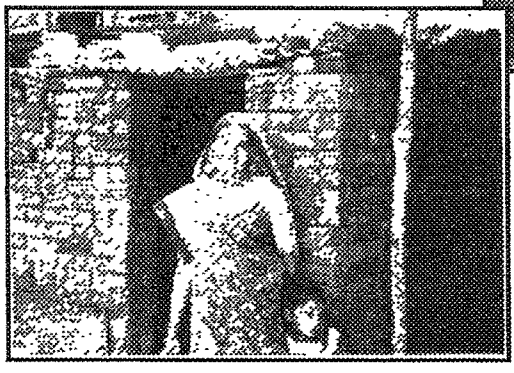


REVIEW OF LITERATURE

CHAPTER II

REVIEW OF LITERATURE

SECTION I

Maternal Undernutrition - Anemia, Antenatal Services and Quality of Implementation : An Overview

Over the years, a rapid demographic transition has been occurring in a number of developing countries including India. This has resulted in a major shift of the rural poor toward the cities. In spite of the well-known greater concentration of health facilities in the cities than in rural areas, standards of health care fall far below reasonable minimum levels for those who live in urban slums. It has been observed that very little emphasis is given to the health needs of the urban poor, who also lack awareness of and access to good health care facilities. This lack of care is reflected in alarmingly high prevalence of morbidities and malnutrition among the urban poor, especially in women and children (Rossi-Espagnet 1987). Illness is frequently a consequence of malnutrition - and malnutrition is also commonly the result of illness.

It is well known that malnutrition can be transmitted across generations beginning at childhood, through adolescence, pregnancy and childbirth. A stunted child is likely to become a stunted adolescent and later a stunted adult. If female, she is likely to be malnourished before, during and after pregnancy with adverse nutritional consequences for her newborn such as low birth weight. And so the intergenerational cycle of malnutrition turns (ACC/SCN 1992). With this reality, malnutrition in women deserves special attention from the point of view of their own health as well as that of the future generations. Undernutrition and anemia are the two major nutritional deficiency disorders among women in India, among both the rural and urban poor.

WHAT IS KNOWN GLOBALLY ABOUT WOMEN'S ANTHROPOMETRIC STATUS?

ACC/SCN (1992) has computed regional averages for various indices using data from 330 studies in 87 countries. These data show that in general women from South Asia and to a lesser degree South East Asia, have particularly poor nutritional status as indicated below.

- Stunting (height below 145 cm) relates to the risk of obstetric complications during delivery and is much more widespread in Asia (over 15%), to a lesser degree in Latin America (over 10%), and in Sub-Saharan Africa (2-3%).
- Thinness (BMI less than 18.5) is most widespread in South and South-East Asia (around 40%) followed by Sub-Saharan Africa (over 20%).
- The underweight (weight below 45 kg) prevalence follows the same regional pattern as stunting but at higher levels, with rates in South Asia over 60%, South-East Asia over 40% and other regions around 20% (Sub-Saharan Africa) or less.

It should be noted that underweight among African women relates more to thinness and in Latin American women to stunting, whereas in Asia, the high prevalence of undernutrition relates to both thinness and stunting. These women thus enter their pregnancies with an extremely poor nutritional status.

HOW IMPORTANT ARE MATERNAL WEIGHT AND HEIGHT TO PREDICT PREGNANCY OUTCOME?

Maternal anthropometric indicators have been useful for screening women at nutritional risk, monitoring maternal nutritional status, and predicting unfavorable infant outcomes related to pregnancy such as low birth weight (LBW), perinatal, neonatal and infant mortality, and poor infant growth (USAID/WHO/PAHO/ MotherCare 1991).

To identify the most appropriate indicators for different settings and to assess how practical they were for identifying pregnancies at risk, WHO carried out a meta-analysis of 25 studies of maternal anthropometry from 20 countries including India (WHO 1995). The analysis showed that indicators of "attained weight" from before pregnancy through to the end of pregnancy were strongly associated with both low

birth weight and intrauterine growth retardation. The strongest link was between low weight before pregnancy, followed by consistently poor weight gain during it, and intrauterine growth retardation. However, though a woman's weight before pregnancy is a relatively good indicator of the risk to the fetus, this measurement is rarely available in developing countries. Therefore, weighing mothers at various stages of pregnancy is a more practical option which is a common feature of antenatal care in many parts of the world including India. However, the analysis shows that, although there is a strong association between attained maternal weight and intrauterine growth retardation, using the former to predict the latter is not advisable. Maternal weight is better at identifying women not at risk of adverse outcome than it is at predicting women who are.

The indicator of maternal height was found to be neither sensitive nor specific enough to justify measuring maternal height as a routine part of antenatal care.

Maternal Anthropometry and Pregnancy Outcomes

According to Gillespie (1997), maternal anthropometry is predictive of the risk of intrauterine growth retardation (IUGR) though it is necessary to differentiate potential indicators with respect to their use for:

- identifying risk of a poor birth outcome such as IUGR
- screening individuals who are likely to benefit from intervention, i.e. targeting, and
- measuring the response to an intervention, i.e. monitoring or evaluation.

Indicators

- **Prepregnancy Weight**

In many studies in developed and developing countries, prepregnancy weight has been shown to be a sensitive initial indicator of the risk of delivering a LBW baby (Kardjati et al 1988, Kramer 1987, Naeye 1979). Although prepregnancy weight and weight gain in pregnancy are related, prepregnancy weight has an independent effect on birth weight other than that of weight gain and other factors (Shah and Shah 1972,

Eastman and Jackson 1968). A WHO study on 111,000 women in 25 population groups found that low prepregnancy weight had an odds ratio of 2.55 for elevated risk of IUGR (WHO 1995).

It is acceptable and more feasible in developing country situations to use the prepregnancy weight or a single weight taken early in pregnancy as a predictor of negative pregnancy outcome (Anderson 1989, Nutrition Foundation of India 1988, Garn and Pesick 1982).

In most developing countries, where the average female adult height is around 150 cm, a prepregnancy weight of 40 kg represents a useful cutoff delineating LBW risk (Gillespie 1997). Anderson (1989) has estimated that at least 50% women in Western India weigh less than 40 kg during their first trimester of pregnancy, which puts them at a very high risk of giving birth to LBW babies.

- **Weight Gain During Pregnancy**

Appropriate weight gain during pregnancy is critical to maternal and infant outcomes of pregnancy. Optimal weight gains are different for women who begin pregnancy at different levels of nutritional status. Women with low prepregnancy weights need to gain more weight during pregnancy than women who are of average weight (USAID/WHO/PAHO/MotherCare 1991).

Moreover, the combination of low prepregnancy weight and low weight gain during pregnancy puts women at greatest risk of delivering LBW babies (Rosso 1985, Niswander et al 1969). In many developing countries where the average weight gain is around 7 kg, mean birth weights remain around 2.8 to 3.0 kg, leaving little maternal reserves (Durnin 1987, Shah and Shah 1972).

The U. S. guidelines for pregnancy weight gain give differential weights based on prepregnancy status. Recommendations for underweight women (BMI < 19.8) are for a total gestational weight gain of 12.5-18 kg. Recommended weight gains for women

who prior to pregnancy are normal weight (BMI of 19.8 and above) are 11.5-16 kg. However, average weight gains for women in developing countries (5-9 kg) are much lower than these recommendations and also much lower than the average weight gains of 10.5-13.5 kg reported for women in developed countries (USAID/WHO/PAHO/MotherCare 1991).

The rate of weight gain in the latter part of pregnancy relates strongly to birth outcome when most fetal growth takes place. It is also related to the nutritional status of the mother. This is reflected in differences in weight gain patterns in well nourished and undernourished women in India. As shown by Tripathi et al (1987), well nourished and undernourished women put on similar weight in the second trimester, whereas in the third trimester, the well nourished women gained 50% more weight as compared to their poorly nourished counterparts. This slowing of weight gain in the third trimester (during 36-40 weeks) later manifests in higher LBW prevalence among infants in developing countries (Prentice et al 1987, Ghosh 1985).

The WHO study (WHO 1995) suggested that if developing country women, having their prepregnancy weights within a range of 44-54 kg, gained 10.5 kg during pregnancy, they could on an average expect to deliver an infant weighing 3 kg or more. However, this weight gain seems rather difficult to achieve. Thus, adequate weight prior to pregnancy remains utmost important.

The WHO collaborative study of maternal anthropometry and pregnancy outcomes (Kelly et al 1996) has also shown that a single measurement of attained weight at 16-20 weeks or 24-28 weeks is the most practical screening instrument for LBW and IUGR in most primary health care settings and provides warning of the need for intervention.

- **Height**

Height has been used by several researchers to screen for risk of poor pregnancy outcomes such as low birth weight, perinatal, neonatal and infant mortality, and

lactation duration. Also, an independent contribution of height to infant outcomes of pregnancy such as birth weight has been found in many studies (WHO 1995, Prentice et al 1987, Martorell et al 1981).

