

Strengthening Maternal and Neonatal Health: Results from two rural areas of Bangladesh



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ABSTRACT

The maternal mortality ratio in Bangladesh, at 4.5 per 1,000 livebirths, is one of the highest in the world. Although Bangladesh has an extensive health and family planning service-delivery network, most facilities are under-used, and many are inadequate. Most mothers do not receive any antenatal care, and the proportion of deliveries carried out at any health facility is less than the number of cases expected to become complicated and require medical help.

An intervention on Strengthening Maternal and Neonatal Health: Improving Linkages at All Levels was designed with the objective of improving maternal and neonatal health by increasing the knowledge of women regarding complications of pregnancy and childbirth; increasing the coverage of antenatal and postnatal care; increasing the number of deliveries attended by trained personnel; increasing the number of cases with complications managed by trained personnel; increasing post-abortion contraceptive use; and improving neonatal care.

The existing basic Emergency Obstetric Care (EOC) services at the Abhoynagar Thana Health Complex (THC) were strengthened. A new maternity unit was constructed at the Mirsarai THC, and was equipped to provide comprehensive EOC. The intervention introduced a pictorial card for raising awareness about the common complications of pregnancy and childbirth, and as a tool for linking pregnant women with the appropriate health facilities. A Pregnant Women Register was also introduced for follow-up of pregnant women. Three unions, each from Mirsarai and Abhoynagar thanas, were selected for implementation of the intervention, which was fully operational in June 1996. Process indicators were used for mid-term evaluation of the intervention.

Results of the mid-term evaluation showed that women's knowledge about the common complications of pregnancy and childbirth and the coverage of both antenatal and postnatal care by qualified personnel had increased. This increase could be attributed to the introduction of the pictorial card which served as a linkage between the women and the different service facilities. The average number of admissions at the THC

maternity at both Mirsarai and Abhoynagar and cases admitted with complications at both the areas had also increased, though the latter is still below the expected level of 15 per cent. In all the areas, the role of the husbands was predominant in making decisions regarding the treatment of their wives. The use of contraceptives in the post-abortion period had increased among the women who had induced abortions at the THC or the Health and Family Welfare Centres.

The lessons learned from this intervention are that comprehensive EOC, with effective referral and linkages, can be successfully implemented at the thana level; that the Pictorial Card is an effective tool for improving antenatal care (ANC) coverage and linking pregnant women to service centres; and that the Pregnant Women Register is an effective tool for follow-up of pregnant women.

The Government of Bangladesh has already adopted the policy of introducing comprehensive EOC nationwide in a phased-in manner. As part of this process, comprehensive EOC will be introduced in five additional thanas by end of 1997. Together with awareness-raising efforts, the provision of facilities will go a long way in improving maternal health in the country. However, it must be mentioned that Bangladesh is a country in which deep-rooted traditions and rituals surround the whole process of childbirth and motherhood. These practices are hard to change and an intervention like the present one will require a considerable amount of sustained effort and time before the desired effects become evident. This should be taken into account by all concerned in the replication process.

Introduction

Globally, about half a million women die each year of pregnancy-related complications, 99 per cent of them in developing countries [1]. The maternal mortality ratio in Bangladesh is estimated to be 4.5 per 1,000 live births [2]. Estimates show that for every maternal death there are at least 16 morbidities [3]. Haemorrhage, eclampsia, obstructed labour, puerperal sepsis, and complications of abortion are the five major causes of maternal mortality in the country [3,4,5].

Bangladesh has a well-established health service infrastructure from the community to the thana (sub-district) level. The Thana Health Complex (THC) is the first static facility where basic emergency obstetric care (EOC) services are expected to be available. A recent review of these services in 52 THCs showed that only 60 per cent of them were providing some basic EOC services. Also, the proportion of deliveries carried out at any health facility was far below the advocated 'minimum expected level', i.e. 15 per cent of total births [6].

Most mothers receive no antenatal care (ANC) and, despite the government mandate that all pregnant women should receive ANC, only a quarter of those who gave birth in 1996-1997 did so [7]. Also, almost all deliveries (96%) in rural Bangladesh take place at home. Moreover, neonatal and infant mortality rates in Bangladesh are also among the highest in the world, at 48 and 82 per 1,000 live births respectively, and are much higher in rural than in the urban areas [7]. Neonatal asphyxia, tetanus, low birth weight, and other infections are the most important causes of these deaths [8].

Population-based studies in Bangladesh show that complications of unsafe abortion are responsible for nearly a quarter of all maternal deaths [3]. About 8,000 women in Bangladesh die each year due to abortion-related causes [9,10]. A recent study in the Extension Project areas of ICDDR,B found that, of the total pregnancies, three per cent ended in induced abortions, and six per cent in spontaneous abortion [11].

Inadequate health care services and lack of trained personnel for management of abortion-related complications lead to compromised reproductive function, infertility, or even death [12]. Indigenous abortions performed under unhygienic conditions are practised everywhere in the country [11].

Despite the preventive measures taken by the Government of Bangladesh (GOB) so far (e.g. identification and referral of high risk pregnancies, and an extensive traditional birth attendant (TBA) training programme for providing clean delivery services), functional linkages between different levels of service are weak. Maternal mortality continues to remain high in Bangladesh. Results of research show that (a) all pregnant women are at risk of serious obstetric complications; and (b) maternal mortality cannot be substantially reduced unless women have access to emergency obstetric services [6].

Keeping in mind the objectives of the WHO Safe Motherhood initiative taken in 1985, the goals of the ICPD in 1994, and the strong commitment of the GOB to improve mother and child health and its existing health and family planning infrastructure, the MCH-FP Extension Project (Rural) designed the intervention "Strengthening Maternal and Neonatal Health: Improving Linkages At All Levels" in 1995. This Project is a collaborative effort of the Ministry of Health and Family Welfare (MOHFW) and the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B), and has been working toward improving and strengthening the national MCH-FP programme.

Objectives

The overall objective of this intervention was to improve maternal and neonatal health. It aimed at: (a) increasing the knowledge of pregnant women regarding complications of pregnancy and childbirth, and infant feeding; (b) increasing the coverage of antenatal and postnatal care; (c) increasing the number of deliveries attended by trained personnel at different levels; (d) increasing the number of cases with complications of pregnancy and childbirth managed by trained personnel; (e) increasing post-abortion contraceptive use; and (f) improving neonatal care.

Methodology

This operations research was designed to test the various components of the intervention in the government MCH-FP service-delivery system. The intervention was initiated in two rural thanas, Mirsarai in Chittagong district and Abhoynagar in Jessore district. These are the field sites of the Rural MCH-FP Extension Project of ICDDR,B. Chittagong division, where Mirsarai is located, has been identified as a 'low performing' area, both in terms of health and family planning indicators. Mirsarai, comprising 16 unions, is a large thana of a population of over 345,853 [13]. According to the crude birth rate of 30 per 1,000 population, the annual expected births in the area are about 10,376. Most of the population is involved in farming or business, but a substantial number of men work outside Mirsarai, mostly in the Middle-east. Chittagong has the highest number of female-headed households compared to the rest of the country [2]. Abhoynagar is located to the south-west of Dhaka and has good communication with the rest of the country. It comprises eight unions, and has a population of about 210,000. According to the crude birth rate of about 26 per 1,000 population, the annual expected births are 5,460 [14]. A sizeable portion of the labour force work in mills and factories. Literacy is slightly higher than the national rate. The contraceptive prevalence rate (CPR) is about 56 per cent [15], and Abhoynagar is regarded as a 'high-performing area' as far as

health and family planning indicators are concerned. The Project has been operating there since 1982, much longer than in Mirsarai.

Three unions, each of Mirsarai and Abhoynagar, were selected for the implementation of the intervention. The comparison thanas were Satkania in Chittagong and Keshobpur in Jessore. The design of the intervention was quasi-experimental, and data were collected from various sources. Data for baseline information regarding number and pattern of hospital admissions, management of cases and the outcome of treatment were collected from the THC maternity registers of 1993 for Abhoynagar and 1994 for Mirsarai. A pre-intervention survey was also conducted in the intervention and comparison areas through the Project's Sample Registration System (SRS). The SRS is a longitudinal data collection system which collects demographic and health survey data from married women of reproductive age every two months, from every fifth house. Pre-intervention data were collected from 781 women who had delivered between May and December 1995. The women were asked about the common complications of pregnancy and childbirth which usually necessitate a woman to seek care in the hospital. A list of obstetric problems was prepared according to the recommendations of the safe motherhood initiative [16].

The symptoms of these complications were divided into three groups: during pregnancy, during delivery, and after delivery. These symptoms included bleeding, headache and swelling of the legs or face, fever for more than three days, leaking membrane, and convulsion in the antenatal period. Complications of childbirth included prolonged labour, malpresentation, retained placenta, and convulsion during delivery. Symptoms, like fever for more than three days, convulsion, bleeding and foul smelling discharge after delivery, were included as postnatal complications. Knowledge regarding safe delivery, diet during pregnancy and lactation, and infant feeding were also parts of the survey questionnaire. Trained and skilled female Field Research Assistants (FRA) conducted the interviews. Probing during interview was permitted, but prompting was not allowed for the knowledge-related questions. These interviewers were supervised by the Project's Field Research Officer and Medical Officers.

The intervention

The intervention was designed to strengthen the existing basic EOC services at the Abhoynagar THC, and to introduce comprehensive EOC at the Mirsarai THC. As there was hardly any maternity service other than normal delivery at the Mirsarai THC, measures were taken to start basic EOC followed by comprehensive EOC. To encourage women to use these facilities, emphasis was put on referrals and linkages from the grassroots upwards. This was achieved through the introduction of a pictorial card showing the symptoms of complications of pregnancy and childbirth (Annex 1). Another tool, the Pregnant Women Register (Annex 2), was also developed for identification and listing of all pregnant women during routine home visits by the Family Welfare Assistant (FWA). The FWAs distributed the antenatal and pictorial cards to the pregnant women, and explained in detail the complications shown in the card. They encouraged the women to go for ANC to the Health and Family Welfare Centre (H&FWC) or Satellite Clinic (SC), to go to the Trained Traditional Birth Attendant (TTBA) for normal delivery, and to go directly to the THC if there were any complications (Annex 3). The FWA updated the pregnant women register at the H&FWC, recording antenatal visits made by the women. She also recorded any pregnancy outcome in her area and updated the FWV's records. If a pregnant woman came to the H&FWC/SC for antenatal check-up without a card, the Family Welfare Visitor (FWV) there was supposed to give her the cards. The pictorial card, along with the antenatal card, were introduced only in the intervention areas. The FWV was also responsible for identifying pregnant women with complications and referring them to the THC. Also, the existing mechanism for referring patients from the THC to a higher level hospital, in cases where they cannot be managed at the THC, has been strengthened.

Complicated cases from neighbouring THCs are encouraged to come to the Mirsarai THC for comprehensive EOC. To establish linkage with five adjacent thanas for referral of obstetric patients, a one-day workshop was conducted with thana health and family planning officers and the medical officers of all the concerned THCs.

Implementation

Before the intervention was initiated, the current maternal and neonatal health status was discussed with the thana managers and other medical officers at both the field sites. The intervention was then designed, and the various activities of the intervention were explained to the thana managers, doctors, and other staff. The intervention was then begun and progress regularly discussed. The intervention's implementation process was divided into two phases as shown below.

