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Maternal Morbidity in Rural Bangladesh: Where Do Women Go For Care?

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Abstract

Pregnancy and childbirth related complications are among the leading cause of mortality and morbidity in women of reproductive age in developing countries. The maternal mortality ratio in Bangladesh is 4.5 per 1,000 live-births, which is still very high even by the standards of other developing countries.

This cross-sectional study was undertaken to assess the pattern of complications that women encounter during their pregnancy and childbirth, their care-seeking behaviour, and knowledge about these complications. A total of 2,105 women who had a birth during the last 12 months were interviewed at their homes during May-August 1996, using a structured questionnaire. The women were selected from four rural subdistricts of Bangladesh, the field sites of the Operations Research Project of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B). The Sample Registration System (SRS), a longitudinal data collection system of the Project, was used for selection of the women.

Sixty-six percent of the women developed at least one complication during the index pregnancy and childbirth, the most common of which were prolonged labour, fever, bleeding, and pre-eclamptic toxaemia. Reporting of complications was found to be associated with women's education, parity, and knowledge about obstetric complications.

Most women who had complications consulted untrained service providers. Forty-one percent consulted village practitioners, 11 percent went to homeopaths, and six percent went to kabiraj/religious healers. Only 34 percent sought help from medically trained personnel or any health facility. About 19 percent did not seek any care at all. The use of institutional facilities and/or trained providers for obstetric complications was positively associated with women's age, education, knowledge of obstetric complications and their husband's education. Husbands were the major decision-makers about the selection of a care provider(s) for obstetric complications of their wives.

Women's knowledge about complications of pregnancy and childbirth was limited. Most women knew about prolonged labour and malpresentation, but very few knew about bleeding, retained placenta, and convulsion. A majority knew nothing about postpartum complications.

Analysis showed that the women's knowledge about the symptoms of obstetric complications was associated with the use of trained providers or facilities for the management of complications. This study showed that women who received antenatal care from trained providers were also more likely to have their deliveries by trained providers.

In this study a high proportion of still-births was found in women having complications and in those having hospital deliveries.

The findings indicate that there is a strong need for awareness-raising efforts in the community about the complications of pregnancy and childbirth and the importance of seeking medical help in obstetric emergencies.

Introduction

Every year more than 200 million women become pregnant [1]. Most pregnancies of healthy mothers end with the birth of a live baby. But, in many cases, childbirth is not the joyous event as it should be but a time of pain, fear, suffering and even death. Globally, it has been estimated that about half a million women die each year of pregnancy related causes, 99 percent of them in developing countries [2]. At least 9 percent of the pregnancies are complicated by a disease which is aggravated by pregnancy, such as malaria, iron-deficiency anaemia, hepatitis, tuberculosis (TB), and heart disease [1].

Pregnancy and childbirth related complications are the leading cause of maternal mortality and morbidity in Bangladesh. The five major causes of maternal deaths are haemorrhage, eclampsia, unsafe abortion, sepsis, and obstructed labour. In addition to the high risk of death associated with pregnancy and childbirth, women in Bangladesh are at an even greater risk because of the high-fertility norm. Poverty, social and cultural prejudices, gender-based violence, lack of education and less access to essential health-care facilities also contribute to poor maternal health. An estimate shows that about 28,000 maternal deaths occur each year in Bangladesh due to pregnancy and delivery-related complications [3]. Maternal mortality ratio of 4.5 per 1,000 live-births at present [4] is unacceptably high even by the standards of other developing countries. This persistently high ratio illustrates the risk that Bangladeshi women face during their reproductive life span. Thus, maternal health status in Bangladesh is markedly low.

The target is to reduce maternal mortality to 3 per 1,000 live births, achieve 80 percent coverage of antenatal care, and 80 percent deliveries attended by trained providers by 2002 [5]. In the context of maternal morbidity, the situation is also alarming. Maternal morbidity constitutes a wide range of illnesses or morbid conditions which occur during pregnancy or childbirth. This has long been identified as an important indicator of maternal health. A study done in one province of India has estimated that there are 16.5 morbidities for every maternal death [6]. Results of more recent studies suggest that this figure is far too low and that there may as many as 100 morbidities for every maternal death. This means that more than 61.8 million women suffer

from significant ill health annually as a result of childbearing [7]. A study conducted by BRAC in one district (Manikganj) of Bangladesh has found that over 80 percent of the women reported post-partum morbidity [8]. Another recently conducted study showed that 57 percent of women complained of one or more morbidity during the antenatal period, 26 percent during delivery and 65 percent within 42 days after delivery [9].

