrition	2	9	5
▪ Poor nutritional status of the mother	NR	3	2
▪ Low iron stores in the body	NR	NR	1
▪ Irregular consumption of IFA tablets	1	2	2
▪ Low intake of GLVs	NR	2	1
▪ Repeated pregnancies	NR	3	1
▪ Malaria	NR	1	NR
▪ Poverty	NR	1	NR
• Treatment of anemia			
▪ IFA tablets	2	9	6
▪ Adequate nutrition	2	4	5
▪ Increased consumption of GLVs	2	7	6
▪ Increased consumption of pulses and legumes	2	5	5
• Counseling given to anemic pregnant women			
▪ Take IFA tablets	2	9	6
▪ Increase consumption of GLVs	2	9	6
▪ Increase consumption of milk, pulses and jaggery	1	9	6
▪ Take adequate diet	2	3	2
▪ Take adequate rest	1	3	NR
▪ Include non-vegetarian foods in diet	1	2	NR
▪ Take advice of the health worker visiting your area	NR	1	NR

The major common responses on the treatment of anemia included IFA supplementation, adequate nutrition, and increased consumption of green leafy vegetables, pulses and legumes in the diet. With respect to anemia prevention, the health workers advised pregnant women to consume IFA tablets, increase food intake, especially of green leafy vegetables, milk, jaggery and pulses as well as non-vegetarian foods, and take adequate rest. The health workers felt that it was a little difficult to convince the pregnant women at times to consume IFA supplements, if there was resistance from their family members such as husband and mother-in-law. In such cases, they made special efforts to convince the family members.

The health workers perceived that the main objective of the government anemia control program was to reduce the prevalence of anemia during pregnancy through distribution of IFA supplements to poor women. According to the functionaries, the IFA supplements (tablets) were distributed to the pregnant women at the MCH clinics and through home visits. ICDS *Anganwadi* workers also distributed these supplements. The records maintained on IFA supplementation included the stock register and Mother's card besides the ANC register.

Some of the suggestions given by the rural health functionaries for improving the Anemia Control Program were :

- The government should give adequate number of tablets to cover all pregnant women in the area.
- In addition to IFA supplements, supplementary food should be provided to poor pregnant women.

On comparing the above perceptions with those of urban functionaries, it was seen that: Both the groups were aware about anemia, its adverse consequences and treatment. However, they were not aware of the exact nature of these issues. Health functionaries belonging to both the rural and urban areas felt that giving IFA supplements to pregnant women was an effective way of controlling anemia. However, they complained about the irregularity in the supply of IFA tablets. In the rural area, IFA tablets were not available for nearly a year before the study period.

- **Perceptions of Rural Functionaries Regarding Antenatal Care Services Through Matrix Ranking/Scoring Exercise**

As described for urban functionaries, a Matrix Ranking/Scoring exercise was also conducted with the functionaries of the rural Primary Health Center with the purpose of assessing the regular availability, utilization and benefits of various antenatal care services provided at the PHC.

The rural group was first asked to list down the various ANC services provided at the PHC followed by a ranking exercise to depict the priority given to each service by them in the order of importance. Interestingly, the group ranked the ANC services according to the **sequence** in which they actually provided the services at the PHC. As one ANM said,

"Pahela toh register karvu j padè ne pachhi biji sevao apay"

((We) have to register (the pregnant women) first and then can other services follow).

Therefore, early registration received the first rank. The group said that they could do early registration (before 4 months of pregnancy) for about 40% women in their work areas. However, they added that they registered all the women at some time during their pregnancy, thus achieving 100% registration figures. Antenatal registration was done by the functionaries through home visits and during family planning surveys. They added that some pregnant women preferred to go to private hospitals initially as they had a fear of miscarriage before 3 months of gestation.

While talking about the contribution of male health workers in registering pregnant women for ANC, one male worker said that if they came across any unregistered pregnant woman while doing their malaria work, they informed the ANMs to register her. During the MCH clinics too the male workers helped the ANMs in registering pregnant women for ANC. The other ANC services received ranks in a sequential manner as shown in Table 4.33.