Phase I: Abhoynagar

This comprised strengthening the activities that had already been undertaken or were ongoing at Abhoynagar. The THC had been rehabilitated to provide normal delivery, including basic EOC services in March 1993, and essential drugs and equipment were procured. A pictorial card for raising awareness about complications of pregnancy and childbirth was introduced in April 1994. One medical officer and one technologist were trained in blood transfusion in May 1995. An incinerator was also built in the THC premises for the safe disposal of hospital waste, like gauze, syringes, needles, blood, and tissue parts.

Rajghat, Noapara and Sreedharpur unions in Abhoynagar were selected for implementation of the intervention, while two unions of Keshobpur served as the comparison areas.

The distribution of the antenatal and pictorial cards at the doorstep was first introduced in Abhoynagar in April 1994. Based on the experiences gained from Abhoynagar, a revised version of the card was introduced in June 1996.

Phase II: Mirsarai

Besides normal delivery at the Mirsarai THC, there were hardly any maternity services. Thus, the aim was to start EOC services from scratch, and build up to providing comprehensive EOC, which would include basic EOC, cesarean section, and blood transfusion. A new maternity unit was built in the Mirsarai THC. Necessary equipment and drugs were procured from the Central Warehouse, Directorate of Family Planning and Central Medical Store of the MOHFW, and an incinerator was also built on the THC premises. The maternity unit started providing basic EOC services since July 1995. One Medical Officer (MO) and one medical technologist were trained in blood transfusion in August 1995. The government was unable to place any Obstetrician or Anaesthetist at the Mirsarai THC. Finally, the Directorate of Family Planning sent two MO-MCH from the THC for one year to attend the EOC training at Chittagong Medical College Hospital in September 1995. They came back after the training to work at the THC in September 1996. One was trained in obstetrics and the other in anaesthesiology. During the interim period of their training, the Project posted an Obstetrician Consultant at the THC. The Consultant gave on-the-job training on comprehensive EOC to the MOs and other staff members. Although the post of the government Anaesthetist was filled in April 1996, it took a while to procure an anaesthesia machine for the THC. Thus, caesarean sections could not be done until June 1996. Officials of the neighbouring thanas were informed of the facilities available at the Mirsarai THC, and were encouraged to refer patients with complications. The existing system for referring complicated cases to the Chittagong Medical College Hospital was strengthened. It was initially planned to train the FWVs to provide Emergency Obstetrics First Aid at the H&FWC. However, as women do not go to the H&FWC for deliveries, and also because another NGO wanted to work on training FWVs in first-aid EOC, this activity was not implemented by the Project.

Hinguli, Mithanala, and Jorarganj were selected as the intervention unions in Mirsarai, while two unions of Satkania thana served as the comparison areas. Distribution of the antenatal and pictorial cards at the doorstep was started in these areas in June 1996.

In summary, the intervention consisted of basic EOC services in Abhoynagar and comprehensive EOC services in Mirsarai. The various components of EOC are shown in Table 1.

Table 1. Components of Emergency Obstetric Care

First Aid EOC	Basic EOC	Comprehensive EOC
Ergometrine (Injectable)	Oxytocics (Injectable)	All basic EOC services
Antibiotics (Injectable)	Antibiotics (Injectable)	Caesarean section
Anticonvulsants (Injectable)	Anticonvulsants (Injectable)	Blood transfusion
	Manual removal of placenta	
	Assisted vaginal delivery	

Source: UNICEF, 1993.

Orientation of staff members

Orientation on the intervention and its implementation was given to the GOB health and family planning staff members at the union and thana levels through several training workshops. The thana managers also received orientation sessions on the monitoring tools of the intervention.

Intervention Orientation Workshop

A two-day orientation workshop, regarding the intervention and emphasising on referrals and linkages, was conducted for each of the three intervention unions of Mirsarai and Abhoynagar in December 1995 and April 1996 respectively. A total of 43 and 55 field-level health and family

planning staff members, i.e. FWAs, FWVs, Medical Assistants (MA), Family Planning Inspectors (FPI), Health Assistants (HA), Assistant Health Inspectors (AHI), Health Inspectors (HI) in Mirsarai and Abhoynagar respectively attended the workshop. The TTBA's of the concerned unions also attended the workshop. These workshops were conducted with all levels of workers from the same union participating together. The workshops followed the participatory training approach and used the Project's manual for refresher training of field workers. Some new materials on EOC and neonatal health were also used. The facilitators included the thana-level GOB officials, i.e. Thana Health and Family Planning Officer (TH&FPO), Thana Family Planning Officer (TFPO), Medical Officers, Senior FWV, and the concerned officials of ICDDR,B. The immediate outcome of the workshop was evaluated (except for the TTBA's) by pre- and post-tests on knowledge about signs of obstetric complications, safe delivery, nutrition during pregnancy and lactation, etc. The average score increased from 61 to 85 per cent in Abhoynagar, and from 47 to 83 in Mirsarai.

Workshop on Post-Partum Contraceptive Counselling

This one-day workshop was aimed at enhancing the expertise of service providers regarding family planning counselling and client screening, and at improving the management of side-effects and complications of clinical contraceptives. The THC doctors and nurses, and the paramedics of the intervention unions participated in the workshop, which was conducted by senior officials of the Project. Post-test results showed that knowledge of the participants regarding abortion, post-partum and post-abortion contraception, and the different contraceptive methods improved as a result of the workshop.

Monitoring

The THC registers were used for monitoring the number of maternity admissions and the types of services provided. Three additional columns were included in the registers to record the patient's possession of the

pictorial card, person(s) consulted before coming to the THC, and the person who referred the pregnant woman to the THC.

The FWAs recorded the total number of pregnant women from the intervention areas in the Pregnant Women Register, developed by the Project as a monitoring tool for the intervention. This register contained all relevant information about the current pregnancy, and the services received during that period. The field workers (FWAs) kept this register, and a copy was also kept at the H&FWC, where it was updated by the FWA every month when information like outcome of the pregnancy and place of delivery became available. The FWV recorded all antenatal services provided to women in this register. Also, each time the FWA updated her register, she was supposed to encourage the pregnant woman to go for ANC if she had not already done so. The Project had also developed observation checklists for monitoring the different components of the intervention. The government Management Information System (MIS) and the Pregnant Women Register were used for monitoring the performance of the FWVs. A questionnaire was used for abortion clients to assess contraceptive behaviour in the post-abortion period.

Indicators

The principal indicators for this intervention were the knowledge of women about obstetric complications and safe-delivery practices; knowledge about infant feeding; coverage of antenatal and postnatal care; number of pictorial cards distributed in the community and retained; number of THC maternity admissions, including cases of maternal and neonatal complications and their management; neonatal care at the THC; pre- and post-abortion contraceptive use of women who had come to the H&FWC/THC for services; and the number of referrals to and from the THC.

Mid-term Evaluation

Mid-term evaluation was conducted in the intervention and comparison unions in both Mirsarai and Abhoynagar to assess the effect of the intervention on the selected indicators of maternal and neonatal health.

Data collection

For the purpose of the evaluation, data were also collected from various other sources.

Data from the THC maternity registers were collected between January and April 1997. Exit interviews of THC maternity users were also conducted at both the field sites. Interviews which could not be conducted at the time that the women were leaving the THC were taken at their homes within 48 hours of discharge. Women who were referred from the THC to higher centres were interviewed 15 days after referral, giving them time to return home from the referred hospital. Observation checklists were used for assessing neonatal care provided at birth in the THC.

Exit interviews of women who came to the THCs and H&FWCs for abortion services between June and December 1996 were also taken. These women were then followed up at home three months after the abortion to investigate contraceptive use. A special survey for mid-term evaluation was conducted through the Project's Sample Registration System (SRS) in both the intervention and comparison areas. Data were collected from women who delivered during October 1996-February 1997, using the same set of questionnaires used for the baseline survey. As all the components of the intervention were in place in June 1996, three months were given for the intervention to become fully functional. A total of 509 women from the two field sites were interviewed for the mid-term evaluation.

During January-March 1997, antenatal care, including distribution and explanation of the pictorial cards provided at the homes, the H&FWC and Satellite Clinics (SC), was also observed.

The Pregnant Women Register was used for identifying women at risk who were referred to the THC. These women were then interviewed at their homes. As this register was initiated by the Project, baseline information about referrals from the H&FWC/SC could not be collected.

The interviews were conducted by trained female Field Research Assistants (FRA). The same principles of data collection were followed as in the baseline survey. The observations were conducted by the Project's Senior FRAs, who are trained paramedics and have intensive training on observation techniques. The observations were performed unobtrusively. Permission was obtained before conducting the observations from the relevant thana managers, who were oriented on the survey.

Analysis

The filled-in questionnaires were edited prior to computer entry and analysis. Simple frequencies were calculated, and single and bi-variate analyses were done to determine the relationship between different variables.

Results

The results obtained from the process indicators are presented here. The various activities of the intervention started at different phases necessitate that it be functional for a certain period before desired results can be shown. Also, Bangladesh is a country with many traditions and rituals surrounding the whole process of childbirth and motherhood. These practices will not be easy to change. Thus, it will take sometime to achieve the desired effects of an intervention as the present one.

Knowledge of women

This section deals with women's knowledge of complications which occur during pregnancy, childbirth, or in the puerperium; knowledge about hygienic delivery, knowledge of food intake during pregnancy and lactation and knowledge about infant feeding.

Knowledge about obstetric complications

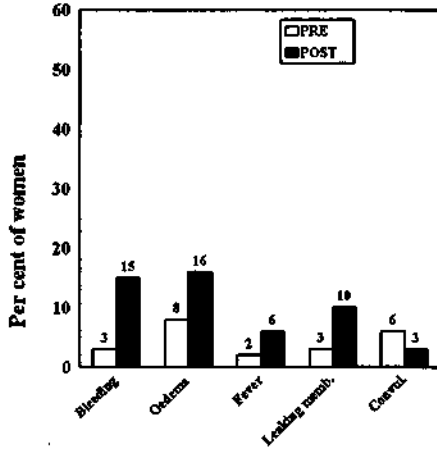
Knowledge of women about the symptoms of obstetric complications had increased in both the intervention areas compared to the comparison areas. Women in Abhoynagar were found to be relatively more knowledgeable about these complications than women in Mirsarai. One of the reasons for this could be that the pictorial card, containing pictures of the symptoms of complications related to pregnancy and childbirth, was introduced much earlier in Abhoynagar than in Mirsarai.

a) Knowledge of complications during the antenatal period

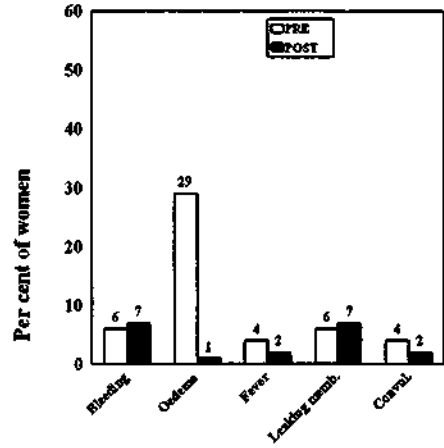
The knowledge of bleeding, symptoms of pre-eclampsia, eclampsia and leaking membrane increased in both the intervention areas. This knowledge is relatively less in both the comparison areas, although there appeared a two-fold increase in the knowledge of the symptoms of pre-eclampsia and eclampsia in Abhoynagar (Fig. 1).

b) Knowledge of complications related to childbirth

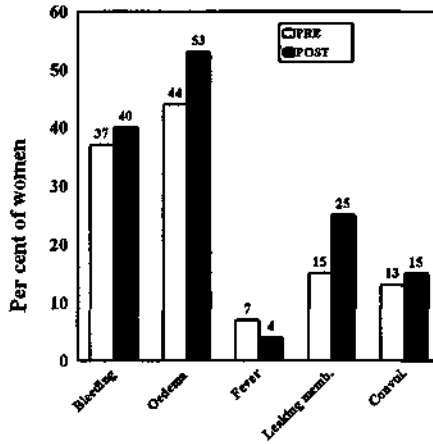
Knowledge of complications, like prolonged labour and malpresentation, had increased uniformly in all the reference areas (Fig. 2). Knowledge regarding bleeding, retained placenta, and eclampsia increased only in the intervention areas.