Maternal height is the best simple indicator of the risk of complications due to cephalopelvic disproportion (CPD) and obstructed labor. It also has some value in identifying risk of IUGR (OR=1.91) (Merchant and Villar 1993, Moerman 1982). However, maternal height cannot be used as an indicator of potential benefit from, or as response to, an intervention as it cannot change. Thus, maternal height is useful as a proxy for pelvic disproportion and in turn as a predictor of the risk of difficult or obstructed labor and CPD. Short stature has also been found to increase the risk of miscarriage and stillbirth (Chatterjee and Lambert 1989).

- **Body mass Index (BMI)**

BMI (weight (kg)/height (m^2)) is commonly used for monitoring of weight gain during pregnancy based on prepregnancy status, since thinner women need to gain more weight during pregnancy in order to significantly lower their risk of unfavorable outcomes such as LBW, small-for-date infants and perinatal mortality (Krasovec and Anderson 1991).

Researchers have shown that low maternal BMI is also associated with negative postpartum outcomes such as lower breastmilk production and underweight children (Kusin et al 1982).

Wolfe et al (1991) studied 6270 gravid women to compare the use of maternal weight and BMI for risk assessment at the initial prenatal visit. They found that the initial risk assessment of outcomes related to calculation of BMI offered no advantage over simply weighing the mother.

Along with general malnutrition, multiple micronutrient deficiencies of iron, vitamin A, zinc, folate, iodine, vitamin B_{12} and riboflavin may co-exist in the pregnant

woman, and interact with each other, with effects on various pregnancy outcomes. Iron deficiency is the most common serious micronutrient deficiency among pregnant women (Gillespie 1997).

HOW DOES MATERNAL ANEMIA AFFECT PREGNANT WOMEN AND HOW EFFECTIVE IS IRON SUPPLEMENTATION TO COMBAT ANEMIA?

Pregnancy requires additional maternal absorption of iron. Pregnancy produces increases in plasma volume and the hemoglobin concentration decreases accordingly. Severe anemia (defined as hemoglobin < 8 g/dl) is associated with the birth of small babies (from both preterm labor and growth restriction), but so is the failure of plasma volume to expand (Steer 2000).

Prevalence of Anemia Among Pregnant Women

Data available on pregnant women from South-East Asian countries reveal that the prevalence of anemia ranges from 46 – 88%, that is, one-half to practically all pregnant women in this region suffer from anemia. The regional data from 1988 show a high prevalence of anemia among pregnant women: South Asia-75%, South East Asia-63%, Africa-> 50% (WHO 1992).

In India, the prevalence is above 80% in pregnant women (Seshadri 1998, Gillespie 1997). In six Indian states namely Maharashtra, Gujarat, Rajasthan, Haryana, Uttar Pradesh and Bihar, 70% or more pregnant women are anemic. The prevalence of severe anemia (defined as Hb < 8 g/dl) is 21% in Gujarat (Seshadri 1998).

Studies carried out in the Department of Foods and Nutrition, M. S. University of Baroda have reported the prevalence of anemia among urban poor pregnant women in Vadodara to be about 70% (Sharma 1996, Edward Raj 1995). A study in urban Vadodara has shown that 2% of pregnant women residing in urban slums had hemoglobin levels less than 7 g/dl at 20 weeks of gestation indicative of severe anemia. This prevalence increased to 4% at 28 weeks of gestation and declined to 1% at 36 weeks (Sharma 1996).

Causes of Anemia Among Women

Causes of iron deficiency anemia among women in developing countries and South East Asia, as summarized by Gillespie (1998, 1997) and Seshadri (1998) include:

- Insufficient dietary intake of iron and other nutrients (especially vitamins A and C)
- Poor bioavailability of dietary iron related to a high consumption of absorption-inhibitors and a low consumption of absorption-enhancers
- Impaired utilization of iron due to chronic infections and blood loss due to parasitic infestations including malaria and hookworm
- Blood loss due to menstruation and childbirth amplified by repeated and closely spaced pregnancies
- Socioeconomic deprivation and gender discrimination which underlies many of the above etiological factors.

Consequences of Anemia Among Pregnant Women

The adverse consequences of anemia in women are numerous and widely documented and include debilitating fatigue, compromised immune function, widespread maternal death in childbirth, and damage to the fetal brain. Anemia due to iron deficiency is associated with several functional impairments in pregnant women. These include higher rates of perinatal morbidity and mortality, intrauterine growth retardation, preterm delivery, and low birth weight babies (Gillespie 1997).

When maternal anemia is present before midpregnancy, it has been associated with an increased risk of preterm delivery and low birth weight (Allen 2000, Scholl and Reilly 2000, Allen 1997, Scholl and Hediger 1994). Anemia is directly related to the risk of both inadequate gestational weight gain and preterm delivery (Scholl et al 1992, Garn et al 1981). The severe the anemia, the greater the risk that the mother will deliver a LBW baby due to IUGR (Klebanoff et al 1991, Klebanoff et al 1988).

Scholl et al (1992) assessed anemia and iron deficiency anemia in more than 800 pregnant women at entry to prenatal clinic in the United States. They found that iron

deficiency anemia was associated with significantly lower energy and iron intakes early in pregnancy and a lower mean corpuscular volume. The odds of low birth weight were tripled and of preterm delivery more than doubled with iron deficiency, but were not increased with anemia from other causes. Inadequate weight gain was more prevalent among those with iron deficiency anemia and in those with anemias of other etiologies.

Iron Supplementation to Combat Anemia Among Pregnant Women

The adverse effects of anemia on maternal and perinatal morbidity and mortality are largely preventable with appropriate treatment. Daily iron supplementation is the most beneficial and widely tested approach to combat anemia during pregnancy.

Several studies have indicated that routine supplementation with iron and folic acid appears to prevent low hemoglobin at delivery (Atukorala 1994, Seshadri et al 1994, Suharno et al 1993, ICMR 1992, Agarwal et al 1991, Reddiah et al 1988, Sood et al 1975, Iyengar and Apte 1970). Mahomed (2000) reviewed data from eight controlled trials involving 5449 women to assess the effects of routine iron and folic acid supplementation on hematological and biochemical parameters and on pregnancy outcome. It was observed that routine supplementation with iron or folate raised or maintained the serum iron and ferritin levels and red cell folate levels. Supplementation resulted in a substantial reduction of women with a hemoglobin level below 10 or 10.5 g/dl in late pregnancy.

Effectiveness of Iron Supplementation Programs for Pregnant Women

The World Bank's World Development Report 1993 has observed the micronutrient programs to be among the most cost effective of all health interventions. Deficiencies of just vitamin A, iodine and iron waste as much as 5% of the gross domestic product (GDP), but addressing them comprehensively and sustainably would cost less than 0.3% of the GDP. The annual program cost for iron supplementation to pregnant women (assuming 6 prenatal visits and 200 iron tablets) for a population of 10,000 is estimated to be 8,000 US $ (World Bank 1994).

Although the epidemiology of anemia, the knowledge and technical means of preventing and controlling it are well known, very few pregnancy anemia prophylaxis programs successfully apply this knowledge to the development and implementation of comprehensive control strategies in the developing countries. Despite the proven efficacy of small scale field trials wherein iron supplements have been biologically effective in raising iron status of beneficiaries proportionate to the dose and its duration, few large scale programs have been found to be operationally effective (Gillespie 1997).

In South East Asia, the national level programs to combat anemia consist chiefly of the therapeutic supplementation with iron and folic acid in six of the eleven countries in this region. The iron distribution is linked with antenatal care services, the utilization of which is low (20-35%) in Thailand, Myanmar and India. In all countries, a major reason for non attendance at the ANC centers appears to be lack of awareness of the benefits of consumption iron tablets, followed by lack of time and long distances from home to the center. None of the countries has facilities for screening for anemia and hence the supplements are expected to be delivered to all pregnant women. The delivery systems appear to be inadequate in most of the countries along with poor supplies of iron tablets and lack of effective ways of monitoring for compliance (Seshadri 1993).

In India, the National Nutritional Anemia Control Program (NNACP) has been in existence since 1970, which aims at significantly decreasing the prevalence and incidence of anemia in women in the reproductive age group, especially pregnant and lactating women, and preschool children. However, the evaluation of this program by the Indian Council of Medical Research (ICMR 1989) has revealed several lacunae in its operational aspects, which are highlighted below.

- It was found that 87% of the women participating in the evaluation were anemic, irrespective of whether they had consumed the supplements or not.
- The program had a very poor coverage of the 5779 pregnant women surveyed (19.4%) due to a centralized tablet delivery system.

- A similar finding was seen in case of receipt of full course of supplements as only 11.7% of the pregnant women reported to have received 90 tablets during pregnancy.
- The full course of supplements was distributed to a very small number of women.
- The quality of the tablets was poor.
- There were problems with the supply of tablets.
- The number of home visits by the government health functionaries to the women's houses were negligible.
- There was poor monitoring of tablet distribution and compliance as only 35% of the women were monitored.
- A low awareness was observed among the functionaries and the beneficiaries regarding anemia; the functionaries also lacked specialized training as regards anemia control.

Another evaluation of NNACP in urban Vadodara by Seshadri et al (1994) revealed that in addition to the above lacunae, poor packaging of the tablets was also a drawback in the program. Women beneficiaries visited the health centers infrequently, leading to poor coverage, compliance and impact of the program.