Table 4.33 : Matrix Ranking/Scoring Exercise with Rural Health Functionaries

Services	Rank	Scores Given to Various Antenatal Care Services		
		Criteria		
		Regularly available to women	Frequently utilized by women	Beneficial to women
• Early registration	1	5	5	5
• Clinical and physical examination (palpitation and FHS)	2	5	4	5
• TT immunization	2	5	5	5
• Measuring height and monitoring of weight gain	2	5	3	5
• Hemoglobin, blood pressure, urine albumin and sugar	2	3	3	5
• History of previous pregnancy	3	5	5	5
• Nutrition health education	4	5	4	5
• Identification of high risk mothers and referral services	5	3	3	5
• Identification of chronic diseases (TB, cancer, heart disease)	5	3	3	5
• IFA tablets	6	5	4	5
• Financial aid for purchasing food for pregnant women	7	3	4	5
• Trained attendant during delivery	8	5	3	5
• Advice regarding family planning methods	9	5	4	5

Regular availability of the various ANC services to pregnant women

The group gave highest scores (i.e. 5) to early registration, clinical and physical examination, TT immunization, weight monitoring and distribution of IFA tablets to pregnant women. They also added that the services of a trained birth attendant during delivery and later family planning were also available for the women at the PHC. In the urban areas, the services of antenatal registration, TT immunization, IFA distribution and NHE received the highest scores in terms of their regular availability.

The female health workers said that along with antenatal registration, they could achieve 100% coverage for clinical and physical examination as they examined for clinical signs for the detection of anemia and carried out abdominal examination even during home visits.

The availability of TT immunization was good with 100% coverage of pregnant women. The health workers carried TT vaccines to the field areas, immunized women at MCH clinics at the sub-centers as well as at the ICDS *Anganwadis*.

As regards monitoring of weight gain during pregnancy, though the score given was 5, this service was available only at the PHC and some of its sub-centers. The group reported that some sub-centers did not have weighing scales to provide this service. Weight monitoring was also not done during home visits/field visits.

The service of nutrition health education was regularly available to the pregnant women wherein dietary advice was given to the women. The advice included increased consumption of green leafy vegetables, jaggery, brinjals and milk. They also advised the women to consume iodized salt.

The facility of checking of blood hemoglobin levels was available at the PHC only when they had adequate supplies of laboratory chemicals. Blood pressure of the pregnant women visiting the MCH clinic was also checked by the medical officer.

With respect to IFA supplementation, although the health workers regularly distributed the tablets to pregnant women, the regularity of this service depended solely on the supply of IFA, which was not always adequate and regular. The IFA supplements were distributed at MCH clinics and through home visits.

Utilization of the ANC services by the pregnant women

The service of TT immunization was utilized the most by the pregnant women and received the highest score of 5. Following this service were early registration, clinical and physical examination, nutrition health education, IFA supplementation and weight monitoring.

As regards the moderate utilization of the service of early antenatal registration during pregnancy, one of the group members said,

"Early registration nathi karavata karan ke davakhana ma na javani badha rakhe chhe"

(They don't do early registration due to religious reasons).

For nutrition health education too, the women did not always listen to food related advice because of certain religious restrictions. As mentioned by the women,

"Ratva no doro hoy etle gol, dudh evu badhu na khavay"

(Because of our ritual (sacred thread), jaggery, milk...all this cannot be eaten).

Regarding IFA supplementation, the group said that many pregnant women did consume IFA tablets. In case they didn't, the doctor prescribed iron syrup which was purchased from the village pharmacy or from Vadodara.

Weight monitoring was well utilized by the pregnant women visiting the PHC. They were also aware of the availability of this service at the PHC and themselves asked the PHC staff to measure their weight. As one ANM said,

"Am tha am tha vajan karva aavi jaay chhe,kahe ke ae mane bahu game chhe"

(Just like that they come to weigh (themselves), saying that I like it very much).

The referral services were not properly utilized as many people didn't take the pregnant woman to the government hospital in Vadodara because of long distance, and went to the quacks instead. As one group member said,

"Ghani vakhat ame emne kahiye chhe ke mota davakhane Vadodara ma jao, pan te loko atli dur aavta nathi ane dora-dhaga kare chhe"

(Many a times we tell women that go to the big hospital in Vadodara, but they do not go that far and instead go to faith healers).

Where the service utilization was concerned, the urban picture was very much different. The ANMs said that though the ANC services were available and accessible to the pregnant women, they did not utilize them. However, the exit interviews with the pregnant women from the urban areas revealed that the women were not aware of the availability of ANC services at the weekly MCH clinics as they thought that the clinics were meant for the purpose of child immunization.

Benefits of the ANC services to the pregnant women

According to the group, all the ANC services mentioned in the exercise were beneficial to the pregnant women and were given the maximum score of 5. There was a total consensus among the group members regarding this.