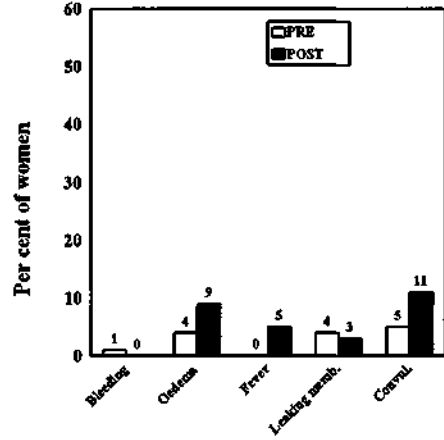
Intervention Unions: Mirsarai



Comparison Unions: Mirsarai

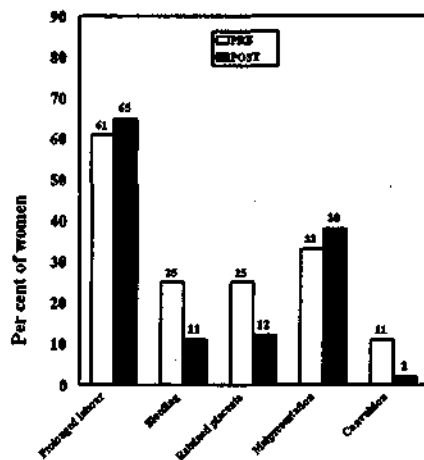
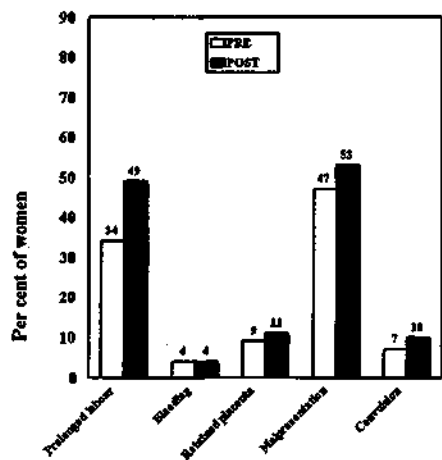


Intervention Unions: Abhoynagar



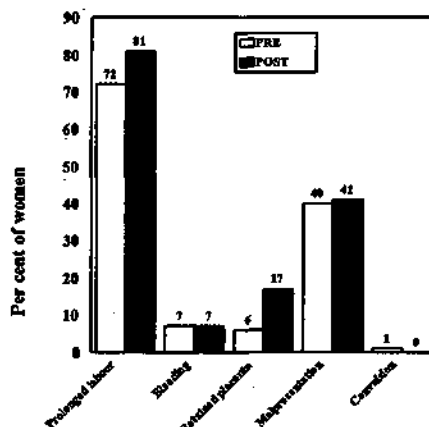
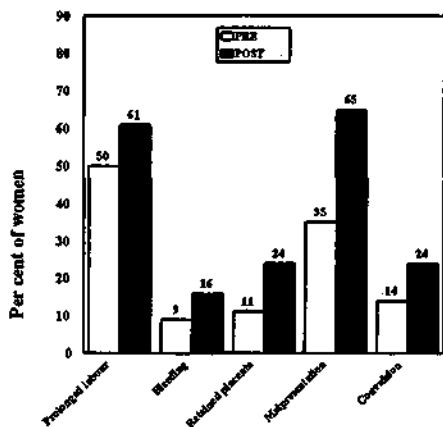
Comparison Unions: Abhoynagar

Fig. 1. Percentage of women by their knowledge about problems during antenatal period



Intervention Unions: Mirsara

Comparison Unions: Mirsara



Intervention Unions: Ahboynagar

Comparison Unions: Ahboynagar

Fig. 2. Percentage of women by their knowledge about problems during delivery

c) Knowledge about postnatal complications

Women's knowledge of severe bleeding as a life-threatening postnatal complication increased by almost two-fold in the intervention area of Abhoynagar. This also increased in the Mirsarai comparison area. However, women's knowledge of the common postnatal complications was quite poor in all the reference areas (Fig. 3).

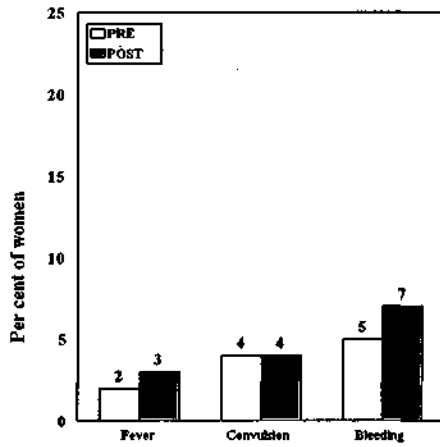
Knowledge about hygienic delivery

Women's knowledge about the three aspects of cleanliness recommended for safe delivery (i.e. clean and hygienic place of delivery, washing of hands, boiling blade and thread) was assessed.

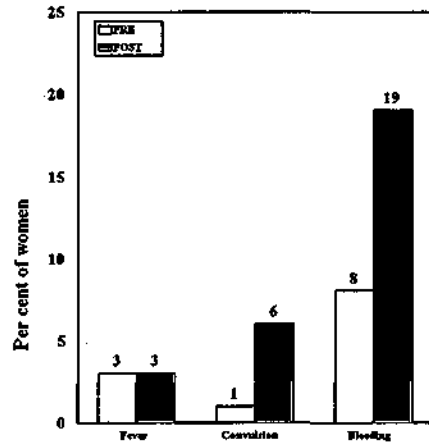
Women's knowledge about safe and hygienic delivery increased over time (Fig. 4). More women in the Abhoynagar intervention area knew about having a clean place for delivery, boiling the thread for tying the cord, and hand washing prior to delivery, than elsewhere. In the Mirsarai intervention area, there was an increase in women's knowledge about boiling of the blade to be used for cutting the cord. Except for the Abhoynagar intervention area, there were some women in all the reference areas who knew nothing about safe and hygienic delivery.

Knowledge about diet during pregnancy and lactation

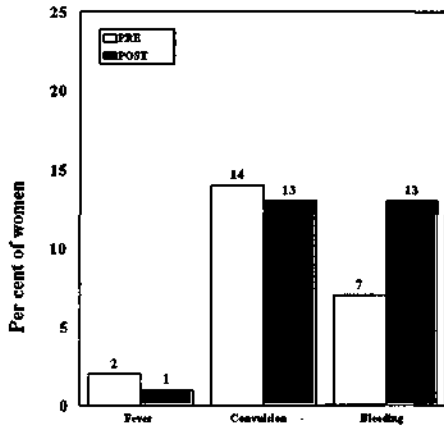
The women in the reference areas were asked about the ideal amount of food for the pregnant and lactating woman. This was categorised into three groups, normal, more than normal, and less than normal. The majority of the women in both the intervention areas knew that more food should be taken during pregnancy and lactation (Table 2). In the Mirsarai intervention area, there was a two-fold decrease in the percentage of women who stated that less food should be taken. Some women said that less food should be taken during pregnancy, but more should be taken during lactation, and they were recorded as "mixed."



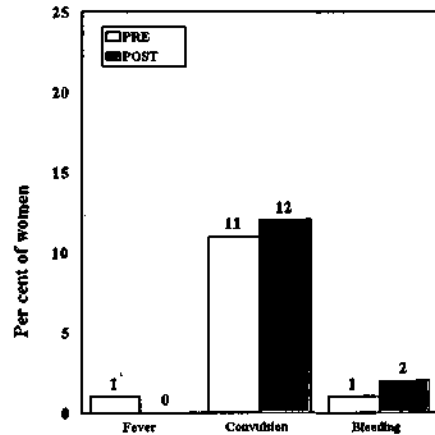
Intervention Unions: Mirsarai



Comparison Unions: Mirsarai

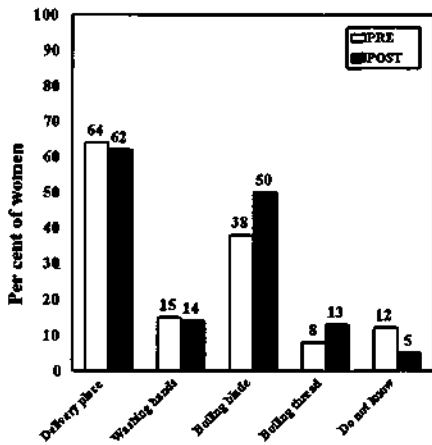


Intervention Unions: Abhoynagar

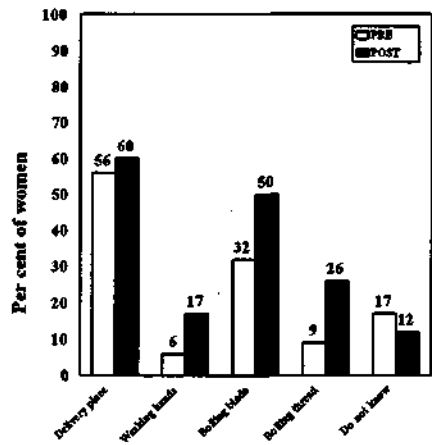


Comparison Unions: Abhoynagar

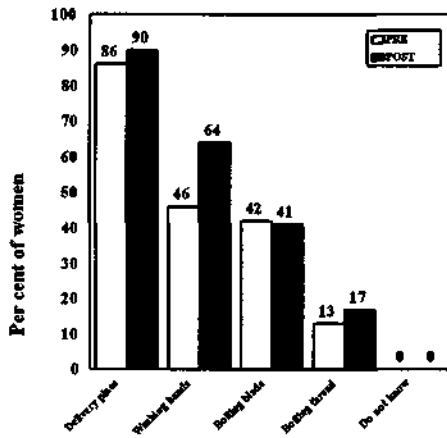
Fig. 3. Percentage of women by their knowledge about problems during post-natal period



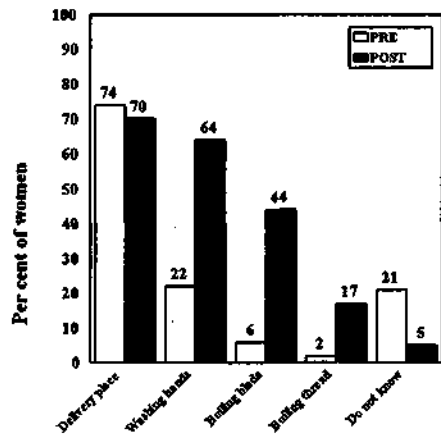
Intervention Unions: Mirsaral



Comparison Unions: Mirsaral



Intervention Unions: Abhoynagar



Comparison Unions: Abhoynagar

Fig. 4. Area-wise percentage of women having knowledge about hygienic delivery

Table 2. Percentage of women having knowledge about diet during pregnancy and lactation

Type of diet	TMirsarai				Abhoynagar			
	Intervention		Comparison		Intervention		Comparison	
	Pre (n=249)	Post (n=203)	Pre (n=160)	Post (n=121)	Pre (n=248)	Post (n=121)	Pre (n=124)	Post (n=64)
Normal	17	21	24	13	4	7	17	5
More than normal	72	70	61	75	92	90	79	95
Less than normal	8	3	14	9	2	3	4	0
Mixed	4	6	1	3	2	0	0	0

Knowledge regarding infant feeding

Women's knowledge that the first food of newborns should be colostrum was observed to increase in all of the areas during the evaluation period. The percentage of women having proper knowledge increased by six percentage points in the Abhoynagar intervention area, but remained the same in the comparison area (Table 3).