In an evaluation of this program in urban Vadodara by the Nutrition Training Research Center (NRTC 1990), it was found that the performance of the program was far from satisfactory as one-third of the pregnant and lactating women from the slums covered by the Family Welfare Centers (FWCs) had not received the supplement at all. Only a small percentage of women (25%) receiving the supplement from the FWCs had received the full course. The receipt of supplements by pregnant women from the slums covered by ICDS centers was better than those covered by the FWCs but the percentage receiving the full course of the supplement was very small (17%).

In another evaluation of NNACP in 24 slums of urban Vadodara by Sharma (1996), it was found that though the coverage of the program was better at 81%, only 34% of the pregnant women had received the full course ($\geq$ 90 tablets) of the supplement.

The evaluation of this program in rural Indore, Madhya Pradesh, by Khanna (1994) revealed that the government functionaries had inadequate knowledge regarding the field level implementation of NNACP. The tablet supplies were inadequate and irregular. The record checking and monitoring by the supervisors was cursory. Besides these lacunae, the services of immunization and family planning were given more importance as compared to iron supplementation.

Thus, unfortunately over the years, the **quality** of anemia control programs has remained poor, which is one reason contributing to the high prevalence of anemia especially among pregnant women. A review of literature by Galloway and McGuire (1994) and studies carried out in the Department of Foods and Nutrition, M. S. University of Baroda, (Khanna 1994, Seshadri et al 1993) highlight the factors influencing beneficiary compliance and poor quality of iron supplementation programs.

- **Health Service Provider Related Factors**

The key factors contributing to poor implementation of the iron supplementation programs are the low priority, lack of political commitment and financial support being given to these programs at the government level. As a result, health functionaries and their supervisors receive inadequate training on anemia and on the field level implementation of the anemia control program. Iron tablet supplies are either inadequate or unevenly distributed. Health functionaries spend more time on other programs like Family Planning and Immunization. Monitoring and supervision is infrequent and cursory, especially with respect to compliance with iron supplementation. Further, there is insufficient Information-Education-Communication material available on anemia and benefits of iron supplementation. The grassroots level functionaries also lack counseling skills to motivate and support women to complete the course of iron supplementation.

- **Client Related Factors**

Anthropological research data reveal that several pregnant women perceive symptoms of anemia as an inevitable part of pregnancy and believe that the symptoms will disappear after delivery. Therefore they usually do not seek treatment for anemia unless the symptoms are severe or accompanied by other illnesses like malaria. Women also may misunderstand instructions and get frustrated about the frequency and number of tablets to be consumed. They may discontinue taking the tablets due to several reasons such as side effects, fear of having big babies, a belief that tablets are 'hot', irregular antenatal visits because of long distances from home and absence of transport facilities. They also lack family support with the mother-in-law often disapproving the consumption of iron tablets by the woman.

As mentioned earlier, in many developing countries such as India, iron supplementation programs for pregnant women are a part of the antenatal care program, which in turn is a part of the Maternal and Child Health (MCH) services.

India has a good infrastructural layout, both in urban as well as rural areas, for the delivery of MCH services to the community, consisting of a network of family welfare centers and health posts under the municipal corporations in the urban areas and primary health centers and their subcenters in the rural areas. There are also district hospitals, state medical college hospitals, and other hospitals in the public and private sectors which provide these services (Singh and Paul 1997). Various antenatal care services to pregnant women are also available through these facilities.

WHAT IS THE CONTRIBUTION OF ANTENATAL CARE TOWARDS BETTER PREGNANCY OUTCOME?

Antenatal care is important for preventive and curative care, including tetanus toxoid immunization, provision of iron folic acid tablets to prevent and treat anemia, early diagnosis and prompt treatment for complications of pregnancy and other illnesses such as sexually transmitted diseases (STDs), malaria, helminth infections, and referral services.

Antenatal care - care during pregnancy - provides an important opportunity for discussion between a pregnant woman and a health care provider regarding diet and health care, recognizing complications that may arise during pregnancy, and safe delivery (WHO 1996).

Antenatal care should address both the psychological and medical needs of the woman, within the context of the health care delivery system and the culture in which she lives. The WHO Technical Working Group on Antenatal Care (WHO 1996) recommends a minimum of four antenatal visits scheduled at specific times in the pregnancy – first visit by the end of the fourth month, second visit in the sixth or seventh month, third visit in the eighth month, and fourth visit in the ninth month. The content of antenatal visits for a normal pregnancy should include **assessment** (history, physical examination and laboratory tests), **health promotion** and **care provision**.

Assessment includes recording of key facts regarding a woman's general health and obstetric past, which helps in rapid identification of problems and provides criteria for appropriate decision about care and services. **Health promotion** at all visits consists of nutritional advice, rest, discomforts of pregnancy, planning on place of birth and birth attendant, counseling on referral hospital, newborn care, breast feeding, and family planning and child spacing. **Care provision** includes development of an individualized delivery plan, tetanus toxoid immunization, IFA supplementation, psychological support and timing of next antenatal visit.

The report also recommends that identification and management of risk factors should be done as a part of the antenatal care services.

COVERAGE AND UTILIZATION OF ANTENATAL CARE IN INDIA : WHAT IS THE URBAN-RURAL SCENARIO?

WHO defines antenatal care as a dichotomous variable; having had one or more visits with a trained person during pregnancy, or none (Rooney 1992). The WHO database

on coverage of maternity care (WHO 1997) reveals that in India, women residing in the urban areas initiate antenatal care (ANC) a little earlier as compared to the rural women (median gestational age 4.2 months versus 5.1 months).

Table 2.1 depicts the provision pattern of antenatal care in 14 states of India revealed through the National Family Health Survey (NFHS) 1992-93 (IIPS 1995). As seen in the table, the percentage of women receiving ANC was as low as 31.2% in Rajasthan to as high as 97.3% in Kerala. However, the percentage of women visited by health worker at home was quite low ranging from 6.8% in Punjab to 42.2% in Karnataka which was even low in case of a home visit in the first trimester of pregnancy. Again the women who had at least 3 home visits by the health worker were quite low in number (2.0% to 29.8%). The percentage of women who went themselves for ANC at the health center ranged from 21.2% in Rajasthan to 80.7% in Punjab. This picture indicates that the reach of the ANC services in India is quite unsatisfactory. Table 2.2 gives the figures for antenatal coverage through various surveys such as the NFHS and Multi Indicator Cluster Surveys in India, Gujarat and Vadodara.

The National Family Health Survey (NFHS 1992-93) throws light on reasons given by mothers for not seeking ANC services. It is surprising to note that out of the total, 37% of births were to women who did not receive ANC. A higher proportion of urban women stated that it was not necessary to go for antenatal checkup as compared to rural women (66% Vs 58%). However, utilization of ANC services was substantially better in urban than in rural areas perhaps because of easier access to ANC in urban areas.

According to the Multi-Indicator Cluster Survey, Gujarat (Gandotra and Dey 1997) data shown in Table 2.3, though the coverage of antenatal checkup was more (92.3%) in rural areas of Gujarat as compared to the urban areas, the frequency was more in the urban areas. As regards iron supplementation, although 76-79% pregnant women did receive IFA, all women did not receive the recommended dose of 100 tablets. In urban slums, only 42% women and in rural areas, 38% women received 51-100

Table 2.1 : Provision Pattern of Antenatal Care in 14 States of India

States	% receiving antenatal care	% visited at home by health worker	% not paid home visit but went herself for antenatal care	% paid home visit by health worker during first trimester	% paid at least 3 home visits by health worker
Andhra Pradesh	86.3	41.2	47.1	9.6	28.3
Assam	49.3	6.8	45.4	1.4	2.0
Bihar	36.8	11.4	26.6	2.7	4.7
Gujarat	**75.7**	35.5	41.8	13.6	25.7
Karnataka	83.5	42.2	43.4	18.4	30.2
Kerala	**97.3**	27.7	70.4	12.5	16.4
Madhya Pradesh	52.1	20.2	33.5	5.3	8.0
Maharashtra	82.7	24.1	60.3	7.2	14.9
Orissa	61.6	32.3	31.8	8.5	14.0
Punjab	87.9	7.3	80.7	2.2	3.5
Rajasthan	31.2	11.6	21.2	2.8	4.5
Tamil Nadu	94.2	40.5	54.3	11.4	29.8
Uttar Pradesh	44.7	17.2	30.1	3.4	6.5
W. Bengal	75.3	14.4	62.6	3.2	4.9

Source: IIPS (1995) : NFHS (1992-93)

Table 2.2 : Coverage of Antenatal Care and IFA Supplementation in India and Gujarat

Reference	Region, Area	Percentage receiving antenatal care (at least 1 visit)	Percentage receiving IFA tablets (at least once)
IIPS (1995) NFHS (1992-93)	India, National	62.3	50.5
	India, Urban	81.0	68.7
	India, Rural	57.0	41.1
IIPS (1995) NFHS (1992-93)	Western India, Gujarat	75.7	69.3
	Gujarat, Urban	83.0	77.6
	Gujarat, Rural	72.0	65.5
Gandotra and Dey (1997)	Gujarat, Urban	81.0	75.5
MICS (1997)	Gujarat, Rural	92.3	79.3
Kotecha (1998) MICS (1998)	Vadodara, Urban	86.3	97.8

Note: Data on weight monitoring during pregnancy were not reported.