Perceptions of Rural Pregnant Women and Their Family Members

- **Awareness of antenatal care services available at the PHC**

The general awareness regarding the availability and receipt of antenatal care services available at the PHC was assessed by interviewing 15 pregnant women and their family members (either mother-in-law or husband). The major responses are summarized in Table 4.34.

All the pregnant women stated that they had registered for antenatal care, either at the PHC or at a private hospital. A majority (87%) had been registered at the PHC. Out of them, 60% were accompanied to the PHC/clinic, usually by the mother-in-law. In contrast, the urban women were accompanied by their husbands to the ANC clinics. The time of registration varied from as early as the third month to as late as the seventh month of pregnancy. Nearly 70% of the women had registered by the fifth month of pregnancy. In the urban areas, the pregnant women had registered mainly at private and government hospitals and very few (n=4) had registered at the Health Posts.

Nearly all (93%) of the rural pregnant women were aware that physical/abdominal examination was carried out during antenatal checkups. However, only 40% of the family members knew about this. While the pregnant women were quite well aware of the availability of services such as blood and urine examination, IFA tablet distribution, weight monitoring and TT immunization, half of the family members did not know about the availability of these services.

Women tended to be aware of only those services they had actually received. Thus, when asked about 'which services they are aware of' and 'which services they have received', there was no difference in the responses. The rural women listed down 7 services availed by them whereas the urban women listed 4 services which they had actually received during ANC visits. They included IFA supplementation, weight monitoring, TT immunization and physical examination by the doctor.

Table 4.34 : Perceptions of the Rural Pregnant Women and Their Family Members Regarding Antenatal Care Services

Major Responses	Pregnant Women (N=15)		Family Members (N=15)	
	n	%	n	%
• Registered for antenatal care				
▪ Yes	15	100	15	100
▪ No	-	-	-	-
• Accompanied for ANC to the PHC/hospital				
▪ Yes	9	60	9	60
▪ No	6	40	6	40
• Accompanied by				
▪ Mother-in-law	4	44	4	44
▪ Sister-in-law	2	22	2	22
▪ Mother	1	11	1	11
▪ Husband	1	11	1	11
▪ Friend	1	11	1	11
• Services received				
▪ Physical/abdominal examination	14	93	5	33
▪ Received medicines (IFA tablets)	8	53	2	13
▪ TT immunization	6	40	2	13
▪ Blood and urine examination	12	80	2	13
▪ Weight monitoring	8	53	2	13
▪ Blood pressure checkup	5	33	-	-
▪ Height measurement	1	7	-	-
▪ Does not know	-	-	8	53
• Importance of various ANC services as perceived by the respondents				
▪ Weight monitoring				
- Know whether weight has increased or not	8	53	7	47
- Know whether the baby is developing properly	6	40	6	40
- Know whether the woman is healthy	1	7	1	7
- Does not know	-	-	1	7

Major Responses	Pregnant Women (N=15)		Family Members (N=15)	
	n	%	n	%
▪ Antenatal checkup by doctor				
- Can assess the development of the fetus	10	67	14	93
- To know about the time of delivery	2	13	1	7
- To assess the position of the baby in the uterus	3	20	-	-
▪ IFA supplementation				
- Increases strength	9	60	10	67
- Increases appetite	3	20	4	27
- Increases blood	2	13	1	7
- Helps fetal development	1	7	-	-
▪ Vaccination against tetanus				
- Prevents tetanus	15	100	15	100
▪ Nutrition health education and counseling				
- Receive information regarding foods to be consumed during pregnancy	10	67	7	47
- Receive information about importance of consuming GLVs, milk, jaggery, pulses and sprouts during pregnancy	5	33	3	20
- Receive information regarding IFA consumption	4	27	-	-
- Does not know	-	-	4	27
• Currently consuming IFA tablets				
▪ Yes	15	100	15	100
▪ No	-	-	-	-
• Needs reminder to consume IFA				
▪ Yes	-	-	-	-
▪ No	15	100	15	100
• Special dietary care during pregnancy				
▪ Eats everything	10	67	6	40
▪ Takes more GLVs, milk, pulses and fruits	7	47	4	27
• Works the same	15	100	15	100
• Registration for delivery				
▪ Government hospital/PHC	13	87	13	87
▪ Private hospital	2	13	2	13

With respect to importance of various services, nearly half of the women and their family members believed that weight monitoring was useful to know whether the woman's weight had increased or not, or, weight monitoring gave an indication of fetal growth. The importance of antenatal checkup was also related to fetal growth as stated by most of the women and family members. Majority perceived that IFA tablets increased strength, appetite and blood, and helped in the development of the fetus. All the women and their family members were aware that vaccination against tetanus helped prevent it. As regards nutrition health education and counseling, the women and their family members said that they received information from the health workers about diet during pregnancy, and 47% followed this advice. These responses matched the ones given by the urban women.

