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Interventions in Obstetric Care: Lessons Learned from Abhoynagar

**Thérèse Juncker
Mobarak H. Khan
Shameem Ahmed**



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**MCH-FP Extension Project (Rural)
International Centre for Diarrhoeal Disease Research, Bangladesh
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ABSTRACT

In order to provide Emergency Obstetric Care (EOC) at the *thana* level, a series of interventions were initiated by the MCH-FP Extension Project (Rural) of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B). The interventions were launched at the Abhoynagar *Thana* Health Complex (THC), Jessore district, with the objective of improving the quality and the quantity of obstetric care.

At the beginning of the interventions it was found that some medical officers posted at Abhoynagar THC already had some experience in managing most of the non-surgical obstetric complications, but the quality of care was poor.

It was decided to work through the existing system and to keep the financial input to a minimum in order to make the interventions sustainable and replicable.

During the 1993-1995 period, several interventions were implemented. The delivery room was rehabilitated and equipment for non-surgical procedures was provided. A partograph and a referral sheet were introduced to monitor the patients. A system of infection prevention and safe waste disposal was put in place. Direct blood transfusion, with fee for services, was made available. A simple system of data collection was designed. The trained Traditional Births Attendants (TBAs) were introduced to the THC medical staff and encouraged to bring their patients to the hospital. Since the interventions were implemented step by step and due to the limited number of nurses, services for caesarian section, although important, were not set up during the 1993-1995 period.

From the beginning of the interventions, strong communication links were established and maintained between ICDDR,B research staff and the doctors and the nurses of the THC. Formal and regular meetings were held to discuss performance, problems and plans; scientific meetings were organized to update the knowledge of the medical staff in obstetrics. Contacts were maintained with the Civil Surgeon and the referral hospitals.

The total number of admissions at the THC maternity rose from 301 in 1992 to 532 in 1995 with an increasing proportion of complicated cases. The percentage of still-births decreased from 19 per cent in 1992 to 8 per cent in 1995. The most common complicated cases admitted at the THC included eclampsia, pre-eclampsia, haemorrhage, prolonged labour and malpresentation.

Fifteen per cent of all admissions were referred to a comprehensive EOC unit. Referred patients were mostly caesarian section cases. Eclampsia was the major cause of maternal death at the THC. The service of blood transfusion functioned well. The income generated by this service covered the expenditures for the reagents and the materials.

The quality of services improved a great deal as a result of these interventions. Provision of blood transfusion and the system of infection prevention and waste disposal were the most appreciated interventions. When they perceived the medical importance of the interventions, the doctors and the nurses of the THC developed a strong interest in the new interventions and they were very keen to establish services for caesarian section. However, the medical staff recognized the need for the type of supervision provided by ICDDR,B.

Lack of an effective internal system of supervision, insufficient number of nurses, transfer of trained personnel, absence of collaboration with family planning personnel, lack of contingency money for maintenance and repair were found as the most important problems that affect proper implementation of work.

This experience indicates that medical personnel of the THC level is capable to provide a package of non-surgical services to manage obstetric complications. Supervision is essential to maintain good quality of care. Availability of a clean facility with good services increases the use of obstetric services at the THC. A participatory approach is required to develop and sustain the interest of the medical personnel.

Since the interventions were conducted with minimum funding and in conditions similar to those prevailing in most THCs, they can be replicated in other THCs.

Nine major recommendations are proposed:

- An effective and supportive supervision system needs to be developed;
- The number of nurses posted at the THC should be increased; it is preferable to recruit female nurses with experience or training in midwifery;
- Contingency money for maintaining and repairing the equipment should be made available;
- The trained personnel should be retained at the THC for at least five years and replacement should be sought before transfer;
- The package of obstetric care provided at Abhoynagar THC should be replicated in other THC's, provided technical support and supervision is available;
- Appropriate strategies should be developed to select low risk blood donors and screen the blood for HIV infection before blood transfusion;
- The feasibility to perform caesarian section at the THC should be tested;
- Methods of decontamination and safe waste disposal should be implemented in all hospital facilities;
- The partograph should be part of the basic training in medical and nursing schools.

INTRODUCTION

At the request of the Ministry of Health and Family Welfare (MOHFW), Government of Bangladesh, the MCH-FP Extension Project (Rural) of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B), launched an operations research project in 1982 to test the feasibility of transferring service innovations developed in the ICDDR,B Matlab Project to the government system. Abhoynagar *thana* (Jessore district) and Sirajganj Sadar *thana* (Sirajganj district) were selected as the project field sites for implementing interventions. In the project field sites, the government workers provide MCH-FP services, whereas the ICDDR,B provides support for data management of MCH-FP activities and supervision and training of personnel involved in MCH-FP services at the community, union and *thana* level.

In view of the high-maternal mortality ratio in Bangladesh and the lack of services for obstetric complications at the *thana* level, the Project launched a long-term intervention in Abhoynagar in 1993 to improve the quality and range of obstetric services provided by the Government at the *Thana Health Complex* (THC). In this paper, we present the lessons learned three years after the beginning of interventions.

BACKGROUND INFORMATION

Maternity Care Services

The Government provides antenatal, postnatal and delivery care services to pregnant women.

Antenatal and postnatal services

The Family Welfare Assistant (FWA), who is primarily a family planning service provider, offers limited preventive care to pregnant women at the household level. Every two months, FWA visits all 15-49 year-old married women of a defined area, including about 800 target women. The FWA's tasks in maternity care are to ascertain pregnancies, perform verbal screening to detect high-risk pregnancies, and provide advice on nutrition, hygiene, and immunization. The high-risk women are referred to the Family Welfare Visitor (FWV) at the union level. FWA also provides postnatal care, which includes advice on nutrition, breast feeding, family planning, and child immunization. FWV, a female paramedic who has 18 months' training in MCH-FP, performs medical examination of pregnant and postpartum women at the Family Welfare Centre (FWC) and Satellite Clinic (SC), treats minor ailments, and refers the complicated cases to the medical officers at the THC.