Table 2.3 : Coverage of Antenatal Care and IFA Supplementation in Gujarat

Service	Urban slums (%)		Rural Areas (%)
	MICS Gujarat (1997) [N=300]	MICS Vadodara (1998) [N=161]	MICS Gujarat (1997) [N=300]
Antenatal checkup done			
• Yes	81	86.3	92.3
• No	19	13.7	7.7
Frequency of antenatal checkup			
• Once	9.0	2.2	21.0
• Twice	14.0	5.8	51.0
• Thrice	23.3	12.9	10.7
• Four or more	33.0	78.4	9.7
• Does not remember	1.7	-	-
IFA supplements received			
• ≤ 50	33.7	NR	41.3
• 51-100	32.0	NR	38.0
• < 100	NR	41.9	NR
• 100 and 100+	NR	58.1	NR
• No IFA received	24.3	NR	20.7
IFA supplements consumed			
• ≤ 50	43.0	NR	46.7
• 51-100	32.0	NR	32.7
• < 100	NR	51.6	NR
• 100 and 100+	NR	48.4	NR
• No IFA consumed	25.0	NR	20.6

tablets whereas 34% women in urban slums and 41% women in rural areas received less than 50 tablets. As regards consumption, 43% urban women and 47% rural women reported consumption of 51-100 tablets. One fourth of women from the urban slums and 21% women from the rural areas did not consume IFA at all.

The Multi-Indicator Cluster Survey, Vadodara (Kotecha 1998) carried out in urban slums of Vadodara revealed that more than 86% pregnant women surveyed had undergone at least one antenatal checkup and as many as 78% had 4 or more checkups done. Of those women who had had at least one ANC visit, 98% had received IFA tablets – 42% received less than 100 tablets and the rest had received 100 or more tablets. This high receipt may be attributed to the recent mobilization of ICDS in urban Vadodara to actively distribute IFA tablets to pregnant women and to counsel them regarding the benefits of IFA consumption. Out of these women, nearly 52% consumed less than 100 tablets whereas the rest of them consumed 100 or more tablets (Table 2.3).

The NFHS-2 (PRC and IIPS 1999) preliminary data for the state of Gujarat indicate that overall 86% of women who gave birth during 3 years preceding the survey and included in it had received at least one antenatal checkup during their pregnancy. About 83.4% women from the urban areas and 75% women from rural areas had received IFA supplements at least once in their pregnancy and 75.4% of the urban women and 61.5% of the rural women had received IFA supplements for 3 months or more. The latest NFHS - 2 (IIPS 2000) data reveal that in India, the coverage of ANC (at least one visit) was 65.4% and of IFA distribution was 57.6%. the urban coverage was better (ANC : 85.8%, IFA : 75.7%) as compared to the rural areas covered (ANC : 59.6%, IFA : 52.5%).

However, as regards consumption of IFA tablets, the data were self-reported by the pregnant women which are not always reliable or foolproof. Also the follow up carried out by the health workers did not involve actual counting of tablets for corroborating the reported information on compliance most of the times.

Another fact which comes to light from the surveys is that they have no data on another important nutrition service i.e. weight monitoring of pregnant women although this is an accepted service as a part of the antenatal care program in India.

Barriers to Antenatal Care Utilization

Barriers to utilization of antenatal care services have been linked to inappropriate service usage and poor health outcomes of mothers and children. The major barriers to care reported in literature (FCI and SMIAG 1998a) include:

- long distance from home and lack of transport
- cost of care, and
- unsympathetic care providers.

Studies confirm that transportation difficulties contribute significantly to the underutilization of services. In rural Tanzania, 84% of the women who gave birth at home intended to deliver at a health care facility, but did not because of distance and lack of transportation. Even where health services are provided free of cost, costs of transportation, drugs and food and lodging for the woman or for family members may also reduce women's routine use of maternal health services. As regards interaction with health providers, many women describe providers in the formal health care system as unkind, rude, brusque, unsympathetic and uncaring. For example, a study in Tanzania found that 21% of women delivered at home because of the rudeness of the health staff (FCI and SMIAG 1998a).

Beckmann et al (2000) carried out a descriptive, correlational study with 110 pregnant women who sought antenatal care after the 20th week of gestation in the United States. The purpose of this study was to determine barriers to antenatal care services in a low income population. They found that the major barriers to seeking antenatal care were: long waiting time at the time of appointments and the cost of care.

In another study, Omar et al (1998) identified barriers to antenatal care as described by low income recipients and providers in a small rural county in the Midwest in the United States, using a prospective study design and focus groups. They found that almost half of the recipients identified no barriers to antenatal care; however, these women still received less than adequate antenatal care. Providers identified the attitudinal barrier of women as not valuing antenatal care, but the women did not. This may indicate that low income pregnant women lack knowledge and information about the availability of the various antenatal care services.

While analyzing several barriers to and motivators of antenatal care in the context of a developing country, Tunisia, Njah et al (1993) found that sociocultural factors were as important as organizational factors were important in motivating women to seek antenatal care. The authors further state that while social and economic development may improve the quality of life in the long term, it is important to respond now to the needs of pregnant women in order to encourage them to use such services.

These studies demonstrate that issues surrounding antenatal care for pregnant women belonging to economically poor communities are complex and subtle. Certain variables identified through several studies prevent these women from seeking early antenatal care; however, these barriers to a large extent are amenable to change. As mentioned by Beckmann et al (2000), strategies to reduce barriers could include providing more culturally competent care, more timely appointments, better use of the woman's time when appointments are kept, educating women in the community about the availability of low cost care, and assistance at the site of care provision for facilitating financial applications.

Assuming that antenatal care does confer health benefits both for the mother and her baby, how it prevents maternal and perinatal mortality and morbidity is logically complex. Epidemiological and observational studies tend to show that women who receive antenatal care have lower maternal and perinatal mortality and better pregnancy outcomes. These studies also tend to demonstrate an association between

the number of antenatal visits and/or gestational age at the initiation of care and pregnancy outcomes after controlling for confounding factors, such as gestational age. According to Villar and Khan (1999), because of this suggested dose-response effect, antenatal care programs seek to increase the quantity of care provided, such as frequency of visits and the intervals between the visits. The authors add that apart from the frequency of antenatal visits and the intervals between the visits, attention has to be directed to the essential elements of antenatal care package, to ensure that **quality** is not overlooked in favor of quantity for effective implementation and utilization of these services.

WHY IS QUALITY OF CARE IMPORTANT?

The unsatisfactory utilization of various antenatal care services including nutrition related services such as iron supplementation is directly related to the Quality of Care (QOC) of these services. Quality of Care is important because:

- Good quality services are cost – efficient
- Good quality services are equitable
- Good quality services are effective
- Good quality services improve staff morale
- Good quality services save women's lives

  (FCI and SMIAG 1998b)

Bruce and Jain (1991) define quality in terms of the way individuals (or clients) are treated by the system providing services. Quality, like quantity, is a dimension of all programs; whether that quality is termed adequate or inadequate is a judgement.

According to ICOMP (1997), quality can be assessed in the process of service delivery, a program's capability to provide services at a desired level, and its impact on clients' health. Both the information provided to clients and actual technical services provided must be based on up - to - date scientific knowledge and technology to ensure an adequate level of quality.

Elaborating on the concept of 'continuous quality development' proposed in 1993 by the WHO Regional Office for Europe and the Danish health authorities, Raceveanu and Johansen (1995) have stated that continuous quality development involves setting and achieving goals for quality on a continuous basis. Health care of good quality encompasses the areas of:

- structure (organizational settings of care),
- process (skills developed in delivery of services), and
- outcome (effects of care given on health and well being of patients).

However, taking only the perspectives of the program and service providers into consideration does not ensure quality - even if the technical quality is excellent and the information correct, it may be unacceptable to clients. The degree of match between the clients' view of the performance of the services and the service providers' view determines the ultimate client satisfaction (ICOMP 1997).

In a study carried out by Proctor and Wright (1998) in the United Kingdom, data were collected through postal questionnaires sent to antenatal and postnatal women who were asked to note if any aspects of their care had particularly bothered or impressed them. There was variation in the factors identified through the different phases of the service- antenatal, labor and postnatal care. However, the study revealed that staff attitudes were a main source of positive comments throughout the service, and lack of information and poor explanations were a consistent source of negative responses.

Frameworks for Assessing Quality of Care

The earlier framework for quality of care has been developed by Bruce (1990), which defines quality of care of family planning and related reproductive services and has the following six elements:

1. Choice of contraceptive methods
2. Provider-client information exchange
3. Provider competence
4. Interpersonal relations

5. Mechanisms to encourage continuity of care
6. Appropriate constellation of services

Building on Bruce's framework, to encourage a more comprehensive and systematic examination of women's health services, Mensch (1993) thought it to be worthwhile to specify the components of a quality of care framework within the larger domain of women's health, which includes antenatal care. The elements of Mensch's framework along with their corresponding indicators are as below.