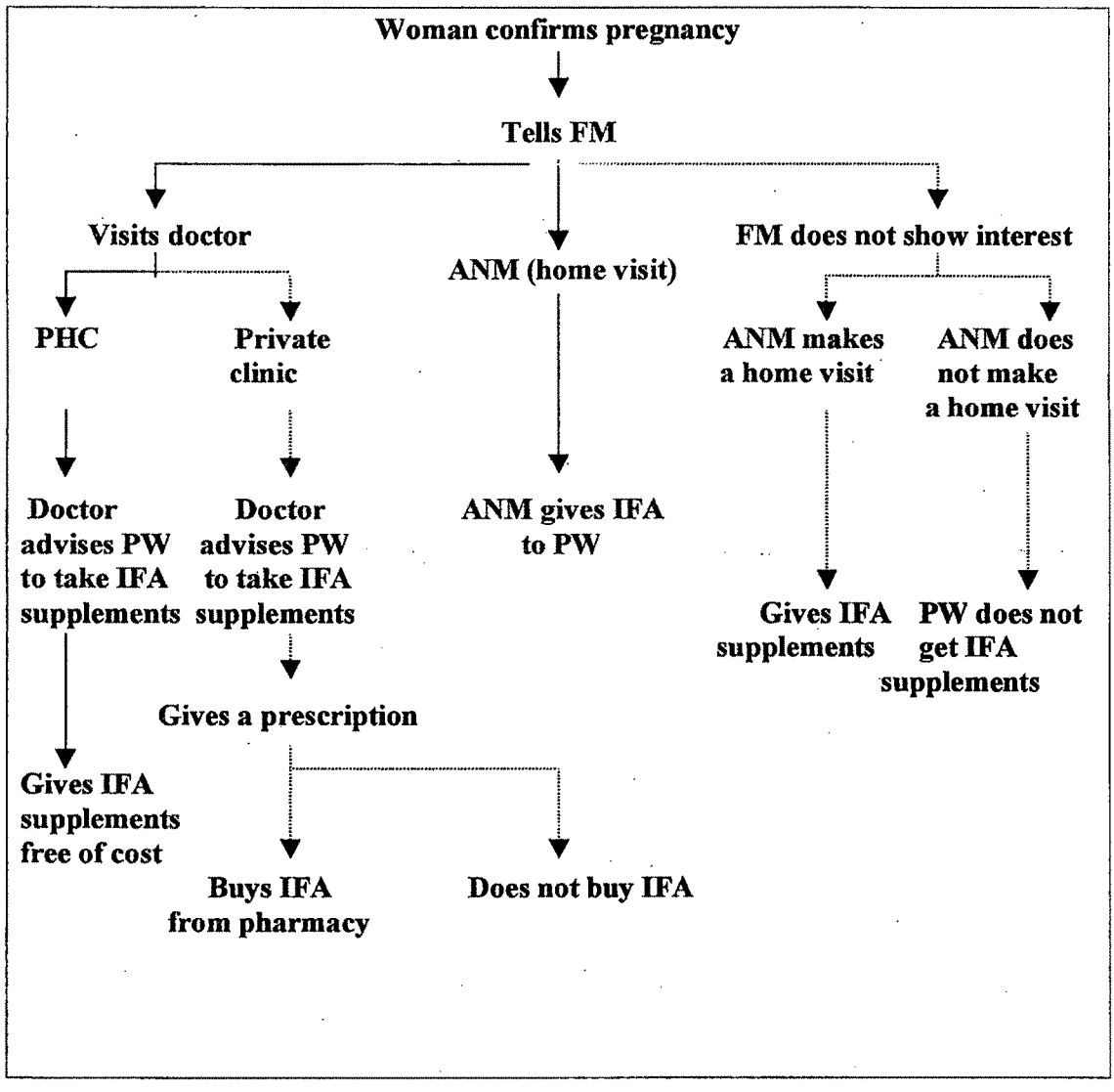
All the women were currently consuming IFA tablets and did not need any reminder. Regarding the amount of household work, it remained the same for all women. As against this, of the total number of urban women consuming IFA tablets, 17% needed to be reminded either by the husband, mother-in-law or children. Of the 15 women interviewed, 87% had registered for delivery at the PHC and the remaining at nearby private hospitals. In case of the pregnant women in urban areas, 73% had registered for delivery either at a government hospital or a private clinic.