Results of a multi-country collaborative study, conducted in Bangladesh, Egypt, Indonesia, and India, showed that the percentage of respondents with at least one morbidity during the index pregnancy and puerperium ranged from 58 percent in India to 80 percent in Bangladesh. The study also reported the ratio of maternal morbidity to maternal mortality to be 186:1 in Bangladesh. Barkat *et al.* [10] has shown that 90 percent of women experienced at least one obstetric complication.

Efforts to reduce maternal mortality and morbidity have so far focused on preventive approaches, such as antenatal care, tetanus toxoid immunization, training of traditional birth attendants (TBAs), and family planning. In Bangladesh, only one-third (29%) of all pregnant women who gave birth during five years preceding the 1996-97 Bangladesh demographic and health survey received antenatal care, and only 19 percent of them had two or more visits. More than 95 percent of deliveries were conducted at home and only 16 percent deliveries were conducted by trained providers [4]. A review of 25 subdistrict hospitals or Thana Health Complexes (THC) showed that only 0.7 to 4.2 percent of the total deliveries took place at these facilities [3]. UNICEF has also reported that essentially, all pregnant women are at risk of serious complications during pregnancy and childbirth, and maternal mortality can be avoided if mothers with such complications receive adequate and timely medical management.

The consequences of the four major obstetric complications are shown in Table 1.

Table 1. Obstetric complications and their sequelae

Obstetric complication	Main sequelae in those surviving
Haemorrhage	Severe anaemia, impaired pituitary function
Sepsis	Pelvic inflammatory diseases, infertility, ectopic pregnancy
Obstructed labour	Fistulae, stress incontinence, uterine prolapse
Unsafe abortion	Pelvic inflammatory diseases, reproductive tract infections, infertility, ectopic pregnancy

Source: *WHO, 1994*

Cost, distance, and quality of services are the obstacles in using essential obstetric care services. Patients who make a timely decision to seek care may still experience delay due to their inaccessibility to health services [11].

In Bangladesh, several studies were conducted which showed the prevalence and causes of maternal mortality [12-14]. Although many women do not die, they suffer from various types of short- and long-term illnesses and disability, like obstetric fistulae, which may render them outcasts from their own family and society [1]. Women with obstetric complications face cultural, social and other barriers to obtain care and, therefore, become silent sufferers. However, very few studies have been done on maternal morbidity in Bangladesh. Thus, it is important to know about the prevalence and trend of maternal morbidity and what women know and do about these.

Objective

The objective of this study was to assess the pattern of complications that women have during pregnancy and childbirth, their care-seeking behaviour, and their knowledge about these complications so as to design interventions for improving maternal health in rural Bangladesh.

Methodology

This cross-sectional survey was conducted in four rural subdistricts of Bangladesh, the field sites of the Operations Research Project (ORP, former Rural & Urban MCH-FP Extension Projects) of ICDDR,B. The Project is a collaborative effort of the Ministry of Health and Family Welfare of the Government of Bangladesh, different partner NGOs, and USAID. Of the four subdistricts, Mirsarai and Satkania in Chittagong district are considered low-performing areas and the other two, Abhoynagar and Keshobpur in Jessore district, are considered high-performing areas in terms of both health and family planning indicators. According to the Bangladesh Bureau of Statistics [15], the crude birth rate in Chittagong district is 29 and in Jessore it is 24 per 1,000 live-births. The population in Chittagong district rely primarily on farming and small business for their livelihood. In Jessore district, a sizeable proportion of the labour force work in mills and factories. In Chittagong, the literacy rate is 47 percent, whereas it is 37 percent in Jessore which is higher than that of the national average [16].