An evaluation of antenatal care provided by FWAs was conducted in 1992 in Abhoynagar *thana* (1). The findings revealed that FWAs were asked to detect pregnancies, but their ability to provide antenatal care was very limited. FWAs were not familiar with the concept of "high-risk pregnancy", and they did not use the screening checklist properly. Moreover, the current checklist includes many risk factors, some with inappropriate cutoff points. As a result, 60 per cent of the pregnant women were identified as high-risk by FWAs. Postnatal care was the most neglected activity of FWA. When provided, postnatal care was directed only at the newborns, and nothing was done for the mothers. The report recommended that risk screening of pregnant women be discontinued, and instead, all mothers should be motivated to visit the FWVs to complete antenatal checkups. Furthermore,

the pregnant women and their decision-makers should be taught to recognize the early signs of complications that require obstetric care immediately.

The paramedical staff working under the Directorate of Health Services do not provide antenatal or postnatal care at the household level. The medical assistants provide services to pregnant women at the FWC level, but as males, they do not perform obstetric examination. The Medical Officer, MCH (MO-MCH), who is seconded from the Health Directorate to the Family Planning Wing has, among other duties, to supervise the MCH activities at the field levels but in reality MO-MCH rarely provides support to the paramedics.

Delivery care

One Traditional Birth Attendant (TBA) per village has been trained by the Government to ensure safe deliveries and to identify cases requiring referrals. The use of the services of the trained TBAs was evaluated in Abhoynagar and Sirajganj in 1992 (2). The report indicates that, in Abhoynagar, three-quarters of the women delivered at home without any trained attendant. The trained TBAs attended merely 4 per cent of the deliveries. On an average, the trained TBAs performed only 4 deliveries per year. Their experience and skill are, therefore, questionable.

FWVs, who very seldom perform deliveries either at the patient's house or at FWC, are not capable of managing obstetric complications. Cases with complications are referred to the medical officers at THC. The senior FWV working in the THC facility has very few contacts with the hospital staff. She is not involved in delivery care or in postpartum contraception.

THC represents the first level of referral for obstetric complications. Five nurse-midwives and eight medical officers are supposed to be posted at the THC level, but there are numerous vacancies in these positions. There is no post for a fully qualified gynaecologist or an anaesthetist at THC. In most THCs, due to the lack of equipment and trained personnel, obstetric services are limited, mainly to normal delivery and medical treatment for eclampsia and pre-eclampsia. In almost all cases, the patients

have to buy their medicines from outside the hospital. As stated in the assessment report of the Health Services for Maternal Health Care (3), most cases with complications are referred from THC to the district hospital. Both the quality of the services at THC and the use of the services by the community are very poor. According to a recent survey on obstetric care in 51 THCs, the mean number of obstetric cases admitted per month at THC is only 6, and the majority of the cases (64%) are patients without any complication (4). Therefore, THC has not been functioning as a referral centre for emergency obstetric care (EOC).

IMPROVEMENT OF OBSTETRIC CARE AT THE *THANA* HEALTH COMPLEX

In 1993, with the support of the Belgian Agency for Development and Cooperation (BADC), a series of long-term interventions were initiated by the MCH-FP Extension Project (Rural) to improve the range and the quality of obstetric services at the Abhoynagar THC, Jessore district.

Site of Interventions

Since the MCH-FP Extension Project was already working in Abhoynagar, the health complex of this *thana* was selected for conducting interventions in obstetric care.

Abhoynagar *thana* includes 8 unions and has a population of 208,000 inhabitants (1995). The *thana* lies along the main road linking Jessore to Khulna. Communications with both the cities are good. All the unions are accessible throughout the year. Eighty-five per cent of the population are Muslim and 15 per cent Hindu. The overall socioeconomic status of the population is higher in Abhoynagar than that in most rural areas of Bangladesh.

THC, located at the centre of the *thana*, includes a small maternity unit. The obstetric services provided at the THC have been detailed in the next paragraph.

Maternity Care at the *Thana* Health Complex Prior to Interventions

The Abhoynagar THC maternity unit includes a small delivery room and a four-bed labour room. Before the interventions started, the condition of the infrastructure was found to be good, but the maintenance did not meet the basic criteria of hygiene and cleanliness. The equipment was in poor condition. The essential drugs and other consumable items were available sporadically. The patients had to buy their medicines from outside.

Five nurse-midwives and six medical officers were working at THC. The nurses admitted the patients, monitored normal labour, performed normal deliveries, and called the duty doctor when there was a complication. One female doctor had received a six-month training in gynaecology and obstetrics at the divisional hospital in Khulna, but she had little experience in surgery. Two doctors had few months training in surgery, and the other medical officers had some experience in obstetrics. The medical staff residing on the hospital compound dispensed 24-hour services.

The types of services that were provided included: normal deliveries; manual removal of the placenta; dilatation and curettage; medical treatment of eclampsia, sepsis, and premature rupture of membranes; repair of first and second degree perineal tears and resuscitation of newborns. In case of blood transfusions, blood had to be purchased from blood banks in Jessore or Khulna. The blood provided by these sources usually comes from professional donors without any screening.

Regarding delivery care, there was no systematic labour monitoring. For most women, some of the parameters to be monitored during labour were not followed up. The decision to call a medical officer was based upon the nurses' appreciation rather than any objective criteria.