Unlike their urban counterparts, the rural women and their family members felt that the ANC services provided at the PHC were satisfactory and did not offer any suggestions for improved care.

- **Behaviors of pregnant women regarding procurement and consumption of IFA supplements**

From the semi-structured interviews of the pregnant women residing in the area of the rural PHC and the observations carried out during the ANC clinics, an EDM was developed to illustrate the behaviors of pregnant women regarding procurement of IFA supplements (Figure 4.9). When a woman confirms her pregnancy, she tells about it to a close family member who takes her to the PHC for checkup or in a few

Figure 4.9 : Procurement of IFA Supplements - An Ethnographic Decision Model



Frequent responses
Infrequent responses

FM : Family Member (s)
IFA : Iron-folic acid supplements
PW : Pregnant Woman
ANM : Auxiliary Nurse Midwife

cases, to a private clinic. At these places, she is advised to take IFA supplements by the doctor, which she gets either free-of-cost (PHC) or buys them at a pharmacy. It was noted that unlike in the urban areas, women preferred to go to the PHC for antenatal checkups and even those who had registered at private clinics, came to the PHC for routine checkup. In very rare cases the family members were indifferent, and mostly they supported the woman to visit the doctor. The ANMs too made home visits and distributed IFA tablets to the pregnant women.

The overall picture that emerged with respect to IFA procurement and consumption by pregnant women indicated that :

- Of the 12 women who were consuming the supplement, 50% had procured it from the PHC, 16% from the pharmacy, and the remaining received the supplement both from the PHC and the pharmacy. For those who received IFA tablets from the PHC, it was prescribed to them by the PHC medical officer whereas the others had taken advice from local or Vadodara based private medical practitioner. At the PHC, the ANMs gave them the tablets.
- The women received 25-30 IFA tablets in one offtake at the PHC. They received the tablets during the MCH clinics conducted at the PHC and the ANMs also gave them the tablets during their home visits.
- It was found that as high as 80% of the women were currently consuming the IFA supplements. However, they started consuming the supplements at different gestational ages varying from the third month (26%) to the eighth month (10%) of pregnancy. Out of those who were taking the tablets, 62% took one tablet daily and the rest of them took 2 tablets every day; and one took iron syrup.
- As regards the advice given by ANMs regarding the consumption of IFA tablets, the women stated that they were told –

  "Aa shakti ni goli chhe, roje ek goli galvani, jamya pachhi- time sar"

  (This is strength giving tablet, take one every day after the (main) meal - on time).
- None of the women were reminded by their family members to consume the tablets. The women who did not take the tablets did so because of side effects such as nausea and vomiting.