Table 3. Area-wise percentage distribution of women having knowledge about first food for the newborns

Types of first food	Mirsarai				Abhoynagar			
	Intervention		Comparison		Intervention		Comparison	
	Pre (n=249)	Mid-term (n=203)	Pre (n=160)	Mid-term (n=121)	Pre (n=248)	Mid-term (n=121)	Pre (n=124)	Mid-term (n=64)
Colostrum	17	19	7	14	22	27	12	13
Honey/SW/ MO/Cow's milk	83	81	86	84	56	49	80	80
Colostrum with sweetened water	-	-	7	3	23	24	8	8

SW = Sweetened water, MO = Mustard oil

The percentage of women knowing that breastfeeding should be initiated immediately after birth nearly doubled (21 to 40 per cent) in the Abhoynagar intervention area. This rise was seven percentage points in Mirsarai (from 29 to 36 per cent). In practice, no improvement in initiating breastfeeding immediately after birth was observed in any of the reference areas.

In both the intervention and comparison areas in Abhoynagar, the knowledge that infants should be breastfed up to five months increased among the mothers. This remained unchanged in the Mirsarai intervention area, but decreased in the comparison area.

Antenatal care (ANC)

Pregnant women contacted by FWAs for antenatal care

There was a remarkable increase in the percentage of pregnant women contacted by the FWAs in the intervention area in Mirsarai, while it decreased in the comparison area. Although this increase was only one per cent in the intervention area in Abhoynagar, the overall percentage was still higher than in Mirsarai (Fig. 5).

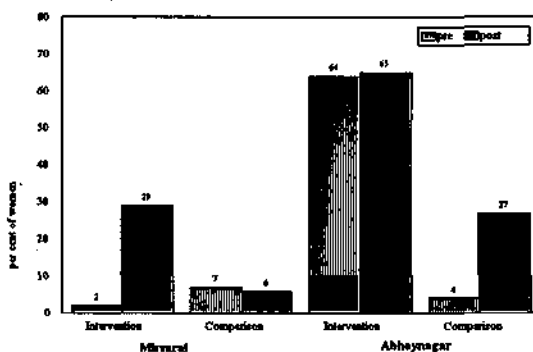


Fig. 5. Percentage of pregnant women contacted by FWAs for ANC

Antenatal and pictorial card

a) Cards received and retained

Of the women who had delivered between October 1996 and February 1997, half (51%) in Mirsarai and three-quarters (76%) in Abhoynagar had received the antenatal and pictorial cards (Fig. 6). Of them, 81 and 91 per cent respectively, had retained both cards at the time of interview in Mirsarai and Abhoynagar.

Of the women who had received the cards, 84 per cent in Mirsarai and 63 per cent in Abhoynagar received them from the FWAs. The remaining women got them from the FWVs at the H&FWC or the SC.

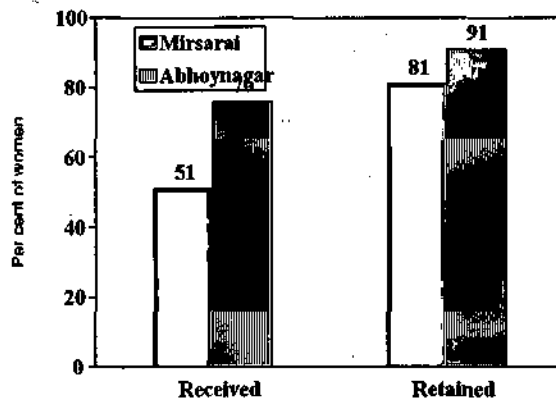


Fig. 6. Percentage of pregnant women who received and retained antenatal and pictorial cards

Source: Special survey: October 1996 - February 1997

b) Pictorial card explained

The FWAs and FWVs were responsible for explaining the pictorial card to each pregnant woman before giving it to her, and at each subsequent visit. Results of the survey show that of the women who had received the cards, 81 per cent in Mirsarai and 84 per cent in Abhoynagar said that the service providers explained the pictorial card to them.

Observation checklists were also used for seeing whether the service providers were actually explaining each picture in the card. A total of 155 and 306 observations were made of the FWVs at the H&FWC/SC in Mirsarai and Abhoynagar respectively. The same procedure was followed to observe the FWAs at the homes of pregnant women (Table 4).

Table 4: Percentage distribution of services provided related to the pictorial card

Types of services provided	Per cent providing services			
	FWV		FWA	
	Abhoynagar (n = 306)	Mirsarai (n = 155)	Abhoynagar (n = 91)	Mirsarai (n = 11)
Enquired about card	96	89	69	64
Assessed knowledge	72	23	59	18
Explained card	73	15	93	46
Informed about referral points	73	79	91	82

The observations indicate that the pictorial cards were explained to the women by the FWAs and FWVs more in Abhoynagar than in Mirsarai. Also more field workers and paramedics in Abhoynagar assessed women's knowledge regarding the cards than in Mirsarai. The poor performance of the FWVs and FWAs in Mirsarai, with regard to explaining the pictorial cards and assessing women's knowledge of the cards, may be due to their reluctance to perform this additional work and perhaps also due to lack of adequate supervision.

Coverage of antenatal care by trained providers

The percentage of women who received antenatal care from medically trained practitioners increased by 14 percentage points in the intervention area in Mirsarai (Fig. 7). There was a decrease in the comparison area, because the FWV in one union in this area had gone for maternity leave, and the other union had a new FWV who was non-residential and often absent from work. In the intervention area at Abhoynagar, antenatal coverage increased by only four percentage points, from 75 to 79 per cent.

There was also a slight increase in the comparison area.

There was a two-fold increase in antenatal care provided by the FWVs in the intervention area in Mirsarai. No such change was observed in the comparison area. Thus, although the coverage of antenatal care in Mirsarai was relatively low, there was evidence to show that it has been increasing over time. No change was observed in the percentage of women receiving ANC from the MBBS doctors in the Mirsarai intervention area, while in the comparison area there was more than a two-fold decrease of these services. This decrease in the comparison area was possibly due to the absence of the medical officer in the rural dispensary.

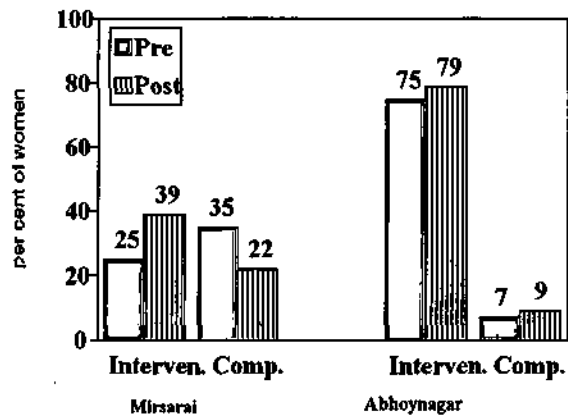


Fig. 7. Area-wise percentage of women receiving antenatal care from medically qualified personnel in the pre-intervention and intervention period

In the Abhoynagar intervention area, there was only a two percentage point increase in ANC provided by the FWVs. Increase in the services provided by the MBBS doctor showed a similar trend (Fig. 8).

According to GOB guidelines, each pregnant woman should have at least three antenatal check-ups from trained medical practitioners. Twenty eight per cent of the 39 per cent women who received ANC in Mirsarai went for three or more visits, whereas 72 per cent went for less than three visits. In Abhoynagar, of all the women who received ANC, 59 per cent had less than three and 41 per cent had three or more visits.

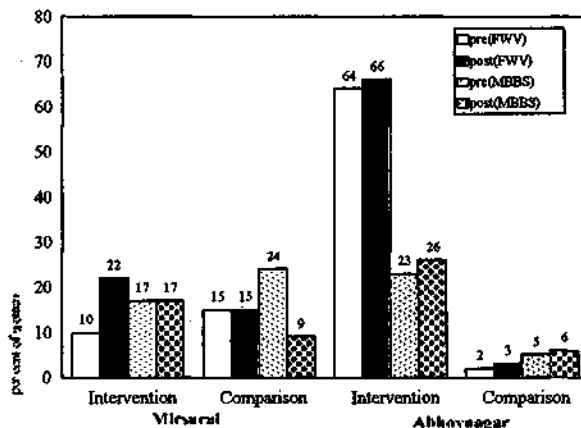


Fig. 8. Percentage of pregnant women who received ANC from FWVs, MBBS doctors

Postnatal visits

The period lasting from delivery up to 42 days post partum was considered to be the post natal period. This was applied for all women having live births, still-births, abortion, miscarriage, and women whose infants had died after birth. The women were asked whether they had received postnatal care from any provider, like the FWA, FWV, MBBS doctor, and others. This care would include advice to go to a qualified provider for routine postnatal care,

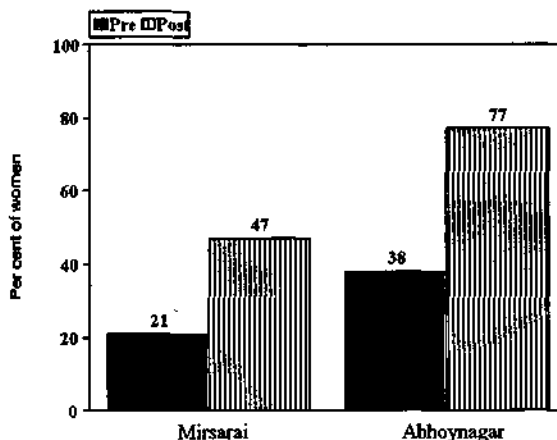


Fig. 9. Percent of women who received postnatal visits

advice on where to go for the management of postnatal complications for both mother and child, information about nutrition, breastfeeding, child immunization and family planning, as well as provision of these services.

There was a two-fold increase in the coverage of postnatal care in the intervention areas of both Abhoynagar and Mirsarai; this was higher than in the comparison areas (Fig. 9). These increases were found to be statistically significant ($p < 0.01$). The majority of the women were contacted by the field workers in their homes during the postnatal period and given advice. It may be mentioned that pre-intervention data from the comparison areas were not available for postnatal care.

Delivery care

Types of Birth Attendants

Deliveries attended by trained personnel, like TTBA's, paramedics, and physicians, increased in the Mirsarai intervention area. Deliveries attended by the TTBA's decreased in Abhoynagar, while those attended by physicians increased.

This could be due to the smaller sample size in Abhoynagar during evaluation as compared to the baseline, or fewer TTBA's were available during the evaluation, because some had left the area, died or had become too old to perform their duties.