Maintenance of patient's records was extremely poor and not standardized. The patient's file contained only findings of a brief general examination on admission and the treatment. There was no register for the patients admitted at the maternity unit, and data about maternity cases were scarce and difficult to obtain.

Patients requiring referral were sent to the divisional hospital in Khulna or to the district hospital in Jessore. Both places are located about 50 km away from THC. Since THC had no functioning ambulance, a private ambulance was used for transporting the patients.

In general, most cases which did not require a blood transfusion or a caesarian section were treated at THC. However, the monitoring of patients and the quality of care of services needed to be improved.

The interventions were introduced step by step, as it was felt that small changes at a time would be better accepted and implemented by the members of the THC staff than a one-time radical modification. Since many services of the obstetric care package were already available in Abhoynagar, priority was given on improving the quality of care before setting up of services for blood transfusion and caesarian section. Regarding the quality of care, the most urgent need was to improve cleanliness, hygiene, patient monitoring, data recording, and communication between staff members and the patients.

The interventions that were launched at THC are presented below:

1993

The delivery room was renovated at a very low cost. Attention was given to ensure privacy of the patients by maintaining a physical separation between the maternity unit and the other hospital wards. Additional instruments for non-surgical procedures, such as vaginal examination, dilatation and curettage, suture of the perineum, etc., were provided. Emergency drugs were made available in the delivery room¹.

All trained TBAs of the *thana* attended a workshop on safe delivery and referral for obstetric complications. They were introduced to the maternity unit and to members of the THC medical staff. The trained TBAs were encouraged to accompany their patients to the maternity ward and give them support during delivery.

A partograph was introduced for systematic labour monitoring, and guidelines were provided for management of prolonged labour.

A simple system of data collection was initiated by introducing a register in the maternity unit.

¹ Emergency drugs included: adrenaline, ergometrin, oxytocin, diazepam, sodium-bicarbonate, hydralazin, dexamethasone, 10% glucose, dextrose/saline solution, ringer's solution and oxygen.

1994

A scientific meeting was held every month to update the knowledge of the members of the THC medical team on various obstetric topics. Recent publications in scientific journals were used for discussion, and the *thana* medical officers were encouraged to make presentations.

A referral sheet was introduced for all patients referred from THC to other hospitals. The form has two parts: one part is designed to provide the referral centre information regarding the patient, and the second part, to provide feedback to THC about the outcome of the pregnancy and the treatment given at the referral centre.

A system of safe disposal of clinical wastes was made effective. Wastes were disposed of in deep cemented, covered holes within the hospital compound. Dry wastes, including needles and syringes, were burnt in a small incinerator before disposal (5).

An operations research was initiated in three unions of the *thana* to raise awareness about obstetric complications in the community (6). During their routine visits, FWAs gave pregnant women a pictorial card, including the early signs of the major obstetric complications. The women were motivated to go to the hospital without delay in case any of the depicted complications occurs. The women were also advised to show the card to their decision-makers, namely their husband and mother-in-law.

1995

An Infection Prevention Training Workshop was held at THC, and disinfection of instruments with chlorine solution immediately after use was introduced at the maternity.

The Medical Officer (MCH), received a two-week training on IUD insertion, menstrual regulation (MR) and infection prevention at the Menstruation Regulation Training and Services Programme (MRTSP) in Salimullah Medical College Hospital, Dhaka.

Services for blood grouping and cross matching were set up, and provision for direct blood transfusion at THC started to operate in June. A medical officer and a laboratory technician received a two-week well-

designed training at the Bangladesh Red Crescent Society in Dhaka. Guidelines were established to select blood donors. A questionnaire was filled out to discard donors with diseases or other abnormal conditions. Three tests were performed on the potential donor's blood prior to the transfusion: measurement of the haemoglobin level, hepatitis B test, and VDRL test. Since the trainees did not have any training on HIV testing, this test was not performed at the THC level. The patients paid a fixed service charge (Tk. 200 per bag transfused) to test, on an experimental basis, the sustainability of the blood transfusion services.

Implementation Process

Since the beginning of the interventions, it was made clear to all partners that the work required collaboration between doctors, nurses, helpers, and ICDDR,B personnel. Support from ICDDR,B was provided by one medical consultant and one field medical officer. Confidence, communication and accountability needed to be built among the team. A workshop on motivation and participation was organized for all THC doctors and nurses before the start of interventions. Whenever an intervention was planned, it was discussed among ICDDR,B and THC staff members in formal meetings, and unanimous decisions were taken. A climate of confidence was progressively built up through this participatory approach. Creating interest in the service providers was also an important aspect of the process. The Project focused on the benefits resulting from the interventions such as job satisfaction, increase of knowledge and performance, satisfaction and safety in working in a neat and clean environment, and greater recognition by the patients.

It was decided to provide minimal input to THC and to work through the existing system to make the interventions sustainable and replicable. Therefore, the renovation of the maternity was minimal, and there was no intention to place a fully qualified obstetrician at THC.

Whenever a new procedure was introduced, the staff members were trained. Training and practical demonstrations on the partograph, safe waste disposal, infection prevention, and blood transfusion were organised.

It was decided to hold formal meetings attended by doctors, nurses, and ICDDR,B scientists to discuss performance, problems, and future plans.

The maternity unit was frequently visited by the ICDDR,B scientists who constantly focused on improving the quality of care. A close supervision was maintained for several months after introducing the partograph, safe waste disposal, and the blood transfusion. Feedbacks from supervision and observations were always provided to the members of the THC medical team, and necessary actions were recommended if required.

Links with referral centres were established by individual contacts between doctors, organized visits to the major hospitals at the district level, and attendance of a consultant from the divisional level to the scientific meetings.

Communication with the Civil Surgeon and the Divisional Director of Health was maintained through field visits and briefings about the interventions.