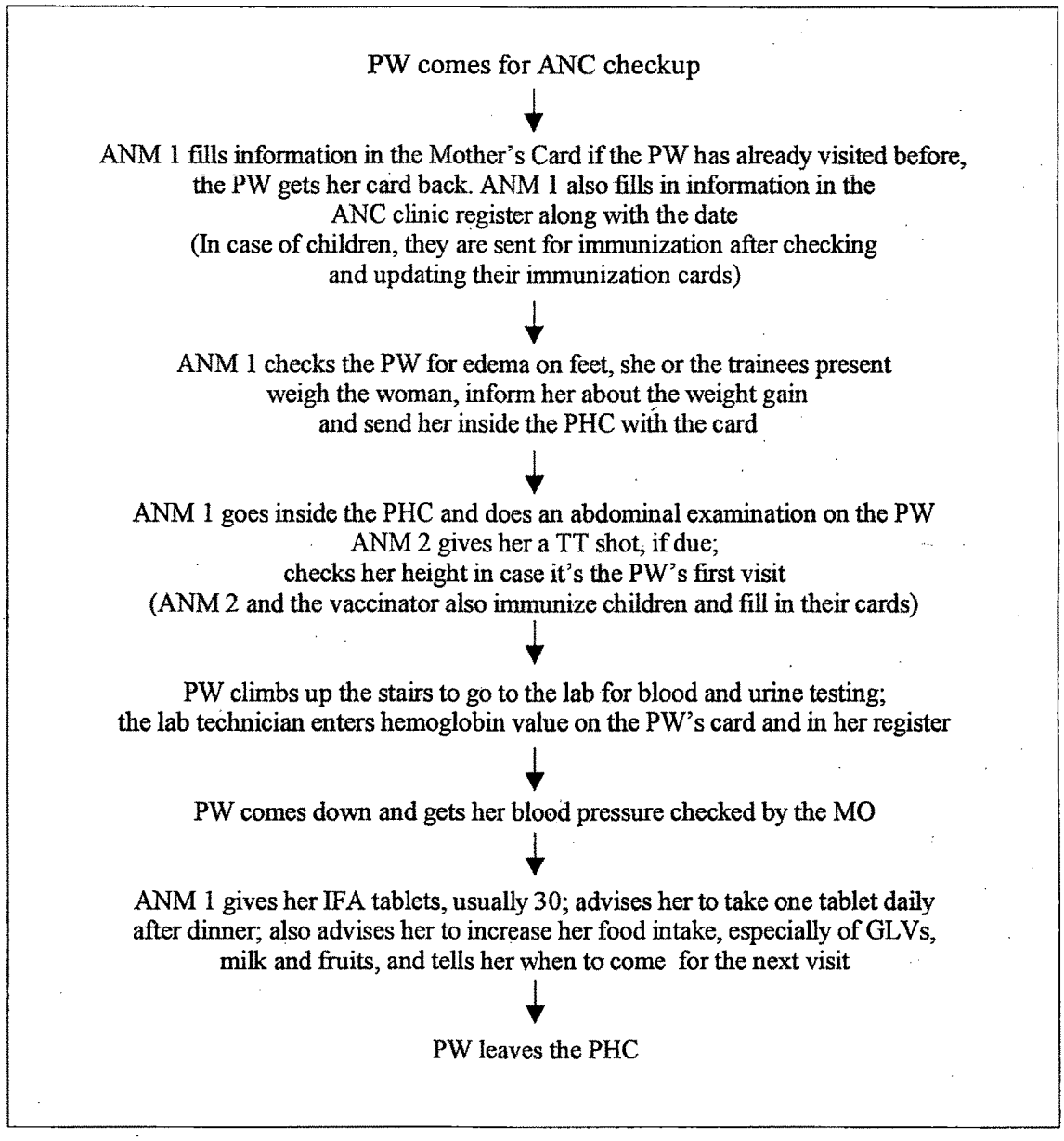
- The frequent responses about the benefits of consuming the IFA supplements by the women were :
  - ★ Got strength *(shakti aavi)*
  - ★ Feel hungry *(bhookh lage chhe)*
  - ★ Feel good *(saaru lage)*
  - ★ Food consumption has increased *(khorak vadhu)*
  - ★ Blood increases *(lohi vadhe)*
  - ★ Fetus gets strength *(balak ne shakti aave)*.

- **Direct Observations at MCH clinics**

Direct observations were carried out at 6 MCH clinics - 4 at the PHC and 2 at one of its sub-centers with the purpose of assessing the implementation of nutrition services. Figure 4.10 presents a flow chart of sequential activities taking place during the MCH clinics conducted at the PHC. These clinics went on for about three hours. Unlike the urban scenario, it was observed that many pregnant women came for antenatal checkup at the clinics indicating a higher awareness among them regarding the availability of ANC services at the clinics. Many parents also visited the clinics for immunizing their children. The major services received by the women at these clinics were height and weight measurements, antenatal checkup, measuring blood pressure, TT immunization, blood and urine examination and IFA supplementation. The women were given about 25-30 tablets in one offtake. The advice received by the woman was mainly related to IFA consumption, and regarding increasing the dietary intake, especially of green leafy vegetables, milk and fruits.

At the sub-centers, the physical examination was carried out by the ANM who was in-charge of the sub-center. At one sub-center, weight monitoring was not done due to unavailability of weighing scales.

Figure 4.10 : Flow Chart of Sequential Activities Taking Place At the Weekly MCH Clinics Conducted at the PHC



Some MCH Services Available at the PHC

MCH Clinics

Child Immunization

Blood Hemoglobin Estimation

Iron-Folic acid Tablets

- **Exit interviews with Women Visiting the MCH Clinics**

In all, 30 women (21 pregnant, 9 lactating) who visited the weekly MCH clinics at the PHC were interviewed. The purpose of these interviews was to elicit information regarding the types of services and advice received by the pregnant women at the MCH clinics.