1. **Provider – woman information exchange:** conveying information to women, i.e. (a) explanation of diagnosis, (b) information, where medically appropriate, on treatment options, (c) information on the therapeutic regime, (d) information on contraindications to side effects of all medications and drugs; and listening to and understanding women, including their (i) background, (ii) preferences for treatment, and (iii) medical history;
2. **Provider competence:** (a) accurate knowledge about the disease, problem, or condition, (b) technical proficiency in providing safe and appropriate clinical treatment known to produce an impact on mortality, morbidity or the existing condition, and (c) knowledge of procedures for referring cases which cannot be adequately managed,
3. **Interpersonal relations:** sensitive treatment of women including (a) privacy, (b) respectful and responsive provider behavior, (c) encouragement of women's participation in decision making, (d) avoidance of moral judgements, (e) confidentiality, (f) limited waiting time, and (g) adequate amount of time spent with woman; and
4. **Mechanisms to encourage continuity of medical care:** (a) information about when to return and, if possible, other locations where services and medications can be obtained, and (b) specific follow up procedures including, when deemed necessary, future appointments and home visits.

According to WHO (1995), quality of health care should be seen as a continuous provision of care throughout women's lives, rather than as a series of isolated interventions. Therefore quality of care for safe motherhood - as it is the most vulnerable period in a woman's life - depends first and foremost on correctly identifying the needs of women in the community before, during and after pregnancy. Once the precise needs are known, services should be specified that meet those needs appropriately. When the services are implemented they must be evaluated to check whether they really are doing what they are supposed to do. The situation must be

reviewed in the light of the evaluation (Were the needs identified correctly? Did the services meet the identified needs?) and strategies and actions should be readjusted to improve the quality of services.

WHO's Mother-Baby Package specifies the elements that make-up quality of care for safe motherhood (WHO 1995).

1. **Promotion and protection of health:** People (men and women) need to know about pregnancy and childbirth and understand the danger signs and symptoms.
2. **Accessibility and availability of services:** Women should be able to benefit from quality of care, understand the full range of services available to them and receive care at the lowest appropriate level of the system close to where they live.
3. **Acceptability of services:** Women need privacy, they may prefer to consult a female health worker, and they should be assured of confidentiality.
4. **Technical competence o health care providers:** Technical competence depends on regular training and retraining, and on clear guidelines for clinical treatment.
5. **Essential supplies and equipment:** Norms and standards should be established for the necessary supplies and equipment at each level of care and their availability should be ensured.
6. **Quality of client-provider interaction:** Providers must treat clients with respect, be responsive to their needs and avoid judgemental attitudes.
7. **Information and counseling for the client:** Clients should have the opportunity to talk to health care providers and should be offered guidance on any health problems identified.
8. **Involvement of clients in decision-making :** Providers should see clients as partners in health care and should involve them in decision-making as active participants in their own health care.
9. **Comprehensiveness of care and linkages to other reproductive health services:** Maternal health care is a unique opportunity to provide women with comprehensive reproductive health care and to address issues such as nutrition and sexually transmitted diseases.
10. **Continuity of care and follow up:** Maternal health care should be part of a continuum of care comprising pre-pregnancy, prenatal, delivery and postpartum care. Clients must be seen as people with needs that continue throughout their lives.
11. **Support to health care providers:** Health care providers at all levels need the back-up and economic and social support of the authorities and the communities in which they work.

Thus it is evident that the Quality of Care frameworks have been developed in the areas of family planning, women's health, and more recently for safe motherhood programs. Studies pertaining to quality of care have mostly been carried out in the

area of family planning and to a lesser extent, women's health. The focus of all these studied has been on the technical quality of the health services/programs as assessed by their outcome as a result of care provided.

However, quality of care has not been adequately studied for nutrition related services with an inclusion of the perspectives of both the provider and the user. Moreover, the measurement of the subjective dimension of quality of care has seldom been attempted which includes

- interpersonal relations between provider and user
- fulfillment of user's needs and satisfaction
- women's (users') and providers' perception of quality of care

Quality of Antenatal Care Services

In the area of antenatal care, limited attempts have been made to study the quality of care of antenatal care services. A major study carried out in developing countries available in the literature was conducted by the WHO. The preliminary findings of this study suggest that the number of antenatal visits by pregnant women, information obtained by them from the providers regarding ANC services, personal treatment given by the providers and language used by them were crucially important for maintaining quality of care (Langer et al 1998).

Tal-Dia et al (1997) estimated the technical quality of antenatal care in 49 health centers in Senegal. The quality of care was assessed by assigning specific scores to 13 actions. It was found that the health workers' qualification with many components of quality. However, a good basic training was not sufficient to provide antenatal care of high quality.

Sikosana (1994) evaluated the quality of antenatal care provided at 30 rural health centers in a Zimbabwean province. Antenatal care clients attending the health centers were interviewed, records were audited and observations were carried out on the health staff performing antenatal duties. It was found that the professional

performance by health workers in provision of antenatal care was unsatisfactory. Limited availability of equipment coupled with poor know-how contributed significantly to the provision of poor quality services.

A large scale community based study in South Kanara district of Karnataka, India revealed that, despite a low infant mortality rate (IMR), there was a clear association between IMR and lack of antenatal care as well as IMR and poor quality of care (Chandrashekar et al 1998).

In an attempt to determine the factors deciding quality of maternity care, Proctor (1998) conducted focus groups with 38 pregnant and postnatal women and 47 midwives in Yorkshire, England. The data revealed 10 dimensions of quality. Similarities between women and midwives included beliefs about the importance of the relationship between the two parties, desired attributes of staff, and the environment of care. The key difference included understanding the importance of information antenatally and postnatally. Therefore, an understanding of the concerns of women by maternity care staff is important in the development of a woman-focused service, in line with current policy recommendations, and has implications for improving the service quality for those who provide and experience the service.

Bruce and Jain (1991) have emphasized that client knowledge and satisfaction with the care received should not be viewed simply as bridges to continued use but also as valued end products of conscientious management and caring service.

The poor quality of care is in turn related to poor program management and obstructing factors in the health system.

WHICH PROGRAM MANAGEMENT COMPONENTS MAY ADVERSELY AFFECT THE QUALITY OF CARE OF REPRODUCTIVE HEALTH PROGRAMS INCLUDING ANTENATAL AND MATERNAL NUTRITION SERVICES?

The discrepancy between the promises and achievements of nutrition programs results primarily from inadequate management. The management related problems, according to the World Bank (1980) are several such as improper or absence of transport facilities, lack of personnel and inventory management, lack of continuing education for the grassroots level health service providers, and inadequately executed administrative and technical supervision. The major management related factors highlighted through several studies, and which together compromise the quality of care are listed below.

1. **Poor Training:** In order to ensure that health workers are competent to carry out quality maternal nutrition and health services, they require adequate initial training as well as in-service training to bring their knowledge and skills up-to-date. ACC/SCN (1991) believes that weak training of health care providers is an important factor underlying effectiveness of many nutrition programs throughout the world and recommends that additional specialized training of health and other service delivery personnel is required in preventing and treating a common nutritional deficiency like anemia in pregnant women.

2. **Lack of Clarity Regarding Job Functions:** Many a times the health care providers are not clear about what exactly they are expected to do as their specific job functions are not properly stated by the higher authorities. Often there is a very thin line between the job description of health workers and their supervisors, for example, Female Health Workers and their supervisors, adding to the confusion regarding 'who is to do what'.

3. **Inadequate Supervision:** Inadequate supervision is frequently reported as a major factor underlying ineffectiveness of health and nutrition programs in developing countries. Lack of understanding the value of supportive supervision

for building and maintaining workers' motivation coupled with multiplicity of records and confusion regarding the Management Information System (MIS) keep the programs far from being successful (NIHFW 1984).

4. **Irregular and Inadequate Supplies and Equipment:** Supplies and equipment should be provided according to the services offered at each level of care. Standards must be set - and adhered to - for the quantity and quality of supplies. There should be a way of making sure that fresh supplies, e.g. iron tablets, are ordered and delivered regularly to replace those that have been used, and that equipment, e.g. weighing scale, is maintained in good working order (WHO 1995a).

5. **Poor Rapport with Clients:** According to WHO (1995a), health care providers who do not treat clients with respect or are judgmental, are likely to discourage people from seeking health care. Health workers should listen to what women have to say and try to be responsive to their needs. Giving a woman iron tablets to take but not explaining what they are for is a sure way of dissuading her from taking them.

6. **Ineffective and Sporadic IEC:** Clients at the receiving end of the services, e.g. pregnant women, should be made aware of their existence and importance in their lives so as to create a demand for specific health care services as equal "partners". Efforts should be made to involve women in making decision about their health. To achieve this, effective health education using an Information-Education-Communication (IEC) strategy can make individuals and communities aware of the menu of health services available to them and enable them to choose the appropriate ones. However, despite being a component of India's Family Welfare Program for the past few decades, IEC remains largely ineffective and focuses mainly on family planning and immunization, neglecting important aspects of maternal and child nutrition. There is very little material available for pregnant

women to educate them regarding the importance of antenatal care services including weight monitoring and anemia control (MotherCare 1997c).