RESULTS

The interventions were aimed at increasing the range and the quality of obstetric care at the THC level to improve the use of services, especially for obstetric complications, and ultimately to reduce maternal mortality and morbidity.

At the beginning of the interventions, services were already available for patients who did not require a blood transfusion or a caesarian section. During 1993-1995, blood transfusion, a major service, was added to the package. The caesarian section was not included for several reasons. Firstly, it was decided to make gradual changes and to wait for each intervention to be well integrated before launching the next one; secondly, it would have been difficult to provide surgical care without additional nurses; and, thirdly, there was no consensus about training of medical officers on caesarian section and simple anaesthesia. During the intervention period, the quality of care improved remarkably in maintaining hygiene, cleanliness and patient monitoring.

Measuring the impact of the described interventions on maternal mortality and morbidity is not very practical since the data are difficult to collect and the number of deaths is too small to assess changes in a short time. We shall, therefore, examine the process indicators that can more easily reflect a change in the situation.

Some qualitative results, including the quality of care, information about the implementation of the new activities and the THC staff members' perception of the interventions, have been provided under the sub-headings "Service Providers' Perspective" and "Implementation of the Interventions" of this paper.

Process Indicators

Admissions

During the two years prior to the interventions (1991-1992), 300 patients per year were admitted at the THC maternity centre. Between 1992 and 1995, the number of admissions to the THC maternity centre has increased by

76 per cent (Fig. 1). The increase in 1995 has been more marked than during the previous years. It should be noted that blood transfusion services, an important component of obstetric care, were introduced in June 1995. Based on the birth rate in the area, the admissions represented 10.6 per cent of the life-births in the *thana* in 1995, as opposed to 6.4 per cent in 1992.

We distinguished three types of obstetric cases based on the diagnosis made on admission: labour pain, abortions and complications (other than abortions). Menstrual regulations were not reported at all, and among the abortion cases no distinction was made between complete, incomplete, septic or nonseptic abortions.

The distribution of these three categories of cases has changed over time (Fig. 2). The proportion of the cases with complications has risen from 35 per cent in 1992 to 43 per cent in 1995, whereas the proportion of abortions has dropped from 26 per cent in 1992 to 20 per cent in 1995. This is an indication of some changes in hospital care and probably in the community. The THC staff members were more prompt in recognizing complications, and the community people might have been more inclined to go

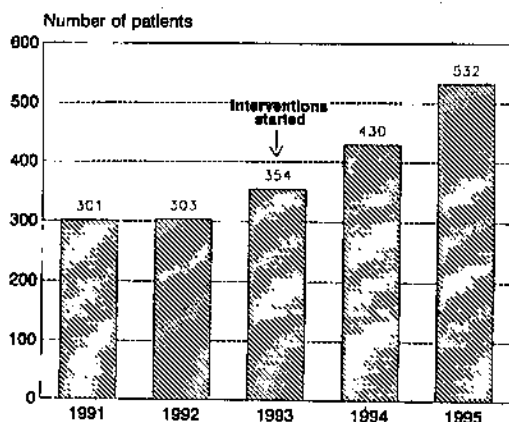


Fig. 1. Admissions at Abhoynagar THC maternity centre

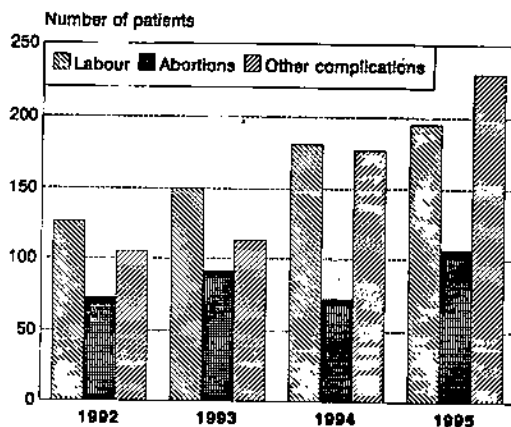


Fig. 2. Reasons for admission at Abhoynagar THC maternity centre

to the THC for complications in 1995 than in 1992. In 1994, an intervention was started in three unions to inform pregnant women and their relatives about the signs of obstetric complications and the need to go to hospital without delay when a complication occurs.

Deliveries

The number of deliveries at THC was 124 and 237 respectively, in 1992 and 1995. The percentage of still-births has decreased remarkably from 19 per cent in 1992 to 8 per cent in 1995, whereas the proportion of referrals from THC to a comprehensive obstetric care unit has remained the same (15%). This indicates that the women come earlier to the hospital and/or the case management at the THC level has improved. A 1995 survey, covering 61 THCs, reported 19 per cent of still-births at the THC level (4).