It was found that all of the women were aware of the weekly MCH clinics conducted at the PHC. The services received by them included ANC checkup, hemoglobin estimation, TT immunization, weight monitoring, IFA tablet distribution, and nutritional advice regarding increasing the quantity of diet, especially the green leafy vegetables in the diet.

As regards IFA supplements, the women said that they consumed 1-2 IFA tablets daily, as advised by the ANMs at the PHC. The women received 10-30 IFA tablets in one offtake. In case of women, who visited the clinics frequently, 10 IFA tablets were given. Three of the pregnant women did not consume IFA tablets; two of them did not like to take the tablets and one discontinued taking them due to nausea.

Four of the pregnant women interviewed had also visited private hospitals in Vadodara, but they still continued to visit the MCH clinics as it was easily accessible, and they reported to be treated well by the PHC staff.

QUALITATIVE AND PARTICIPATORY RESEARCH TOOLS IN THE CONTEXT OF HEALTH SYSTEMS RESEARCH METHODOLOGY

Presented below is a discussion of the strengths and constraints experienced in the use of qualitative and participatory research (QR/PR) tools in the formative stage of research as well as in the process evaluation of interventions.

Usefulness of QR/PR Methods in Formative Research

The major QR/PR methods used in formative research included key informant interviews, semi-structured interviews, focus group discussions, matrix ranking/scoring exercises, and free listing and seasonality diagramming.

- **Key Informant Interviews (KIIs)**

Strengths

- KIIs conducted with the Corporation health functionaries yielded rich information on the position of nutrition services in the VMC's antenatal care program, the priority given to these services, and the implementation of these services from the perspective of the higher level health functionaries.
- KIIs were helpful in building good rapport with the VMC's health officials and further, in participatory planning of the interventions.

Constraints

- At times, it was difficult to remain focused on only the antenatal care services as the respondents tended to talk about their more successful family planning and immunization programs.
- Sometimes the respondents became defensive about their work.

  For example, after a monthly meeting, one ANM said,

  "Yah baar baar FP ka targets hi poochhte hain... kitna iron diya, kitna tika lagaya... nahin poochhte"

  (They always ask about (the completion of) family planning targets and not about the distribution of iron tablets or immunization).

- **Semi-structured Interviews (SSIs)**

Strengths

- SSIs threw light on the perceptions of health service providers and their clients regarding health problems during pregnancy, antenatal care services, and behaviors of pregnant women regarding the utilization of nutrition services, especially iron supplementation.
- SSIs also provided information as regards the family members' views of antenatal care services. These family members also tended to influence the pregnant women's decision making at the household level.
- Better interaction and interpersonal communication was possible with informants through SSIs, which was less likely in the FGDs.

Constraints

- SSIs were time consuming; each interview took nearly an hour's time.
- A few informants did not give much information despite probing.
- Sometimes informants gave socially acceptable answers. For example, the ANMs said that they counseled the pregnant women regarding the importance of consuming iron supplements, while in practice, the investigator observed that this was not done.

- **Focus Group Discussion (FGD)**

Strengths

- FGDs provided a general picture of pregnant women's perceptions of anemia and anemia control program.
- FGDs encouraged women to talk in groups and contribute information; especially the less educated ones.
- FGDs revealed various local terms to express anemia and its symptoms.

Constraints

- FGD data may not reflect individual knowledge, hence SSIs were used to obtain specific information.

- Recording of FGDs at times posed a challenge due to the fast moving discussion on some issues.

- **Matrix Ranking/Scoring (MR/S) Exercise**

Strengths

- Through the MR/S exercise, a clear picture regarding the health service providers' perspective of the antenatal care services (availability, utilization by women, and usefulness) emerged.
- A group consensus was obtained regarding the issues raised in the session.

Constraints

- The MR/S exercises were group based, hence could not elicit individual viewpoints. Therefore individual interviews and observations were carried out.
- It took time to arrive at a common score. So in one case, 2 scores were given to same service.

- **Free Listing and Seasonality Diagramming**

Strengths

- From the free listing exercise, a list containing a wide variety of about 20 foods, which "increase the strength of blood", as perceived by slum dwelling women, was obtained.
- In the seasonality diagramming exercise, which followed free listing, the women depicted their consumption of specific foods according to seasonal availability, by means of glass beads, using the concept of relativity (i.e. food 'less' or 'more' available, and 'less' or 'more' consumed).