Mavalankar (1999) has reviewed management constraints for the operationalization of reproductive health program interventions in the PHC system in India. They include:

- **Human resource management related problems** such as non availability of doctors in the PHCs, lack of interest in the PHC work by doctors, non availability of paramedical staff at village level, presence of 'male' doctors at PHCs, inadequate training management, and lack of rigorous monitoring of performance.
- **Poor access and quality of care related problems** like remote or difficult location of the health centers and inconvenient working hours, weak worker-community contact, deteriorating technical competence and level of clinical practice, lack of privacy and confidentiality, weak information, counseling and communication process, and poor image of the PHC in the community and gross underutilization of the PHC services.
- **Weak support service systems** consisting of weak referral system, weak laboratory services at PHCs, and poor epidemiological and microbiological services.
- **Weak and centralized monitoring and supervision** creating difficulty in monitoring reproductive health interventions.
- **Inadequate and in-operational service infrastructure** such as poor buildings, equipment and supplies.
- **Poor demand for health services by the community**
- **Weak management of services** due to lack of commitment and accountability in the PHC staff, and ineffective and bureaucratic management process.

All these components are a part of the overall health system. Further, urban health systems are quite different from the rural health systems in terms of their structure and functions. **Therefore the Health Systems Research (HSR) Methodology is appropriate to understand the factors impeding and improving the quality of implementation of nutrition programs.**

WHAT IS HEALTH SYSTEMS RESEARCH?

Quality of care as a continuing process should be built into all services that provide health care. The assessment, improvement and maintenance of quality in health services are possible with the help of Health Systems Research (HSR). HSR helps to find out exactly where the difficulties in a health program lie, what the people and health service providers really want and what people can reasonably expect from services provided. HSR embraces all areas that have a bearing on the provision of health care, not only the health sector.

The three basic components of a health system are (Varkevisser et al 1991):

- **A set of cultural beliefs about health and illness forming the basis for health seeking and promoting behavior:** In the context of antenatal care services, the pregnant women may not visit a health centre for antenatal checkup unless they have any complaints regarding their health which they perceive worthy of attention. Besides this, various other cultural beliefs may obstruct a woman's care seeking behaviour.
- **The institutional arrangements within which health related behavior occurs:** With respect to antenatal care services, the institutions are the women, their families in the community and the government health system. The type and quality of these networks will influence women's interactions with each of these as well as their health. The quality of government programs (especially their communication strategy) plays an important role here as the women and the communities are not much aware of the importance of weight monitoring and iron tablet consumption during pregnancy.
- **The socio-economic/political/physical context in which the health behavior occurs and the health system in which the antenatal care services in the context of RCH operate:** For example, lack of political will and low priority accorded to the antenatal care component of the RCH program (especially nutrition services for pregnant women) may result in inadequate budgets being allotted to these services by the government, and poor quality of care.

Basically HSR is concerned with improving the health of a community by enhancing the efficiency and effectiveness of the health system as an integral part of the overall process of socio-economic development.

Using scientific methods, HSR aims to provide insight into health problems and:

- makes possible a greater understanding of health care on general development.
- assists in more rational health planning.
- results in health care that is more effective and better adapted to the cultural and emotional needs of the people.
- promotes greater self-reliance in health matters by actively involving individuals, families and the community in the solution of their problems.

According to Taylor (1983), HSR is inclusive in its approaches, and methods are borrowed from many disciplines. These approaches include simplified systems analysis, operations research for progressive improvement of management, field projects to test alternative interventions and procedures, natural experiments and comparative analysis, and field experiments testing total health packages. Of these five categories of research approaches, the first three can be done best within the health system; the other two are more likely to need special studies from an academic institution.

The IDRC/WHO report (Varkevisser et al 1991) on Health Systems Research describes the essential characteristics of HSR as

- its focus on priority problems in health
- its participatory nature
- its action orientation
- its integrated multi-disciplinary approach
- its multi-sectoral nature
- its emphasis on cost effectiveness
- its focus on practical, timely solutions, and
- its interactive nature that allows for evaluation of the impact of planned change and consequent revision of action plans and health policy.

Health Systems Research in India

According to a review by Murali (1992) on status of health systems research in India, historically, the creation of the Indian Council of Medical Research as a nodal agency for promoting medical research marked the recognition of health research by the Indian government. The creation of a task force on operations research for improved delivery of health services by the Government of India in 1974 was another major step towards HSR promotion in India.

Various research institutions such as the National Institute of Nutrition, Central Technical Committee promoting research activities under the ICDS, and national institutes working in several areas of health research have contributed towards strengthening of various national health and nutrition programs.

The HSR related studies in India have been carried out in the areas of health need assessment, communicable and non communicable diseases, nutrition, human power development, IEC, managerial processes, health organizations, health economics, health care delivery systems, health service utilization, knowledge-attitude-practices (KAP) of health service providers and their clients, health behavior, and evaluative studies on several national health and nutrition programs.

The next section of this chapter reviews the available policy and program documents related to ANC and nutrition services for pregnant women.

SECTION II

A CRITIQUE OF AVAILABLE POLICY AND PROGRAM DOCUMENTS IN GUJARAT AND INDIA RELATED TO ANTENATAL CARE SERVICES FOR PREGNANT WOMEN WITH A FOCUS ON NUTRITION CARE SERVICES

The goal of ensuring good nutrition for vulnerable groups should be articulated in declarations at the international and national level. Following the Global Plan of Action for Nutrition adopted in 1992 after the United Nations World Summit on Children in 1990, the Government of India adopted the National Nutrition Policy in 1993.

NATIONAL NUTRITION POLICY (Government of India 1993)

The National Nutrition Policy aims to identify the causes of malnutrition and formulate and launch effective sustainable intersectoral strategies to achieve nutritional goals and enhance nutritional security in the country. However, maternal nutrition in pregnancy and lactation is not adequately articulated.

The policy first discusses the nutritional status of the Indian population as regards calories, protein, and micronutrient (especially vitamin A) intake. It also lists down major nutritional problems in India: Protein energy malnutrition, iron, iodine and vitamin A deficiencies, and low birth weight children. Other areas covered include seasonal dimensions of nutrition, natural calamities, the landless, urbanization as well as the problems of overnutrition

As regards urbanization, the policy states that the children of urban slum dwellers and of the urban informal sector are the most vulnerable of all groups nutritionally. Poor sanitary conditions, acute respiratory infections and communicable diseases characterize the urban slum settlements.

The policy focuses on the importance of tackling the problem of undernutrition through direct nutrition interventions such as nutrition interventions for specially vulnerable groups, which include expanding the safety net of the Universal

Immunization Program, Oral Rehydration Therapy and the Integrated Child Development Services (ICDS), and improving growth monitoring of children (0-3 years) with closer involvement of mothers. With regard to nutritional status of women, the policy highlights the importance of ensuring better coverage of expectant mothers in terms of supplementary nutrition from first trimester of pregnancy for reducing the incidence of low birth weight babies and continuing during the major period of lactation. Control of micronutrient deficiencies among children, pregnant women and nursing mothers through intensified programs and reduction of nutritional anemia to 25% by 2000 AD among pregnant women are also mentioned. It is encouraging to note that the policy considers adolescent girls as an important target group for reducing undernutrition and anemia. Fortification of essential foods with appropriate nutrients, for example, salt with iodine and/or iron, are also stated.

The indirect measures for long term institutional and structural changes stated in the policy include food security for the population, improvement of dietary patterns through nutrition and health education, improving the purchasing power of the poor through poverty alleviation programs and ensuring an equitable food distribution system.

The health and family welfare related measures include increased health and immunization facilities, improved prenatal and postnatal care to ensure safe motherhood, as well as intensive family welfare and motivational measures. Nutrition surveillance and monitoring of nutrition programs (viz ICDS), nutrition research and communication, education, and improvement of the status of women are some other strategies stated. It is unfortunate that the policy does not clearly elaborate on the component of maternal nutrition within the Family Welfare program.

Implementation of the National Nutrition Policy (NNP)

It has been stated in the policy that it should be administered by several ministries/departments of the Government of India and various governmental and

non-governmental organizations. The policy also emphasizes a close collaboration of the Food Policy, the Agricultural Policy, the Health Policy, the Education Policy, the Rural Development Program and the Nutrition Policy as each one complements the other. It is further stated that the NNP should immediately be translated into sectoral action programs. Special working groups formed at the Departments of Agriculture, Rural Development, Health, Education, Food, and Women and Development would analyze the nutritional relevance of sectoral proposals and incorporate nutritional considerations in the light of the NNP wherever necessary. An Inter-ministerial Coordination Committee would oversee and review the implementation of nutrition intervention measures. A Nutrition Council with the Prime Minister as its President would serve as the highest body for overseeing the implementation of the NNP through various sectoral plans and issue policy guidelines based on latest nutritional surveillance feedback, primarily as given by the NIN/NNMB (National Institute of Nutrition/National Nutrition Monitoring Bureau).

The National Nutrition Policy was the forerunner for different states to launch their nutrition policies.

GUJARAT STATE NUTRITION POLICY (Government of Gujarat 1998)

The Government of Gujarat is one of the few states in the country to develop a State Nutrition Policy.

The policy reviews the nutrition situation in Gujarat in terms of protein energy malnutrition in under 4 children, and vitamin A, iodine and iron deficiencies in children and women. It lists down the various nutrition programs in Gujarat- ICDS, supplementary nutrition program and measures for micronutrient deficiency control under the Child Survival and Safe Motherhood (CSSM) program.