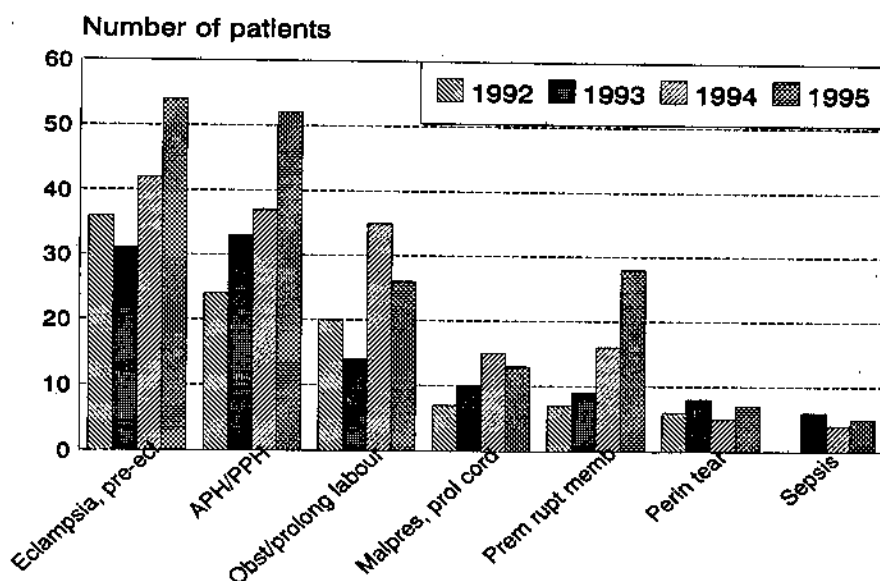
Complications

Apart from abortions, the most common complications reported on admission were eclampsia and pre-eclampsia; haemorrhage (ante and postpartum); prolonged/obstructed labour and malpresentation; and premature rupture of membranes. These accounted for over 75 per cent of all the complications in 1995 (Table 1 and Fig. 3). In 1995, there was a remarkable increase in the number of cases of eclampsia, haemorrhage and premature rupture of membranes, and a decrease in the number of cases of prolonged/obstructed labour and malpresentation compared to the previous year. Provision of blood transfusion at THC may have drawn a large number of women with haemorrhage, and the overall improvement of the quality of care may have attracted women with other complications that are manageable at THC. The decreasing number of cases admitted with prolonged labour may be fortuitous or due to the fact that caesarian section is not performed at THC.

Only a few cases of rare but fatal complications, such as ruptured uterus, extrauterine pregnancy or abruptio placentae, were reported at THC.

Table 1. The most common complicated cases admitted at Abhoynagar THC maternity centre

Complications	1992 (n = 105) %	1995 (n = 230) %
Eclampsia and Pre-eclampsia	34	23
Haemorrhage		
<i>Antepartum</i>	8	7
<i>Postpartum</i>	15	16
Obstructed/prolonged labour and Malpresentation	5	17
Premature rupture of membranes	7	11
Other obstetric complications	31	26
Total	100	100



Note: Abortions are excluded

Fig. 3. Patients with major obstetric complications admitted at Abhoynagar THC maternity centre

Referrals

Cases referred from THC to a comprehensive obstetric care unit accounted for 15 per cent of all admissions in 1992, as in 1995. The main reasons for referral are presented in Table 2 and Fig. 4. Prolonged/obstructed labour, haemorrhage, eclampsia and pre-eclampsia, and premature rupture of membranes represented over 80 per cent of the referrals. Referrals were mainly done for cases requiring a caesarian section.

It may be mentioned that most patients referred for haemorrhage had an antepartum hemorrhage since the majority of cases with postpartum hemorrhage were treated at THC.

Table 2. Complicated cases referred from Abhoynagar THC maternity centre to a comprehensive obstetric care unit

Complications	1992 (n = 46) %	1995 (n = 83) %
Prolonged/obstructed labour and malpresentation	49	53
Haemorrhage		
<i>Antepartum</i>	4	11
<i>Postpartum</i>	2	2
Eclampsia and pre-eclampsia	15	11
Premature rupture of membranes	13	10
Others	17	13
Total	100	100

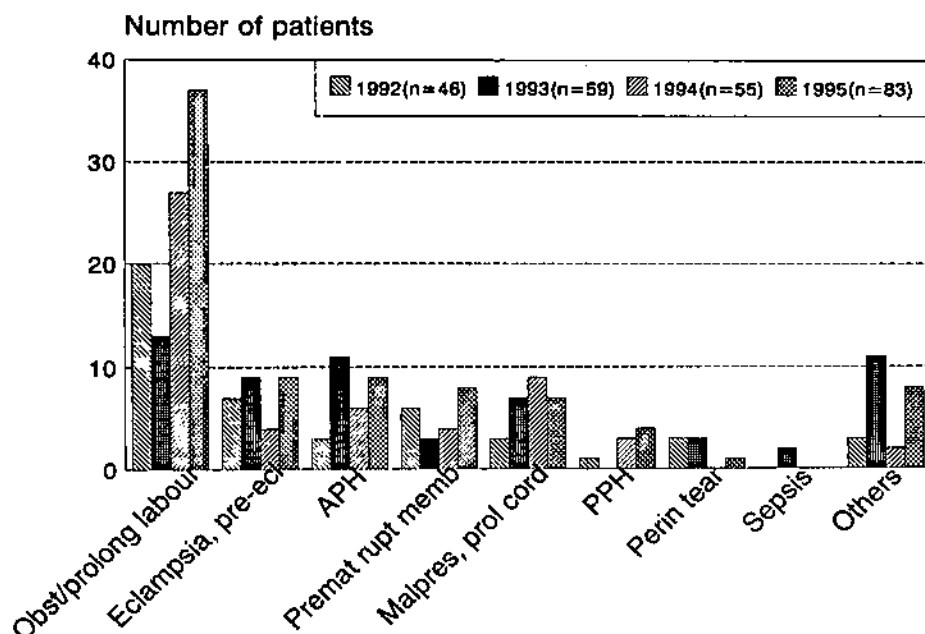


Fig. 4. Cases referred from Abhoynagar THC maternity centre to a comprehensive EOC unit

Maternal Deaths

The maternal deaths occurring after admission at THC are presented in Table 3. The maternal outcome of the pregnancy was known only for the cases who were treated at THC. As the proportion of women admitted with complications, the case fatality rate has increased after 1992. No woman, however, died from haemorrhage in 1995, the year when blood transfusion was introduced, although this complication was one of the commonest. Eclampsia remains the major killer for the patients admitted at the THC maternity centre.