Constraints

- As the free listing exercise was followed by seasonality diagramming, the process took considerable time, which made the women restless towards the end.
- Also, the opinion of more dominant women probably influenced the final judgement of availability and consumption of iron rich foods.

Usefulness of QR/PR Methods in Process Evaluation

The qualitative methods used in process evaluation were direct observations of health service providers at work at the Health Posts, and exit interviews with women visiting the weekly MCH clinics at the Health Posts.

- **Direct Observations**

Strengths

- They were useful for recording the actual implementation of ANC, especially nutrition care services during the MCH clinics.
- Observations also revealed the actual time spent by the health workers in carrying out their job functions, especially during vertical campaigns such as pulse polio.
- It was observed that as compared to ANC services, immunization and family planning related work received more of the workers' time and attention as they had to complete the targets for these services.

Constraints

- Observations required continuous monitoring and recording of events over a long period of time, and thus were time consuming.
- Analysis of the observation data was challenging so as to remain focused, and not get overwhelmed by the information obtained.

- **Exit Interviews**

Strengths

- Exit interviews were useful in assessing the quality of implementation of antenatal care services from the clients' perspective.
- Exit interviews elicited information on the ANC services received by the pregnant women and advice given to them at the MCH clinics, i.e. the actual content of ANC visits.
- The data yielded through the exit interviews were reported data and not the actual observations. Nevertheless it was a time-efficient method. Also, there was no recall period as the women had just received the services.

- The interviews revealed that MCH clinics were mainly conducted for child immunization and a very small number of pregnant women sought ANC during these clinics. They also revealed the low awareness among the women regarding the availability of ANC services at the Health Posts.

Constraints

- As a very small number of pregnant women attended the MCH clinics for ANC, women with young children who had attended these clinics during their pregnancy, needed to be interviewed.

The Strength of Integration

The integrated use of several qualitative and participatory methods validated the data from different sources and provided the perspectives of the health service providers and their clients, in their own words with respect to the implementation of nutrition related antenatal care services in the context of an urban health system. The use of QR/PR methods provided flexibility to the investigator to change the focus of an enquiry or to go further along and probe for more detailed information, especially during formative research. Further, disparities between community responses and those of government health workers regarding care provision prompted the use of direct observations and exit interviews. This helped in getting a sense of the quality of implementation of nutrition care services in the ANC program of VMC during the process evaluation, and brought forward the realization that program sustainability of any intervention or innovation is not possible unless it becomes an integral part of the health system and is supported by it. As regards constraints, although individual methods alone were not greatly useful, a mix of several methods together enriched the data. Further, the flexible, iterative nature of the present research helped to overcome methodological limitations to the extent possible. Thus, QR/PR approaches, whatever the method, if used in the true spirit of the partnership, mutual empathy and respect, are not only meaningful from a research point of view but also help involve program implementers in the formulation of truly integrated and sustainable program strategies.

Anker et al (1993) from the WHO assessed the performance and quality of health services in five developing countries (Botswana, Madagascar, Papua New Guinea, Uganda and Zambia) between 1988-1991. In order to assess the functioning of the health care facility from the clients' view, a random selection of patients was interviewed immediately after the consultation or contact with the health services using the technique of clinic exit interviews. This provided an opportunity to find out how the clients perceived what happened during their visit to the clinic. Information included items on their satisfaction or dissatisfaction with the services rendered and other problems encountered in seeking health care. The exit interviews helped determine if the clinics were providing appropriate health education messages.

In the same study, observation of the clinic staff's performance during their contact with patients proved effective in learning what actually happens during the encounter. Although time consuming, this method supplemented information on the quality of care obtained through the use of other tools such as interviews, FGDs and review of clinic data.

QR/PR in the Context of HSR Methodology

The QR/PR tools employed in the present study were useful in the context of the HSR framework and helped in understanding the nutrition services in the health system.

However, the results of HSR are worthless if they are not used to improve the functioning of the health service delivery system. Throughout the present study, a sincere effort was made by the VMC's health authorities for improving the functioning of the health system, especially the nutrition care services and the anemia control program. However, due to frequent changes in the priorities of the State Government and also due to the frequent vertical campaigns, as discussed earlier, sustained improvements in the quality of implementation of nutrition related ANC services were difficult to achieve in the health system.