Table 5. Percentage distribution of the types of birth attendants

Type of Birth Attendant	Mirsarai				Abhoynagar			
	Intervention		Comparison		Intervention		Comparison	
	Pre (n=249)	Mid-term (n=203)	Pre (n=160)	Mid-term (n=121)	Pre (n=248)	Mid-term (n=121)	Pre (n=124)	Mid-term (n=64)
UTBA	79	72	70	73	62	71	89	78
TTBA	10	13	19	13	17	10	6	6
Paramedic	5	4	3	2	12	12	2	3
Physician	2	3	3	1	4	8	3	0
Self	1	1	1	0	2	6	0	3
Others	3	7	4	12	1	1	1	9

Place of delivery

Percentage of institutional deliveries, like deliveries conducted in the FWC, THC, District Hospital or private clinic, increased slightly in the intervention area in Abhoynagar, whereas in Mirsarai, it showed a slight decrease. The percentage of deliveries taking place at home increased in all the reference areas, except in the Abhoynagar intervention area, where there was a six percentage point decrease (Table 6).

Table 6. Area-wise percentage distribution of place of delivery

Place of delivery	Mirsarai				Abhoynagar			
	Intervention		Comparison		Intervention		Comparison	
	Pre (n=249)	Mid-term (n=203)	Pre (n=160)	Mid-term (n=121)	Pre (n=248)	Mid-term (n=121)	Pre (n=124)	Mid-term (n=64)
Home	94.0	95.6	94.4	97.5	85.9	80.2	96.8	98.4
THC	2.8	2.5	0.6	0.8	8.0	6.6	2.4	0
District hospital	1.2	0.5	1.3	0	0.4	0.8	0	0
Clinic/Private hospital	1.2	0	0.6	0.8	2.8	5.0	0	0
Others	0.8	1.5	3.1	0.8	2.8	7.4	0.8	1.6

Complications related to pregnancy and childbirth

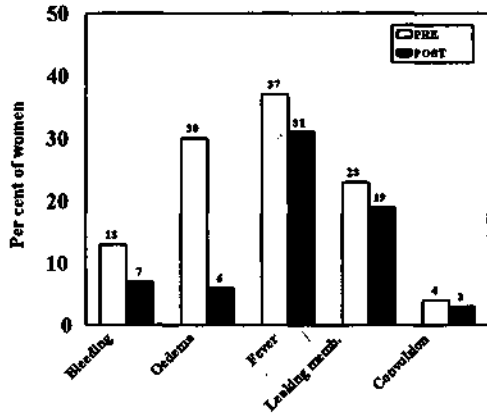
The complications as reported by the women were divided into three groups as presented below.

a) Complications in the antenatal period

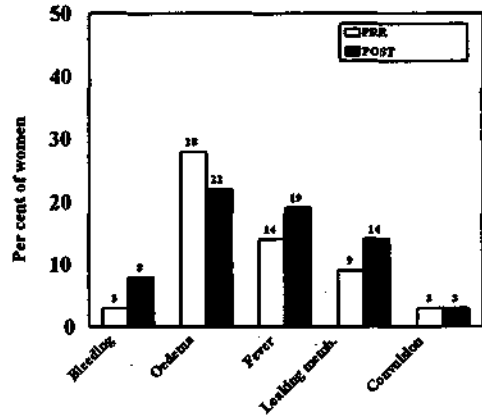
In the Mirsarai intervention area, there was an overall decrease in reporting of the common symptoms of complications of pregnancy, like bleeding, fever, leaking membrane, high blood pressure, headache, and swelling of the face and legs. Reporting about most of these complaints, except the symptoms of pre-eclampsia, increased in the comparison area. However, in the Abhoynagar intervention and comparison areas, there was no such difference between the pre- and post-intervention period, except for a sharp rise in the reporting of the symptoms of pre-eclampsia in the comparison area (Fig. 10). This could be due to a different group of women being interviewed in the two periods, as well as reporting bias.

b) Complications of childbirth

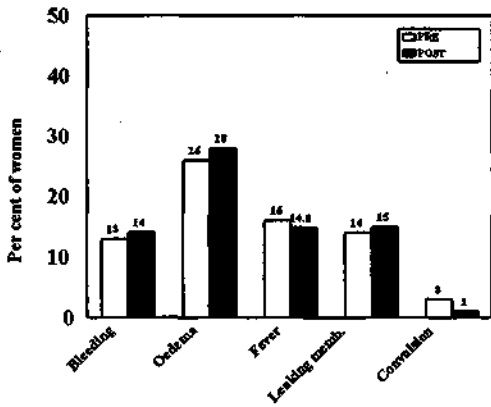
Prolonged labour was one of the most common problems in the reference areas, as stated by the women (Fig. 11). It increased by 10 percentage points in the intervention area in Abhoynagar. The incidence of retained placenta, which was highest in the Mirsarai intervention area, showed a sharp decline in the evaluation period. This could be attributed to the increased number of deliveries attended by trained personnel since the initiation of the intervention.



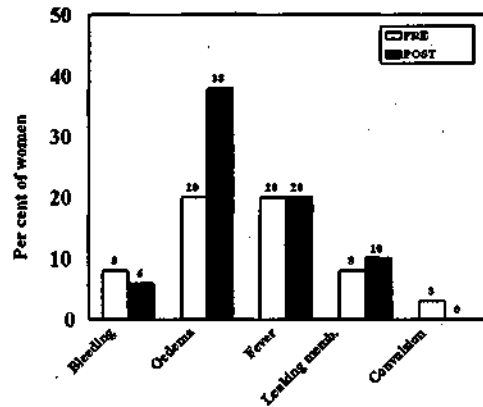
Intervention Unions: Mirsarai



Comparison Unions: Mirsarai



Intervention Unions: Abboynagar



Comparison Unions: Abboynagar

Fig. 10. Incidence of complications experienced in the antenatal period

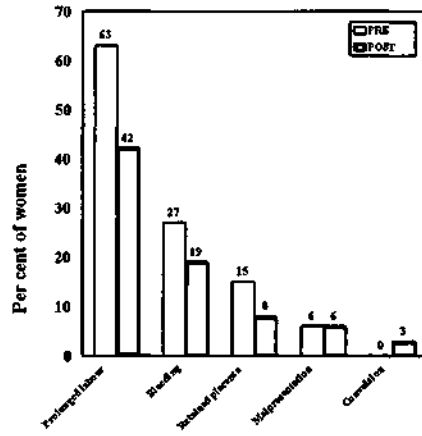
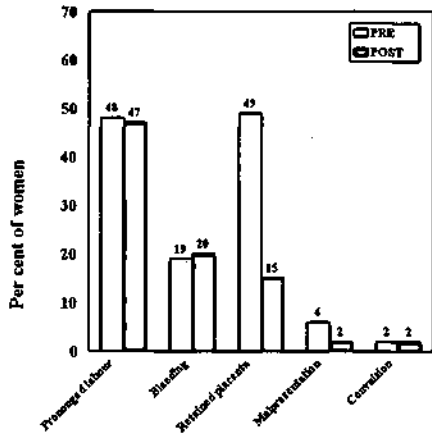
c) Postnatal complications

The common postnatal complications were heavy bleeding, foul smelling discharge, fever for more than three days, and convulsion immediately after delivery. As reported, the percentage of women suffering from fever decreased by nearly seven percentage points in the Mirsarai intervention area, and doubled in the comparison area (Fig. 12). The findings were similar in Abhoynagar. The incidence of post-partum haemorrhage (PPH) decreased by three percentage points in the intervention area in Abhoynagar, and increased by the same figure in the Mirsarai intervention area. This increase in the Mirsarai intervention area could be due to better vigilance of the health workers in the post-partum period. It may be noted that the reporting of PPH increased sharply in both the comparison areas.

Care-seeking behaviour for the management of complications

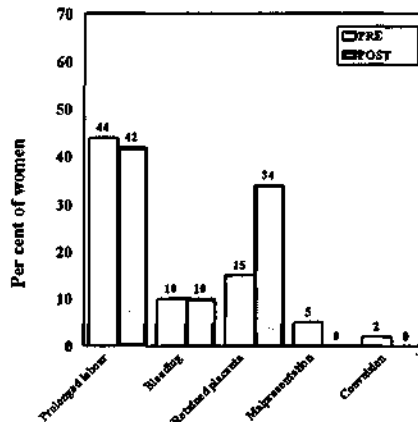
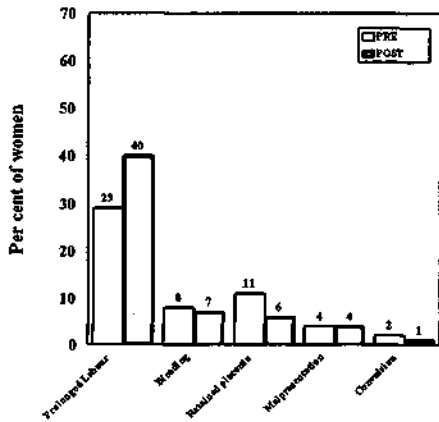
Place and providers consulted for complications

The percentage of women who went to medically qualified personnel for management of complications decreased by seven percentage points at Mirsarai, and increased by two percentage points at Abhoynagar. In general, women in the intervention unions of Abhoynagar used THC services for complications relatively more than those in the other areas, though there was no change in the THC service utilisation on comprehensive EOC in either area (Fig. 13). The percentage of women going to the unqualified practitioners remained static in Abhoynagar. However, it may be too early in the period of the intervention to show any significant change in the general care-seeking behaviour.



Intervention Unions: Mirsarai

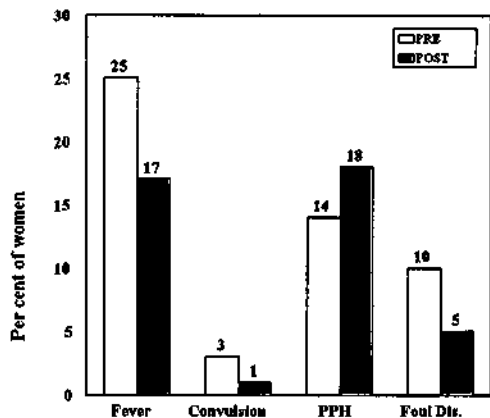
Comparison Unions: Mirsarai



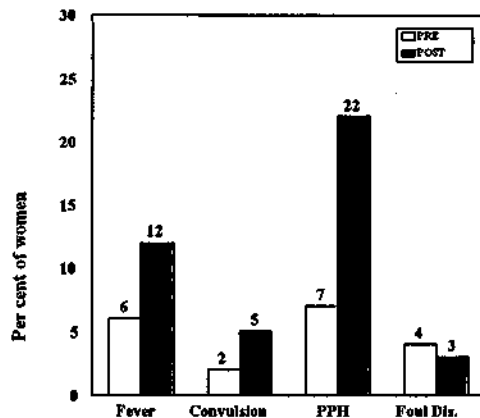
Intervention Unions: Abhoynagar

Comparison Unions: Abhoynagar

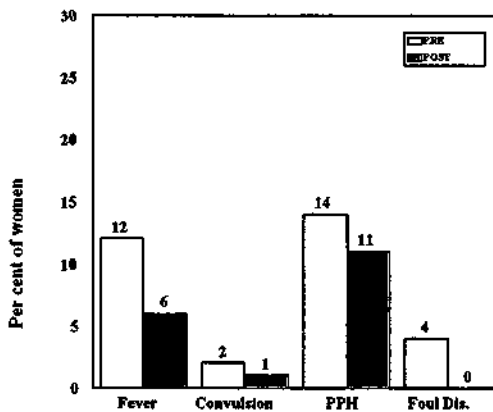
Fig. 11. Percentage of women having complications during childbirth