Table 3. Maternal deaths at Abhoynagar THC maternity centre

Complications	1992	1993	1994	1995
Cases with known outcome	226	296	377	449
Maternal deaths	1	3	4	5
Case-fatality rate (%)	0.44	1.01	1.06	1.11
Causes of death	Unknown	PPH (2) Eclampsia (1)	PPH (1) Eclampsia (1) Ectopic pregnancy (1) Unknown (1)	Eclampsia (4) Septic abortion (1)

Service Providers' Perspective

A focus group discussion was held separately with the doctors and nurses in November 1995 to know their perception of the interventions, constraints and views about collaboration with outsiders. The participation of the expatriate consultant and the medical officer of ICDDR,B in the discussion may have created a bias, but it was felt that the communication was good; doctors and nurses expressed positive and negative opinions.

The doctors and the nurses said that, although they were sceptical at the beginning, they welcomed the interventions, because they felt that these were needed for the population.

The medical team was satisfied in being able to provide more appropriate services for their patients, and strongly demanded to set up services for caesarian section, but the doctors complained that the process of establishing blood transfusion and caesarian section at THC was rather too slow. The nurses were pleased to have gained new knowledge and to be able to detect prolonged labour. Both nurses and doctors were pleased and proud of the great improvement in cleanliness in the hospital.

Regarding the quality of work, the doctors exercised little self analysis, and did not point out any intervention where the quality of work could be improved. The nurses acknowledged that their work was not always accomplished with the optimum quality, but this was mainly due to the lack of time.

The major constraint expressed by each member of the medical team was the limited number of nurses and sweepers. It is to be recognized that five nurses are not sufficient for the *thana* health complex, and this is a matter of concern for establishing a service for the caesarian section. Lack of contingency money and the large number of patients' attendants were the other reported problems.

The collaboration among the various medical cadres was discussed in both groups. The doctors praised the nurses for their skills, sincerity, reliability, and hard-working ability. The doctors of the Health wing mentioned the lack of collaboration with the Family Planning personnel. Patients referred to them by the THC doctors were not properly attended to. There were no interactions between the Medical Officer for MCH (MO-MCH) and the other medical officers. The THC doctors were not satisfied with the referral hospitals, because they did not receive any feedback, and sometimes their patients were not admitted immediately. The nurses said that they worked in good collaboration with the doctors, but they would appreciate more supervision from them. This will help them perform better. The external support provided by the ICDDR,B scientists in THC was considered by doctors and nurses as beneficial and necessary. "The external consultant acted as a positive catalyst and this was very much needed" reported the doctors; the nurses said, "it was essential".

Implementation of the Interventions

Beside the fact that the process indicators show favourable changes in obstetric care at the THC level, it is worth to look at how the interventions were implemented. Observation and supervision provided valuable information on the job performance.

The delivery room, the maternity ward, and the room used for blood transfusion have been maintained in a clean state. Instruments, emergency drugs, and reagents were available. Over time, maintenance and cleanliness were perceived as good quality of care. When the doctors and nurses felt the benefit of working in a clean environment, the tasks of cleaning the maternity unit naturally became a part of the activities.

The partograph was well accepted by the medical team. Training and refresher courses were organized for all the medical staff, and close

supervision of the partographs was maintained for eight months after the beginning of the intervention. The partographs used during the last three months of 1995 were reviewed. Though each woman in labour had a partograph, data were not recorded systematically, and many crucial pieces of information were missing. In most cases, the progress of labour was correctly recorded on the graphs, but there were important lapses in some cases of prolonged labour. Observations showed that the partographs were often filled in after the delivery whereas it was actually a tool for monitoring labour. Despite the emphasis on the purpose of the partograph given during training and supervision, the medical staff did not use it as a decision tool to provide specific treatment or to decide about referral. It seemed that the members of the staff used the partograph as a means to record the patients and to replace the patient file.

Provision of blood transfusion at THC has been perceived as a great achievement by the members of the medical staff. Beside blood transfusion for in-patients, grouping, VDRL and hepatitis tests were performed for out-patients if requested. The tests for syphilis and hepatitis B were regularly performed on the donors. The register was well maintained, but the questionnaires were not filled up completely, and the indications stated in the register for some of the transfusions did not seem appropriate. A reasonable charge for service was decided to make this service sustainable. According to the doctors, there was no objection from the community against the fees. The funds were properly managed by the THC laboratory technician. The income generated during September-December 1995 covered 100 per cent of the expenditures for reagents and transfusion bags.

The follow-up sheets were regularly filled up for the patients sent to a comprehensive obstetric care unit, but they could not be traced at the district and divisional hospitals. Except in one private hospital, the medical and nursing staff members at the referral hospitals did not cooperate in providing the required information. It should also be mentioned that many patients went to private hospitals of their choice without informing the THC team. Therefore, no feedback information was provided about the patients referred to, and an opportunity to learn about the diagnosis and the case management was missed.

Hospital waste was collected in all hospital departments. Incineration and waste disposal outside the hospital were performed regularly. This

intervention, running at no cost, is well appreciated by the members of the THC staff. It contributes to improved hospital hygiene, and reduces the risk of reusing syringes and needles.

The new method of disinfection of instruments was applied correctly, but the method was discontinued after some time, because the bleaching powder, stored in humid conditions, became hard, and did not dissolve in water. The THC staff is ready to resume this task, and a solution to this problem is being discussed to find out adequate provision for the storage of this chemical.

The scientific meetings provided an opportunity for the medical staff to develop their knowledge on scientific topics. The scientific meetings were well attended by the members of the THC staff. A doctor posted at the union level and the consultant gynaecologist of Khulna participated in those meetings. Seven meetings were held during June 1994 - June 1995.

Progress-report meetings were conducted 11 times between June 1994 and December 1995. The discussion in these meetings concentrated on specific problems, and solutions were often proposed. The members of the THC staff have been continuing to hold these meetings without the ICDDR,B support.