Based on the UNICEF conceptual framework regarding the causes of undernutrition influencing child survival, growth and development, the overall goal of the policy has been formulated : reduction of malnutrition of all types including underweight and

micronutrient deficiencies amongst children, adolescent girls and women of child-bearing age.

The **specific goals** of the policy are, firstly, improving the capacities of communities, families and individuals to understand and tackle their own nutritional problems; and secondly, sensitization and involvement of government departments, non-governmental organizations (NGOs), and academic institutions in operational issues related to malnutrition, and defining their specific roles.

As mentioned in the policy document, its broad strategies cover interventions related to the three major causative factors of malnutrition- food, health and caring practices. It also states a future strategy of reviewing nutrition programs already in operation, and developing a comprehensive Information-Education-Communication (IEC) strategy for child health and nutrition to be implemented for community empowerment and informed participation in the programs.

The **strategic shifts** stated for specific interventions include prioritizing prevention of malnutrition rather than its management; efforts for linking up all existing government programs and services to attach specific nutritional objectives to each one; a shift of focus from service delivery to empowerment of communities for behavior change and poverty alleviation; initiation of Community Based Nutrition Component (CNBC) in ICDS projects; action programs for women's empowerment towards improving the quality of life; and, qualitative rather than quantitative improvements in the Management Information system (MIS) of nutrition and allied programs in the health, education and welfare sectors.

Under the policy's nutrition related components for short term interventions, nutrition strategies for 0-6 year old children and women are clubbed together which range from exclusive breastfeeding, baby and mother friendly hospitals and management of infectious diseases to child growth monitoring and promotion, basic health care facilities at *Anganwadi* centers, home level nutrition and health counseling, and

coordination of work by Auxiliary Nurse Midwives (ANMs) and Anganwadi workers (AWWs). Specifically, for pregnant women, the policy states sensitization of family members as regards the need of these women in terms of food, rest and intra-household food distribution. Nutrition of adolescents, especially girls, receive a special mention in the policy.

Under the heading of 'micronutrient deficiencies related to iodine, iron and vitamin A', iron supplementation programs with a near universal coverage of pregnant and lactating women have been stated. The policy further mentions ensuring 'adequate' supplies of iron-folic acid (IFA) tablets and compliance by women as regards consumption of the tablets through education and counseling.

Under 'health and environmental sanitation', the interventions include improvement in prenatal and postnatal care to ensure safe motherhood, satisfactory weight gain in pregnancy and reduction in anemia prevalence. Other interventions stated are related to universal immunization coverage in rural areas and urban slums, along with provision of safe drinking water and improvement in sanitary facilities.

The policy's nutrition related components for long term changes include urban slum development, prioritizing nutritional objectives in all poverty alleviation programs and employment/income generation schemes; a nutrition focus in agriculture and food production, post-harvest technology, food distribution channels such as the public distribution system (PDS), education, gender issues, rural/tribal/urban development and industrial policies.

In this document, undernutrition in children (especially under 4) is given a high priority while malnutrition in women does not receive as much attention. Malnutrition among pregnant women is mentioned only in terms of iron deficiency anemia and protein energy malnutrition in pregnant women has not been taken into account.

Operationalization of the Policy

Unlike the National Nutrition Policy, the Gujarat State Nutrition Policy clearly elucidates mechanisms for its operationalization. It states that convergence, communication, social mobilization and community participation would lead to effective implementation of the State Nutrition Policy. The policy is to be implemented at the state level under the State Plan of Action Committee (SPAC), which reviews the progress on goals related to health, nutrition, education, water and sanitation, development of girl child and women, and child labor. The state level nodal agency is decided to be the ICDS (Nutrition Section). Nutrition surveillance, multi-indicator cluster surveys (MICS) for rapid assessment and communication strategies are stated to be included in the policy implementation.

It is also mentioned that at the district level, the District Health Organization would coordinate with ICDS and departments such as health, education and rural development. AWWs, school teachers, village development workers, women's groups *(Mahila Mandals)*, and NGOs are stated to work to provide and monitor delivery of good quality services to the beneficiaries.

However, malnutrition control in women is not given due emphasis as a part of the mainstream health system, whether the earlier Family Welfare program or the current Reproductive and Child Health (RCH) program.

POLICY ON CONTROL OF NUTRITIONAL ANEMIA (Government of India)

As stated in the Policy on Control of Nutritional Anemia, the National Nutritional Anemia Control Program (NNACP) aims at significantly decreasing the prevalence and incidence of anemia in women in the reproductive age group, especially pregnant and lactating women, and preschool children. It further mentions the program's focus on the following strategies:

- Promotion of regular consumption of foods rich in iron.
- Provision of iron-folate supplements in the form of tablets (folifer tablets) to the "high risk" groups.

- Identification and treatment of severely anemic cases.

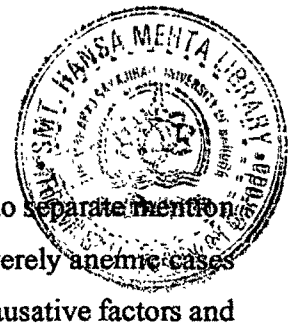
According to the policy, NNACP is to be implemented through Primary Health Centers and their sub-centers by their functionaries such as the Multipurpose Worker (Female) and other paramedics who are responsible for the distribution of adult and pediatric iron tablets. The functionaries of ICDS are to assist them in this task. The policy does not mention iron tablet distribution system for the urban areas.

Under the heading 'Prevention of Nutritional Anemia', the policy states that regular consumption of iron rich foods should be promoted among women attending antenatal clinics, immunization sessions and ICDS beneficiaries. These foods include green leafy vegetables, cereals such as wheat, *ragi*, *jowar* and *bajra*, pulses (especially sprouted), and jaggery, animal foods like meat, liver and fish, which should be consumed along with vitamin C rich foods such as lemon, orange, guava, *amla* and green mango It also mentions reduction in tea consumption for improving iron absorption.

The second part of the policy deals with promotion of consumption of IFA supplements and mentions that as a priority, all pregnant women, irrespective of their hemoglobin status must be provided with IFA supplements during TT immunization sessions. It also states that ICDS *Anganwadi* workers should also distribute IFA tablets under the supervision of multipurpose workers.

The recommended doses of IFA supplements for pregnant women as mentioned in the policy include one big (adult) tablet containing 100 mg of elemental iron and 0.5 mg of folic acid or two tablets of 60 mg of elemental iron and 0.5 mg of folic acid per day for 100 days after the first trimester of pregnancy.

As regards severe anemia (Hemoglobin < 7 g/dl), the policy states that these cases should be identified by trained workers on the basis of clinical signs. The recommended therapeutic dose for women in the reproductive age group is mentioned



as 2 adult (100 mg) tablets daily for minimum 100 days. There is no separate mention of severely anemic pregnant women. It is also mentioned that severely anemic cases should be referred to the PHC Medical Officers for diagnosis of causative factors and appropriate treatment.

As regards monitoring the distribution of IFA tablets by the health workers and consumption of these tablets by the beneficiaries, there is a mention of the use of mother-infant immunization card, ICDS registers and antenatal care register. Considering the critical importance of monitoring and supervision for the success of a program, the policy does not give adequate importance to this component.

Overall, the policy document does not take into account the components related to quality of care nor does it mention the 'supply' aspect of the tablets. Information related to the urban areas, specifically IFA distribution in urban slums is non-existent in the document. It has little information on IEC activities and specific implementation of nutrition-health education and counseling strategies which are crucial for motivating women to improve diets and take IFA supplements regularly.

However, the pervasive and long standing problem of nutritional anemia continues to persist despite the formulation of this policy and implementation of the National Nutritional Anemia Control Program.

THE REPRODUCTIVE AND CHILD HEALTH PROGRAM

(Government of India 1997)

The nutritional well-being of individuals can benefit greatly with better access to basic health services. Therefore, the nutrition programs of a country have to be conceptualized, implemented and monitored in the overall context of its health and development programs.

From Family Planning to Reproductive and Child Health

Conceptually, the National Family Planning Program in India began in 1951 as a completely voluntary program, providing family planning services on one hand, and spreading information about these services on the other hand. However, it was a purely demographic program which focused mainly on terminal family planning methods and received a setback due to its rigid implementation of a target based approach in the 1970s.

Through the 1980s, in recognition of the importance of health of women in the reproductive age group to control population growth, and of children up to 5 years, the approach changed from family planning to family welfare. The Family Welfare Program broadly had two components.

- The maternal and child health (MCH) services which aimed to improve health of mothers and young children through prevention and treatment of major diseases and nutrition care; and
- The family planning services which included provision of contraceptives for child spacing and terminal family planning methods.

During the VIII five-year plan in the 1990s, in order to effectively manage health programs such as the Universal Immunization Program (UIP), Oral Rehydration Therapy (ORT), and other programs under the MCH services, they were brought under the umbrella of Child Survival and Safe Motherhood (CSSM), which was implemented from 1992-93.

The CSSM Plan of Action for Gujarat (Government of Gujarat 1992)

The specific objectives of the CSSM program are stated as:

- To expand and improve quality of care and universalize a set of child survival programs (including control of diarrhea, pneumonia and anemia)
- To develop and initiate safe motherhood program, and
- To provide support to existing institutional systems to enable them to deliver the CSSM services more effectively.