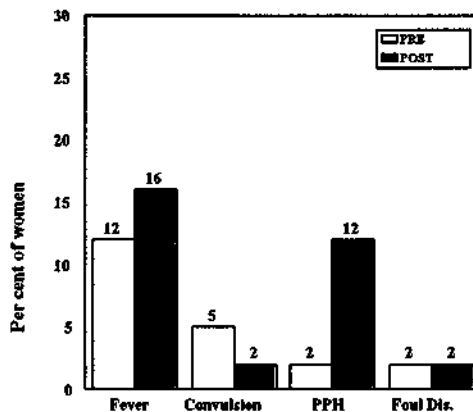
Intervention Unions: Mirsarai



Comparison Unions: Mirsarai

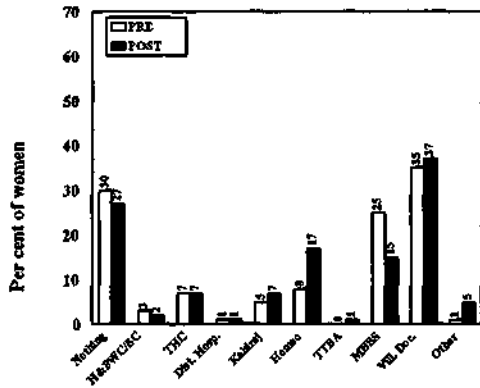


Intervention Unions: Abhoynagar

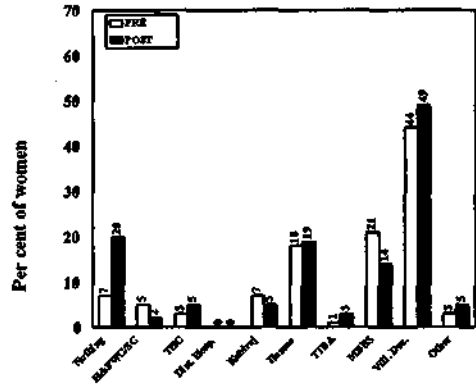


Comparison Unions: Abhoynagar

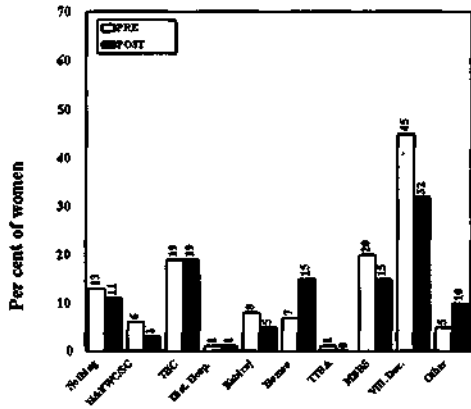
Fig. 12. Percentage of women having complications during post-natal period



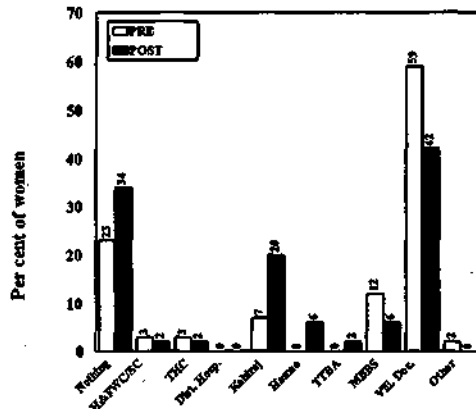
Intervention Unions: Mirsarai



Comparison Unions: Mirsarai



Intervention Unions: Abhoynagar



Comparison Unions: Abhoynagar

Fig. 13. Area-wise distribution of women by their care-seeking behaviour for pregnancy or delivery related problems

Decision-maker

In majority of the cases, when women encountered problems during pregnancy and/or childbirth, husbands were the major decision-makers regarding the service provider to be consulted. During the evaluation, women's decision-making power in the Mirsarai intervention area increased by seven percentage points, while in Abhoynagar it decreased by six percentage points (Table 7).

Table 7. Percentage distribution of decision-makers by place and providers consulted

Persons	Mirsarai				Abhoynagar			
	Intervention		Comparison		Intervention		Comparison	
	Pre (n=146)	Post (n=110)	Pre (n=113)	Post (n=52)	Pre (n=140)	Post (n=72)	Pre (n=47)	Post (n=33)
Husband	67	48	76	56	45	55	55	67
In-laws	10	12	7	14	11	15	4	9
Self	18	25	8	21	13	7	11	12
Relation	10	19	7	6	35	19	32	21
Others	2	3	-	6	8	4	4	

THC admissions and types of services provided

The range of services has increased at both Mirsarai and Abhoynagar THCs. In the pre-intervention period, only normal deliveries were performed, and even episiotomies were never done at the Mirsarai THC. After the implementation of the intervention, caesarean section was initiated at Mirsarai. At both the THCs, assisted vaginal deliveries, like forceps, manual removal of the placenta and treatment of complications of abortion, were initiated. Blood transfusion, a service normally not provided at the thana level, is now available at both Mirsarai and Abhoynagar; 84

maternity patients were given blood transfusions in Abhoynagar and 11 in Mirsarai since the introduction of this service in June 1995 and June 1996 respectively. The country's first caesarean section at the thana level was performed at the Mirsarai THC in June 1996, following which eleven more have been done up to July 1997.

THC admissions

In both Mirsarai and Abhoynagar, there was an increase in the average monthly THC admissions, number of cases of complications managed at the THCs, and cases referred to higher centres from the THCs (Fig. 14 and 15). In the pre-intervention period, of the total expected deliveries in both areas, the total number of THC admissions was 1.7 and 6.5 per cent in Mirsarai and Abhoynagar respectively. During the mid-term evaluation, the corresponding figures were 5.0 and 8.4 per cent respectively, indicating an increase in the number of deliveries attended by trained personnel, and increased use of the THC maternity by more women with complications. This increase was relatively larger in Mirsarai, which may be an effect of the introduction of comprehensive EOC there. As shown in Fig. 14, there is seasonal variation in the maternity admissions.

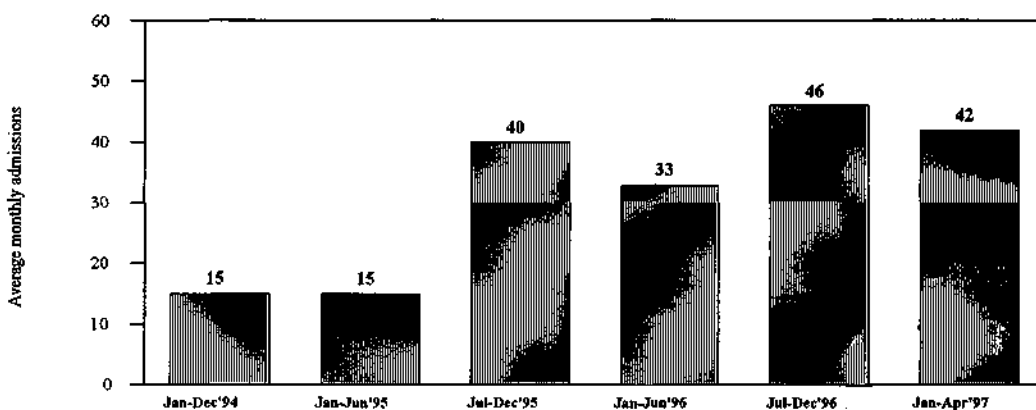


Fig. 14. Average monthly admissions in the THC Maternity, Mirsarai

Source: Maternity register

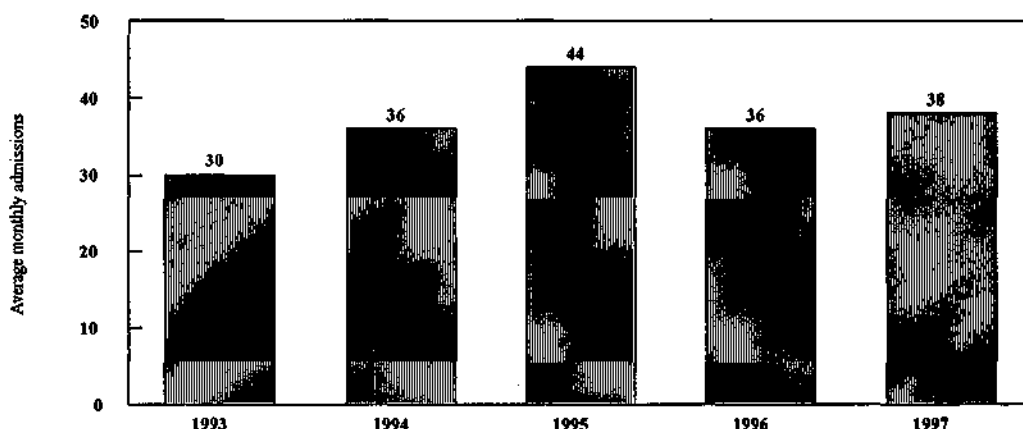


Fig. 15. Average monthly admissions at the THC maternity, Abhoynagar, January 1993 - April 1997.

Source: Maternity register

Referrals

Referrals from the THC

The percentage of patients referred to higher centres from the Mirsarai THC increased from 13 per cent in 1994 to 17 per cent during January-April 1997. In Abhoynagar, these figures were 13 and 20 per cent respectively. The increase in referrals from the Mirsarai THC could be due to the fact that the MO trained in Obstetrics and Gynecology was non-residential and that some patients coming with emergencies had to be referred since he was not available. Another reason is that some women came with very severe obstetric complications which could only be managed at a higher facility, like the District Hospital. In Abhoynagar, the increase in referrals may indicate an increase in community awareness regarding obstetric complications, resulting in reporting of more women to the THC for the management of complications. However, as comprehensive EOC is not available at Abhoynagar, these cases had to be referred to higher facilities.

Among all the women referred from the THC to higher facilities, 39 in Mirsarai and 27 in Abhoynagar were interviewed 15 days after referral. Of them, 15 per cent in Mirsarai and 28 per cent in Abhoynagar

had a caesarean section. More than two-fifths of the referred women in Mirsarai and more than half in Abhoynagar were cases of obstructed/prolonged labour. One-fifth of the referred women in both areas were cases of eclampsia. Other reasons for referral were APH, leaking membrane, and malpresentation. Four women referred from Mirsarai did not visit the centres or any other clinic, as they did not feel the need to do so.

Referral from the union to the thana level

Thirty-six women in Mirsarai and 59 in Abhoynagar were referred from the H&FWC at the union level to the THC at the thana level during the mid-term evaluation period. There are no baseline data for referrals as this was a new activity introduced by the Project. Therefore, the monthly referrals are presented in Fig. 11, which shows an increasing trend between August 1996 and February 1997 (Fig. 16).

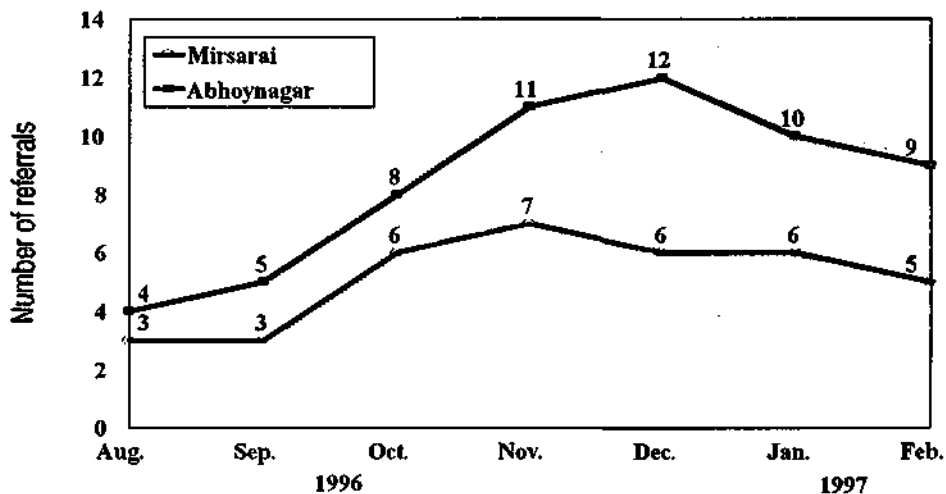


Fig. 16. Number of women referred from union to thana level

Causes for referral were high risk pregnancies, i.e. pregnancy under 20 years or above 35 years, height of the woman less than 145 cm,

oedema, delayed labour, severe anaemia, and others, like bleeding, pain abdomen, malpresentation, etc. (Table 8).