It should be mentioned that an intervention proposed to integrate FP activities into the maternity services was not implemented due to the lack of cooperation between the Health and FP workers.

The evaluation of the pictorial card introduced by FWAs to the pregnant women is presented in details in a separate paper (6). FWAs, who performed most of their tasks correctly, reported a positive impact of the intervention on maternity care. Three-quarters of the women understood the purpose of the pictorial card. However, comprehension of the illustrations of the card was related to the level of women's education. About 60 per cent of the women had shown the pictorial card to their husband and their mother-in-law. Antenatal checkups at the clinic level significantly increased after the intervention started. The proportion of women who had obstetric complications and went to the hospital was twice as much in the intervention unions as in the comparison unions. Unfortunately, the number of women interviewed during the evaluation procedure was insufficient to demonstrate a statistically significant effect of this intervention on the THC use.

LESSONS LEARNED

Use of Obstetric Care

Availability of a clean facility for delivery, improvement of care and provision of life-saving service, such as blood transfusion services at THC, result in a remarkable increase in the use of obstetric services.

The increased proportion of complicated cases admitted at the hospital probably reflects changes at THC and community level. Due to improvement in the quality of care, complications are more promptly diagnosed on admission, and the community is more inclined to come to the hospital for complications. The community-based intervention aiming at creating awareness about obstetric complications has probably contributed to the increased use of the hospital in cases with complications.

Management of Complications

Given that they have some experience, the THC medical officers can provide a package of services to manage obstetric complications that do not require any major surgery.

Since caesarian sections are not yet performed at THC, no conclusion can be drawn regarding this type of service at the THC level.

Quality of Care

Experience shows that the quality of care is not optimal and can be improved. However, efforts and continuous supervision need to be deployed to integrate and sustain the quality of care in the system.

Team Work

A strong interest and demand developed among all health personnel for the improvement of obstetric care. A participatory and positive approach was adopted; active communication between the various cadres was established. This attitude contributed to shared responsibilities and effective team work.

Obstetric care requires close monitoring of patients over several hours. The number of nurses (5 nurses) at THC is insufficient to ensure proper monitoring of women in labour and provide care for surgical cases at all times. The current workload in the maternity centre does not require a full-time nurse for this department, but it is advisable to have always a minimum of three nurses available in the hospital wards for in-patient care. When surgical services are made available, at least two additional nurses should be posted at the THC.

Transfer of trained personnel is of concern. The relative stability of the personnel in Abhoynagar contributed to sustain the new interventions.

An effective system of supervision is not in place at the THC level. Doctors who are not adequately trained to execute technical supervision show little interest in performing such activities. Regular and supportive supervision is needed and is a key element for motivating the personnel and for the sustainability of interventions. Time, good communication, and appropriate techniques of supervision are essential to facilitate open discussion between the partners and to improve the performance of the service providers. Supervision may include regular review meetings, continuing education, case review, etc. It is important that the supervisor not only points out the weaknesses but also praises the good performance of the staff and actively helps in finding out solutions to the problems.

The lack of contingency money is a major hindrance to insure adequate maintenance of equipment and provision of consumable items.

The lack of cooperation between the Health and FP wings at the thana level is preventing the integration of FP in the THC maternity service.

Sustainability and Replicability

The services presently delivered at THC are sustainable provided some of the problems described above are solved. A trained staff member should only be transferred if another trained person is available; maintenance of the material and technical supervision of personnel should be ensured.

Payment for blood testing and blood transfusion services is a key element of sustainability. The Abhoynagar experience shows that a system of payment can be managed by the THC staff members, and that reasonable fees are sufficient to cover expenses for most consumable items required for blood transfusion. Details of cost recovery are presented in Annexure-1.

The interventions were conducted in conditions similar to those prevailing in most THCs. Financial input, kept to a minimum, mainly included a modest renovation of the maternity centre, provision of equipment and training on blood transfusion. The competence of the medical staff was developed locally, and no specialist was placed at the THC level. However, external support was required for planning, monitoring and following up the activities.

RECOMMENDATIONS

It is recommended that:

- An effective and positive supervision system of the THC medical team be developed.
- The number of nurses posted at THC be increased to have a minimum of three nurses available for in-patients care. If caesarian section is added to the package of services provided at the THC level, two nurses should be always available for assisting in the operating theater. It is preferable to post female nurses with adequate training or experience in midwifery.
- Contingency money for maintaining and repairing equipment be made available.
- The trained personnel be retained at THC for a minimum of five years; and replaced before being transferred.
- The package of obstetric care provided in Abhoynagar THC be replicated in other THCs where financial and technical support can be provided.
- The feasibility of performing caesarian section at the THC be tested.
- In view of the emerging HIV-AIDS epidemic in Bangladesh, appropriate strategies be developed to select low-risk blood donors and screen the blood for HIV infection before transfusion.
- Methods of decontamination and safe waste disposal be implemented in all hospital facilities.
- The partograph be introduced in the basic training of the medical and nurse students.

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Annexure 1

Cost recovery for blood testing and transfusion services between September 1995 and December 1995

Costs of the materials:

Cost of reagents per blood grouping (average)	= Tk.	18.00
Cost per transfusion set	= Tk.	90.00
Cost per VDRL test (average)	= Tk.	10.00
Cost per hepatitis B test	= Tk.	60.00

Services provided during the period:

- 8 blood transfusions
- 58 blood groupings*
- 9 VDRL tests
- 8 Hepatitis tests

Expenditures:

8 Transfusions bags	90 x 8	= Tk.	720.00
58 groupings	18 x 58	= Tk.	1,044.00
9 VDRL tests	10 x 9	= Tk.	90.00
8 Hepatitis B tests	60 x 8	= Tk.	480.00
Total expenditures		= Tk.	2,334.00

Income from services charges:

The fee for a blood transfusion is Tk. 200.00 which includes the charge for the necessary number of blood grouping, the hepatitis B and VDRL tests of the donors, and the transfusion set.