The CSSM package for pregnant women consists of antenatal care services and control of anemia. Besides these, the universal interventions for mothers include screening and referral of high risk cases, treatment of morbidities and complications such as sepsis, toxemia, bleeding and obstruction, and spacing and timing of births.

Specifically, the Gujarat Plan of Action (POA) for CSSM states the following antenatal care services which are to be provided by the Female Health Worker (FHW) are described as:

- early registration of pregnancy
- assessment of general health and nutritional status
- 2 doses of tetanus toxoid (TT) vaccine/booster dose
- Iron-folic acid (IFA) supplement for 100 days
- blood pressure assessment
- detection of complications of pregnancy and abnormal presentation
- advice for rest
- at least 3 antenatal consultations at 20 weeks, 32 weeks and 36 weeks of gestation.

Specifically for the management of pregnancy anemia, the following interventions have been described.

- All pregnant women should receive 2 tablets of IFA containing 60 mg of elemental iron and 0.1 mg of folic acid for 100 days or 1 tablet of IFA containing 100 mg of elemental iron and 0.5 mg of folic acid for 100 days.
- All pregnant women should be clinically examined for anemia detection during TT immunization services.
- Mildly/moderately anemic pregnant women should receive 3 tablets of IFA (60 mg) or 2 tablets of IFA (100 mg) for 100 days.
- Severely anemic women (hemoglobin < 6 g/dl) should be referred to Medical Officers at Primary Health Centers.
- All pregnant women should receive dietary advice on consumption of adequate quantities of iron rich foods.

Besides IFA distribution during immunization sessions for women and children, the document states that the health worker should coordinate with the ICDS health worker for IFA distribution.

With respect to records, the POA mentions maintenance of ANC register and a separate anemia register besides the mother and child protection card. However, nutrition related services in the ANC program seem to receive scant attention. For example, under the section 'CSSM supplies', a weighing scale for pregnant women is mentioned. But the POA does not include weight monitoring as a separate service for pregnant women.

As regards training of functionaries, the major aspects of training include management and technical skill upgradation, and hands-on skill development training followed by appropriate supervision. Some of the training components related to pregnant women are antenatal care, immunization against tetanus, anemia control and therapy, complication identification and referral, and care during and after delivery. However, the training curriculum does not include the aspect related to operational implementation of antenatal care, specifically nutrition care services, such as reduction of maternal undernutrition.

Under 'communication activities', messages for prevention and prophylaxis of nutritional anemia, creating awareness regarding the danger signs of anemia and vitamin A deficiency, and advice for a nutritionally balanced diet have been stated. However, the messages are not specific and they do not mention the communication strategies, and monitoring and evaluation of the nutrition education-communication activities.

The neglect of urban areas : The CSSM-POA for Gujarat seems to have been prepared keeping the rural areas in focus with a brief mention of the unorganized and weak health infrastructure in urban areas. It simply states that there is a need to define geographic areas for all MCH activities and family welfare activities in the urban

areas to avoid overlapping of services. However, it fails to take into account the fact that urban areas have their own unique problems which are different from the rural areas. For example, although multiple organizations (governmental, non-governmental) provide health services in urban areas, they do not cater to the needs of the urban poor in a comprehensive manner as the cohesiveness of community structure present in the rural areas is lacking in the urban areas, leading to low community participation.

The document further suggests that the municipalities and municipal corporations should turn more towards developmental and welfare activities rather than sticking to the mandatory administrative function. However, municipalities and municipal corporations are autonomous bodies which do not receive as many resources from the state government as the rural areas. Yet in terms of performance, they are accountable and answerable to the state government.

Though the CSSM program aimed at universalizing the child survival and safe motherhood package, there were drawbacks in the implementation of MCH services under CSSM. Despite this program, malnutrition and mortality rates among women and children continued to be high.

The Paradigm Shift : ICPD (1994)

The 1994 International Conference on Population Development (ICPD), Cairo, heralded a new approach to population and development, shifting the focus of population/family planning programs from demographic targets to a more comprehensive human development agenda. According to the ICPD Program of Action (POA), the expansion of family planning programs was carried out to include a broader range of sexual and reproductive rights and improving individual health and well being.

According to the POA, improving reproductive health calls for more than an incremental addition of services. It requires a range of collaborative efforts to

improve the health care system and socioeconomic position of women. The ICPD recommended that the participating countries should implement unified programs for Reproductive and Child Health (RCH), broader based than the earlier programs. The development perspective is demonstrated in the ICPD goals as seen below.

- Achieving more sustained economic growth in the context of sustainable development
- Achieving universal access to primary education
- Achieving gender equity and equality
- Achieving life expectancy at birth greater than 70 years
- Reducing maternal mortality by one half of the 1990 levels; infant and under 5 mortality rates to 50 per 1000 live births
- Achieving access to full range of safe and reliable family planning and reproductive health services

Following these goals, India embarked on its own RCH program in 1997. Nutrition care services to pregnant women such as monitoring of weight gain during pregnancy, control of anemia and nutrition counseling were expected to be delivered as a part of the MCH services under the aegis of the RCH program. However, as will be evident later, there is a lack of clarity regarding how nutrition services especially for women would be implemented under the program.

The RCH Program Document of the Government of India (1997)

The concept of RCH is to provide need based, client centered, demand driven, high quality, and integrated reproductive and child health services to the beneficiaries.

According to the RCH document, the RCH program - which evolved during the IX five-year plan - incorporates the components related to CSSM and includes two additional components : one related to sexually transmitted diseases (STDs) and the other to reproductive tract infections (RTIs). Unfortunately, the government views RCH as a program which consists of addition of some more services to the older CSSM program rather than a radically different program which has shifted its

perspective from demographic population control driven goals to development oriented, women centered and gender sensitive goals.

Services under the RCH program

The program integrates all interventions of fertility regulation, maternal and child health, with reproductive health of both women and men. It envisages upgradation of the level of facilities for providing various interventions; and a focus on quality of care. It proposes to improve facilities for obstetric care. It includes a specially designed RCH package for urban slums, tribal areas and adolescents : groups neglected in the past policies. It aims at involving non-governmental and voluntary organizations (NGOs and VOs) for improving the outreach of services and support to the Indian system of medicine for improving the range of the services. The program document also mentions involvement of the *Panchayati Raj* system in planning, implementation and assessment of client satisfaction as regards government health services.

The RCH document mentions safe motherhood interventions such as antenatal care, TT immunization, safe delivery and anemia control program. Other interventions include high quality training to health personnel at all levels, strengthened MIS, IEC activities, and adolescent health and reproductive hygiene. Additional interventions include emergency and essential obstetric care, improved delivery services, and screening and treatment of RTIs/STDs.

Nutrition related components of RCH for pregnant women

A concept paper by Kanani (1998) highlights the linkages between nutrition and RCH and also gives a critique of the RCH document from the nutrition perspective. The paper describes why nutrition care is critical for attaining the RCH goals. For example, the RCH program seeks to improve maternal health and reduce maternal mobidity and mortality. It has been proven that anemia is a contributing factor in 20-23% of all postpartum maternal deaths (UNICEF 1998), and hence needs to be appropriately addressed to in the RCH program.

Among the various components stated in the RCH document, the ones contributing to nutritional improvement of pregnant women are:

- All pregnant women should be registered early by health workers.
- All pregnant women should be given iron-folic acid (IFA) tablets for prevention and treatment of anemia.

Thus, the only specific mention of a nutrition related component for pregnant women in the RCH document is provision of IFA tablets for prevention and treatment of anemia. This shows that nutrition services for pregnant women have not been stated in sufficient detail, as are the family planning or immunization services, especially the operationalization of services at the field level in terms of implementation, supervision and monitoring.

Performance indicators mentioned in the MIS section under 'maternal health' cover management of pregnancy and delivery complications, RTIs and antenatal visits, and under 'IEC' cover awareness of contraceptives, pregnancy complications and acute respiratory infections (ARIs). But none of these indicators cover nutrition related services. The major focus of IEC activities and counseling is on sexuality and reproduction, and there is little description of IEC strategies and materials required for nutrition education and counseling. Unless monitoring indicators specifically include all important nutrition related services, it is unlikely that nutrition care will be adequately delivered.

The quality of maternal health care is enhanced if it is linked to other reproductive health services such as family planning and if it includes concerns such as nutrition. Although it is acknowledged that general health and nutrition services, the definition of 'integrated services' needs to be further clarified and incorporated into country specific policies and programs.

Unfortunately, operationalization of nutrition - RCH linkages is not clear in policy documents, and even where policy documents do highlight nutrition care - the quality of implementation of nutrition services is not satisfactory.

To sum up, this chapter has presented an overview of the important indicators for predicting pregnancy outcomes, contribution of ANC services towards better health of the mother and her newborn, the importance of quality of care of ANC services and influencing factors, and the need and relevance of the HSR methodology for assessing, improving and maintaining the quality of implementation of health services. It has also presented a critique of policies and programs related to the implementation of ANC services which form a major area of concern while conducting Health Systems Research.

The literature reviewed highlights that the use of Health Systems Research methodology is crucial for understanding and effectively implementing nutrition services for pregnant women as a part of the ANC program in an urban health system. The next chapter looks at the objectives and methodology used in the present study.