Table 8: Number of pregnant women referred from H&FWC to THC, according to the causes of referral

Cause	Thana		Total (n=95)
	Abhoynagar (n=59)	Mirsarai (n=36)	
Age < 20 years	30	4	34
Age > 35 years	5	0	5
Height < 145 cm	9	1	10
Oedema	6	4	10
Severe anaemia	1	2	3
Delayed labour	2	5	7
For check-up	0	8	8
Others	6	12	18

Only one-third of the women referred went to the THCs. Although the number of pregnant women referred to the Mirsarai THC was lower than that in Abhoynagar, the number of pregnant women who actually went to the former was higher than that in Abhoynagar. Reasons are: the women did not feel the need to go, did not understand the importance of going to the THC, husband objected, the THC was too far away, and other reasons. Most women who did not feel that there was a need to go were referred because they were aged either less than 20 or above 35 years, their height was less than 145 cm, or they had edema or anaemia.

Referral from neighbouring thanas

Facilities for comprehensive EOC have been provided at the Mirsarai THC since June 1996 resulting, as mentioned earlier, in an increased number of maternity admissions and complicated cases. Apart from providing services to the population of Mirsarai, the THC also serves patients coming from the neighbouring thanas. In 1996, 21 complicated obstetric cases were referred from neighbouring thanas to the Mirsarai THC.

Contraceptive use before and after abortion

Of all the women who came to the THC's or H&FWCs, for induced abortion or for the management of abortion-related complications, 80 per cent were not using any contraceptives at the time of conception. However, 59 women (67%) had used some modern method of contraception at some stage of their reproductive life. The most common method used was the pill (73%). Eighty per cent of the women who were using contraceptives were on oral pills at the time of conception. Most of them stated that they did not take their pills regularly, and became pregnant as a consequence. Contraceptive use increased after abortion, as seen at the three-month follow-up visit, and rose to 78 per cent on follow-up (Fig. 17). Pill use increased five-fold, from eight per cent to 40 per cent after abortion. There was a similar increase in the use of the different methods after abortion, with a fall in the percentage of women who were using the traditional methods.

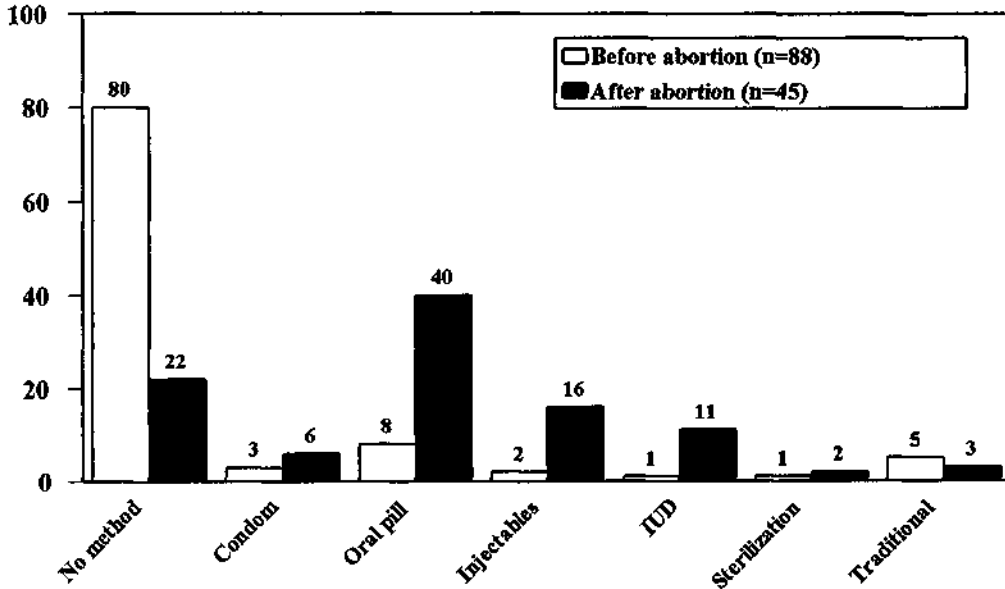


Fig. 17 Percentage distribution of the family planning methods used before and after abortion

Neonatal care

Care of the newborn at the THC

Observation of five neonatal cases during November 1994 at the maternity unit of the Mirsarai THC showed that neonatal care was poor; instruments used for cutting and clamping the cord were unsterile, being soaked in savlon only; and cleaning of the airway was not done properly. The baby was also not kept warm, and was often left unattended for quite some time after delivery. There was no suction machine or other gadgets for neonatal resuscitation [17].

During January-March 1997, 24 cases, delivered at the Mirsarai THC and 19 at the Abhoynagar THC, were observed by using checklists for neonatal care. Of them, three in Mirsarai and one in Abhoynagar were stillbirths. Results of observations on neonatal care provided at the THC are also included in this section.

More than three-quarters of the newborns in Mirsarai and all in Abhoynagar were wrapped in clothes immediately after birth, and their airways were cleaned properly (Table 9). Ninety-six per cent of the newborns at Mirsarai were examined physically after birth, while in Abhoynagar, this was done in 74 per cent of the cases. Suction machine and oxygen cylinders were always kept ready in the labour room in both the THCs.

Table 9. Percentage distribution of immediate care of the newborns at the THCs

Procedure	Mirsarai (n = 24)	Abhoynagar (n = 19)
Baby wrapped with clothes after birth	88	100
Cleaning of airway	79	90
Physical examination of newborn after birth	96	74

Infection prevention procedures for clamping and cutting cord were better at Mirsarai than at the Abhoynagar THC (Table 10).

Table 10. Percentage distribution of practices related to the clamping and cutting of the cord at the THC

Practice	Mirsarai (n = 24)	Abhoynagar (n = 19)
Boiled or autoclaved artery forceps used for clamping	96	58
Boiled or autoclaved scissors used for cutting cord	100	63
Cord tied with boiled thread or silk	79	47

Care of the umbilical stump appears to have been better at the Mirsarai than at the Abhoynagar THC (Table 11).

Table 11. Percentage distribution of cord care at the THC

Activity*	Mirsarai (n=21)	Abhoynagar (n=18)
Umbilical stump cleaned with spirit	100	94
Umbilical stump kept open	100	94
Umbilical stump kept covered	0	6

* Still-births not included.

Giving colostrum

Practice regarding giving colostrum to the newborn increased in the Abhoynagar intervention area. In the Mirsarai intervention area, during the baseline survey, 15 per cent gave colostrum, which remained almost the same during the evaluation period. In Abhoynagar, there was a four percentage point (from 6 to 10 per cent) increase in the number of women giving colostrum during mid-term evaluation.

Discussion

The various components of this intervention were implemented in different phases in the two project areas. Since it was a government collaborative work, many components were dependent on the availability of personnel and equipment. Basic EOC activities had started at the Abhoynagar THC in 1993, whereas comprehensive EOC with all its components, and the pictorial card, were in place in Mirsarai in June 1996. Therefore, this mid-term evaluation is too early to show the desired impact of the intervention. Also, it is important to note that Abhoynagar is a high-performing thana in terms of MCH-FP service use, and that the Project has been operating there for a longer duration than in Mirsarai. Therefore, there are differences in service use and provider care between the two intervention areas.

In Bangladesh, cultural beliefs, religion and family norms have influenced the entire process of motherhood for hundreds of years [18]. Many rituals which have very deep emotional basis are followed. These in-built behavioural and social patterns are difficult to change. It is commonly believed that complications during pregnancy are caused by physical and supernatural factors that cannot be treated by medical doctors [19]. So, although facilities may be built, women may not use them. Community education is, therefore, needed to create awareness about the importance of deliveries by trained personnel. However, change in these age-old practices will take a long time.

Results of the mid-term evaluation show that the antenatal and postnatal coverage had increased in both the intervention areas compared to the comparison areas. This increase, especially of the care provided by the FWV, may be due to the pictorial card working as an effective tool for linking the pregnant woman to a service centre for ANC. Also, ICDDR,B's introduction of the Pregnant Women Register at the H&FWC/SC, and making it available to the FWAs, had an important role in making the work of the FWAs more effective. It may be mentioned that, according to the GOB guidelines, a pregnant woman should have at least three antenatal check-ups from medically trained personnel. Three or more antenatal check-ups were very low in the mid-term evaluation, and will need further emphasis as the Project continues.

The pictorial card has also helped raise awareness for better health care among pregnant women, as seen by the improvement of knowledge regarding complications of pregnancy and childbirth. However, only 51 per cent of the pregnant women in Mirsarai were given pictorial cards, which calls for attention and points to the low contact rate of FWAs with clients at their doorsteps. The Project's SRS reports show even less client contact by the FWAs, and was only 23 per cent in [20] December 1996. Of the women who got the cards, 81 per cent in Mirsarai and 91 per cent in Abhoynagar retained them even after delivery. All these women had gone to the H&FWC/SC for antenatal check-ups. Thus, a simple tool, like the pictorial card, to which women can relate, can become important for improving health care for rural women.

The use of the hospital maternity by women in the community in Mirsarai remained static, but deliveries by trained TBAs showed an increase by three percentage points. The increase in the number of deliveries attended by trained personnel indicates the improved linkage between the trained service providers, as well as increased awareness among mothers. Thus, appropriate training can be used for linkage between different service providers and facilities, leading to the increased use of these services by women. Home deliveries are still high (96%) at Mirsarai. This means that the people of Mirsarai are still reluctant to go for delivery services outside their homes.

In Abhoynagar, although deliveries by untrained TBAs have increased, which could be an effect of sample bias, institutional deliveries are also on the rise. Compared to Mirsarai, institutional deliveries are higher in Abhoynagar. Recently, two private clinics opened at Abhoynagar, and patients visit these clinics. Cases admitted with complications increased at both the areas, though the numbers are still below the expected level. In this study, nearly half of the women who encountered complications did not visit any institutional facility, since they did not feel any necessity for doing so. The second most common reason cited was the cost that would be incurred for treatment at the THC. In accordance with other studies mentioned earlier, this goes to show that beliefs embedded in

the society take time to change; women in Bangladesh prefer home deliveries even in case of complications. Results of studies show that rural Bangladeshi women rely on the assistance of a traditional birth attendant, who is usually known to them, and may have also attended their previous delivery [21,22] . The preference among women for home delivery for normal cases and hospital delivery for complicated cases has also been mentioned in several other studies [23, 19] .

This study also indicates that husbands play an important role in making decisions regarding the treatment of their wives. Although this trend was found to be decreasing in Mirsarai and increasing in Abhoynagar over time, the decision-making power of women for use of hospital care was found to be three times higher at Mirsarai than at Abhoynagar. Similar findings have been reported in other studies [24, 23]. Results of a study conducted by Barkat (1995) showed that husbands had relatively less knowledge regarding obstetric problems than their wives. It also highlighted the predominant role of husbands in making decisions concerning their wives' treatment. So, husbands' lack of knowledge about obstetric complications could be one of the reasons for poor THC use by women. Thus, awareness among husbands regarding complications of pregnancy and childbirth needs to be raised.