8 blood transfusions	200 x 8	= Tk.	1,600.00
25 groupings for out-patients:	30 x 25	= Tk.	750.00
1 VDRL test for out-patient	1 x 50	= Tk.	50.00
Total income:		= Tk.	2,400.00

*Besides blood donors, 25 out-patients requested to have their blood grouped

A Brief History of ICDDR,B

1960	Cholera Research Laboratory established
1963	Matlab field station started First of a series of cholera vaccine trials launched
1966	Demographic Surveillance System established
1968	First successful clinical trials of Oral Rehydration Solution (ORS)
1969	Relationship between stopping breast-feeding and resumption of menstruation demonstrated
1971	Independence of Bangladesh
1973	Shift from Classical to El Tor cholera identified
1977	Maternal Child Health and Family Planning interventions began in Matlab
1978	Government of Bangladesh Ordinance establishing ICDDR,B signed
1981	New Dhaka hospital built Urban Volunteer Programme initiated
1982	Classical cholera returned Field testing of cereal Oral Rehydration Solution began Clinical sub-centres established in Matlab MCH-FP Extension Project began
1983	First issue of the Journal of Diarrhoeal Disease Research Epidemic Control Preparedness Programme initiated
1984	ICDDR,B received UNICEF's Maurice Pate award
1985	Full Expanded Programme of Immunization activities tested in Matlab WC/BS cholera vaccine trial launched
1987	ICDDR,B received USAID's "Science and Technology for Development" award
1988	Treatment of and research into Acute Respiratory Infection began
1989	The Matlab record keeping system, specially adapted for Government use, extended to the national family planning programme
1990	The new Matlab Health and Research Centre opened
1992	ICDDR,B-Bangladesh Rural Advancement Committee study commenced
1993	New laboratories built and equipped New <i>Vibrio cholerae</i> 0139 - Bengal identified and characterized, work on vaccine development began
1994	Twenty fifth anniversary of ORS celebrated ICDDR,B epidemic response team goes to Goma to assist cholera-stricken Rwandan refugees, identifies pathogens, and helps reduce mortality from as high as 48.7% to < 1%.
1995	Maternal immunization with pneumococcal polysaccharide vaccine shown to protect infants up to 22 weeks

MCH-FP Extension Work at the Centre

An important lesson learned from the Matlab MCH-FP project is that a high CPR is attainable in a poor socioeconomic setting. The MCH-FP Extension Project (Rural) began in 1982 in two rural areas with funding from USAID to examine how elements of the Matlab programme could be transferred to Bangladesh's national family planning programme. In its first years, the Extension Project set out to replicate workplans, record-keeping and supervision, within the resource constraints of the government programme.

During 1986-89, the Centre helped the national programme to plan and implement recruitment and training, and ensure the integrity of the hiring process for an effective expansion of the work force of governmental Family Welfare Assistants. Other successful programme strategies scaled up or in the process of being scaled up to the national programme include doorstep delivery of injectable contraceptives, management action to improve quality of care, a management information system, and developing strategies to deal with problems encountered in collaborative work with local area family planning officials. In 1994, this project started family planning initiatives in Chittagong, the lowest performing division in the country.

In 1994, the Centre began an Urban MCH-FP Extension Project in Dhaka (based on its decade long experience in urban health) to provide a coordinated, cost-effective and replicable system of delivering MCH-FP services for Dhaka urban population. This important event marked an expansion of the Centre's capacity to test interventions in both urban and rural settings. The urban and rural extension projects have both generated a wealth of research data and published papers.

The Centre and USAID, in consultation with the government through the project's National Steering Committees, concluded an agreement for new rural and urban Extension Projects for the period 1993-97. Salient features include:

- To improve management, quality of care and sustainability of the MCH-FP programmes
- Field sites to use as "policy laboratories"
- Close collaboration with central and field level government officers
- Intensive data collection and analysis to assess the impact
- Technical assistance to GoB and NGO partners in the application of research findings to strengthen MCH-FP services.

The Division

The reconstituted Health and Population Extension Division (HPED) has the primary mandate to conduct operations research to scale up the research findings, provide technical assistance to NGOs and GoB to strengthen the national health and family planning programme.

The Division has a long history of accomplishments in applied research which focuses on the application of simple, effective, appropriate and accessible health and family planning technologies to improve the health and well-being of the underserved and population-in-need. There are several projects in the Division which specialize in operations research in health, family planning, environmental health and epidemic control measures which cuts across several Divisions and disciplines in the Centre. The MCH-FP Extension Project (Rural), of course, is the Centre's established operations research project but the recent addition of its urban counterpart - MCH-FP Extension Project (Urban), as well as Environmental Health and Epidemic Control Programmes have enriched the Division with a strong group of diverse expertise and disciplines to enlarge and consolidate its operations research activities. There are several distinctive characteristics of these endeavors in relation to health services and policy research. First, the public health research activities of these Projects focus on improving programme performances which has policy implications at the national level and lessons for international audience. Secondly, these Projects incorporate the full cycle of conducting applied programmatic and policy relevant research in actual GoB and NGO service delivery infrastructures; dissemination of research findings to the highest levels of policy makers as well as recipients of the services at the community level; application of research findings to improve programme performance through systematic provision of technical assistance; and scaling-up of applicable findings from pilot phase to the national programme at Thana, Ward, District and Zonal levels both in the urban and rural settings.



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