The increase in the number of admissions at the THCs of patients with obstetric complications indicates better services. The sharp rise at Mirsarai, from 15 patients per month in 1994 to 42 during January-April 1997, as compared to Abhoynagar which did not have comprehensive EOC facilities, shows that improved facilities lead to better use of services. There was, however, an increase in the number of referrals to a higher facility from both the THCs. The increase at Abhoynagar may be explained by the fact that this THC is only equipped to provide basic EOC, and most women referred from there needed caesarean sections. The increase in the number of referrals from Mirsarai could be partly attributed to the fact that the specialist trained in Obstetrics and Gynecology, who was posted there, was non-resident. Doctors and nurses need to have residential facilities to be available around the clock.

Women's knowledge about the complications related to

pregnancy and childbirth, diet of the mother during pregnancy and lactation, safe and hygienic delivery and infant feeding also increased in the intervention areas during mid-term evaluation. This could also be an effect of the intervention, which focused on enhancing the quality of care of service providers in this regard and raising community awareness about improving maternal and neonatal health. It may be noted that this knowledge also increased among women in the comparison area for Mirsarai. The reason for this rise could be the Local Initiative Programme (LIP) working in that area for the last one and a half years. Some respondents in the comparison area have actually been LIP workers conversant in the field of maternal and child health.

Poor use of the existing facilities and absence of even primary newborn care, such as warming, oropharyngeal suction and use of unsterile cutting instruments, are major determinants of high neonatal mortality [25,26]. Practice regarding care provided to the newborns in the study sites was found to be better compared to other THCs in the country, as observed during visits. However, sterility for clamping and cutting the cord was better practised at Mirsarai than at Abhoynagar. This difference may have been due to observation bias. This mid-term evaluation indicates that immediate neonatal care is an area which deserves attention. The evaluation also indicates that there is a lack of knowledge and practice with regard to proper breastfeeding. The major concerns related to breastfeeding are delayed initiation of breastfeeding and prelacteal feeds. It could, thus, be inferred that the national breastfeeding campaign initiated in 1991 has not been able to make much of an impact in the rural areas of Bangladesh.

There was an increase in the use of contraceptives among women in the post-abortion period, from 22 per cent at the time of abortion to 80 per cent. This could be the effect of the post-abortion contraceptive counselling provided after abortion, introduced by the intervention. Also, results of studies show that women are highly motivated to use any method after they have experienced the pain and trauma associated with an induced abortion. Results of this mid-term evaluation of the intervention are also in accord with several other studies [27-30].

Therefore, more efforts should be given toward enhancing post-partum family planning counselling and screening and proper management of the side-effects of modern contraceptives.

Policy Implications

The success of this intervention has led to the inclusion of EOC as an important intervention in the National Integrated Population and Health Programme (NIPHP). The GOB has already adopted the policy of introducing comprehensive EOC nationwide in a phased-in manner. As part of this process, comprehensive EOC will be introduced in five additional thanas by the end of 1997. The provision of proper health facilities at the sub-district level, together with awareness-raising efforts, will go a long way in improving the status of maternal health in the country. However, it must be mentioned that Bangladesh is a country in which deep-rooted traditions and rituals surround the whole process of childbirth and motherhood. These practices are hard to change, and an intervention, like the present one, will require a considerable amount of time before the desired effects can be shown. This should be taken into account by all concerned involved in the process of replication of the intervention.

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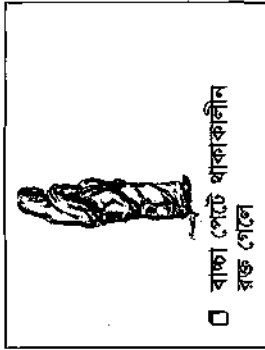
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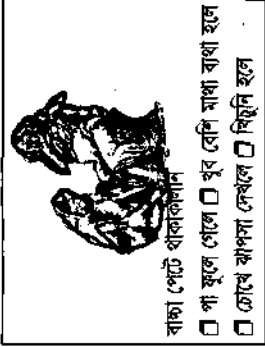


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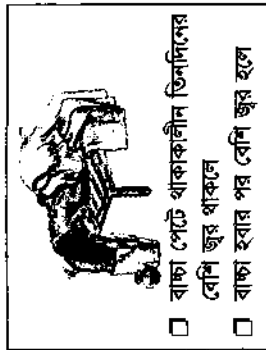
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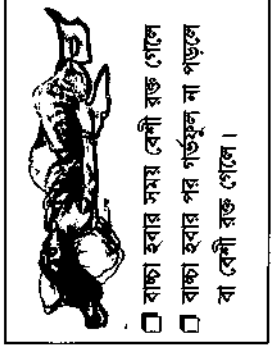
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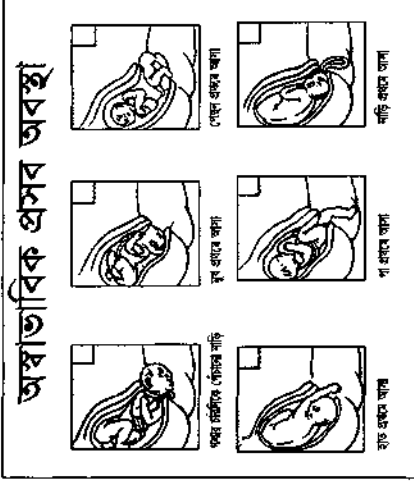
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 বাচ্চা হবার পর গর্ভফুল না পড়লে বা বেশী রক্ত গেলে।

প্রসবের সময় জটিল অবস্থা

অস্বাভাবিক প্রসব অবস্থা



ছবিতে যে কোনো যে কোন একটি লক্ষণ বা অবস্থা দেখা দিলে সাথে সাথে হাসপাতালে যেতে হবে।

হাসপাতাল



ভেতনে রাখুন

- বাচ্চা পেটে আসার পর কমপক্ষে তিনবার কাছের কোনো FWC/SC-এ গর্ভকালীন পরীক্ষার জন্য যেতে হবে।
- বাচ্চা পেটে থাকাকালীন বা বাচ্চা হবার সময় বা পরে (পেরে আসের মধ্যে) কোনো রকম অসুবিধা দেখা দিলে সাথে সাথে কাছের কোনো হাসপাতালে যেতে হবে।
- বাচ্চা পেটে থাকাকালীন স্বাভাবিক দেখালে বা ট্রাণ হ্রাস হলে কাছের কোনো হাসপাতালে যেতে হবে।
- বাড়ীতে বাচ্চা হবার সময় প্রশিক্ষণ গ্রহণ গাইডে ডাকুন।
- বাচ্চা হবার ক্ষেত্রে আসের মধ্যে অবশ্যই FWC/SC-F FWV-র কাছে থেকে সেবা নিন।

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Annex 2

**PREGNANT WOMEN REGISTER
THANA: MIRSARAI**

Family Welfare Assistant's Name:

Unit No.:

Union:

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	Date of first visit	Women's & husband's name	Village & Para	House hold No.	Couple No.	Age	LMP	EDD	No. of total Preg.	Cards given by FWV, MA, FWA	Name of TTBA of that area
	1										
	2										
	3										
	>3										

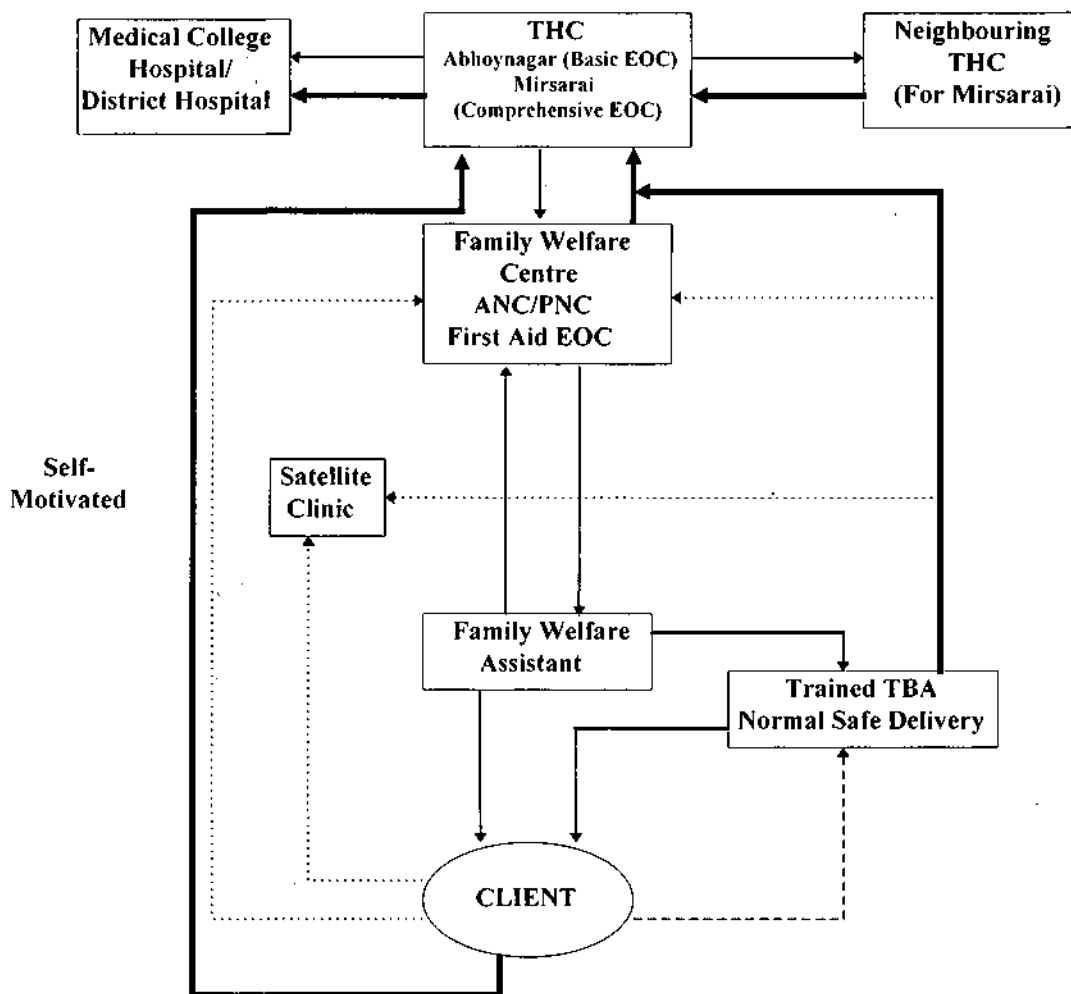
13	14	15	16	17	18	19	20	21
FWV's visiting date	Card shown to FWV/MA	*High risk pregnancy (specify the problem)	Date of delivery/ outcome	Delivery attended by **	Place of delivery house, FWC, THC, DH, other	Date of post natal care received	Referral ***	Comments
1								
2								
3								
>3								

* Only will use by FWV / High risk code

** TTBA, Dai, relative, FWV, THC doctor, other

*** Please mention where and who referred by

Referral And Linkage Flow Chart



- > Referral (complicated cases referred for basic/comprehensive EOC)
- > Linkage (Flow of information about EOC at THC/ANC-PNC)
-> Referred to FWC/SC needing First-aid EOC
- > Normal Safe-delivery Cases