Every 6th household in the study area in Jessore and every 4th household in the study area in Chittagong, constituting a total of 16,911 households, were visited, and 2,105 women who had a pregnancy outcome during May 1995 - June 1996 were interviewed in their homes during May-August 1996. A structured questionnaire was used for collecting data. The interviews were conducted by the Project's female field research assistants who were given prior training. A list of the major obstetric complications was prepared according to the recommendation of the Safe Motherhood Initiative [17]. Complications other than the ones in the list were recorded as "others". The women were asked about the major obstetric complications of pregnancy and childbirth which usually necessitate hospital care. They were also asked about the obstetric complications they had encountered. Multiple answers were accepted. Women were prompted to find out whether they had experienced any other obstetric complication besides those they had reported spontaneously.

Women who reported at least one complication were asked whether they had consulted any provider, such as the paramedic, nurse or doctor (considered as trained personnel) or any village practitioner such as the

untrained village doctor, the herbalist or *kabiraj* and the homeopath (considered as medically non-qualified providers). They were also asked if they had visited any public/private health centre like the Satellite Clinic (SC), the Union Health and Family Welfare Centre (UH&FWC), the sub-district hospital (Thana Health Complex), the district hospital or any other clinic for the management of their complications.

Operational definition

In this study, maternal morbidity refers to any complication(s) reported by women during their last pregnancy (antenatal), delivery and/or within 42 days after delivery (postpartum). The major complications considered were abnormal vaginal bleeding (during pregnancy, delivery, and postpartum), pre-eclamptic toxaemia (any two of the symptoms; swelling of face and legs, blurred vision, or severe headache), convulsion, fever for more than 3 days (during pregnancy or within 42 days after delivery), leaking membrane, prolonged labour (labour pain for more than one day or a whole night), retained placenta, malpresentation, obstructed labour, smelly vaginal discharge, perineal tear, and uterine prolapse.

Characteristics of the study women

Fifty-seven percent of the women interviewed were aged between 20-29 years, the mean age being 25 years. Nearly one-fifth (19%) of the women were aged less than 20 years. Nearly two-thirds (65%) of the women had 1-3 children and the mean number of pregnancies per woman was 2.8, the range being 1 to 9. Over half (53%) the women and nearly half (48%) of their husbands had no schooling. A quarter of both women and their husbands had 1-5 years of schooling, while nearly a quarter of both had 6-10 years of schooling. About 6 percent of the husbands had more than 10 years of schooling. The mean years of schooling of women and their husbands were 2.8 and 3.5 respectively. Eighty-six percent were Muslims, and the rest were non-Muslims. Most women were housewives (97%).

Results

Reported complications or morbid conditions

Two-thirds (66%) of the women reported that they had experienced at least one complication during their last pregnancy and/or childbirth. The rest did not report any such complication or condition (Fig. 1). Forty-three percent reported 1-2 complications, while 23 percent had three or more. The mean number of reported morbidity per woman was 1.5 in the study population.

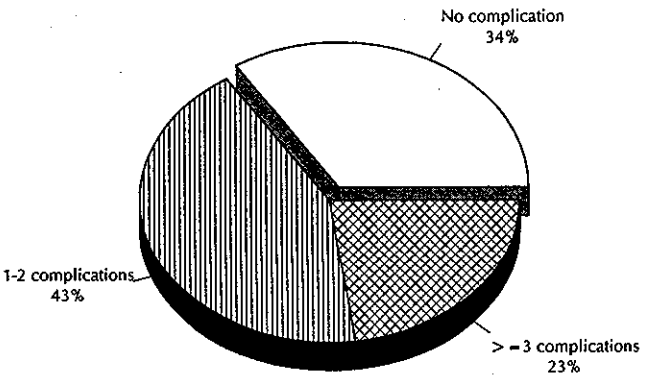


Fig. 1. Proportion of women by the number of reported obstetric complications (n = 2,105)

Pattern of reported maternal morbidity

Nearly one-third (30%) of the women reported having prolonged labour, nearly a quarter (22%) had abnormal bleeding (either in the antenatal, during delivery or postpartum period) while another one-fifth complained of fever during pregnancy and/or delivery. Pre-eclamptic toxaemia was reported by nearly one-fifth (18%) of the women. Leaking membrane, retained placenta, foul smelling vaginal discharge, malpresentation of the foetus during delivery, and convulsion during pregnancy, delivery, or postpartum were also reported. About 23 percent of the women reported symptoms, such as weakness, dizziness, vomiting, lower abdominal pain, and backache. Another one percent complained of jaundice, perineal tear, and uterine prolapse (Fig. 2).

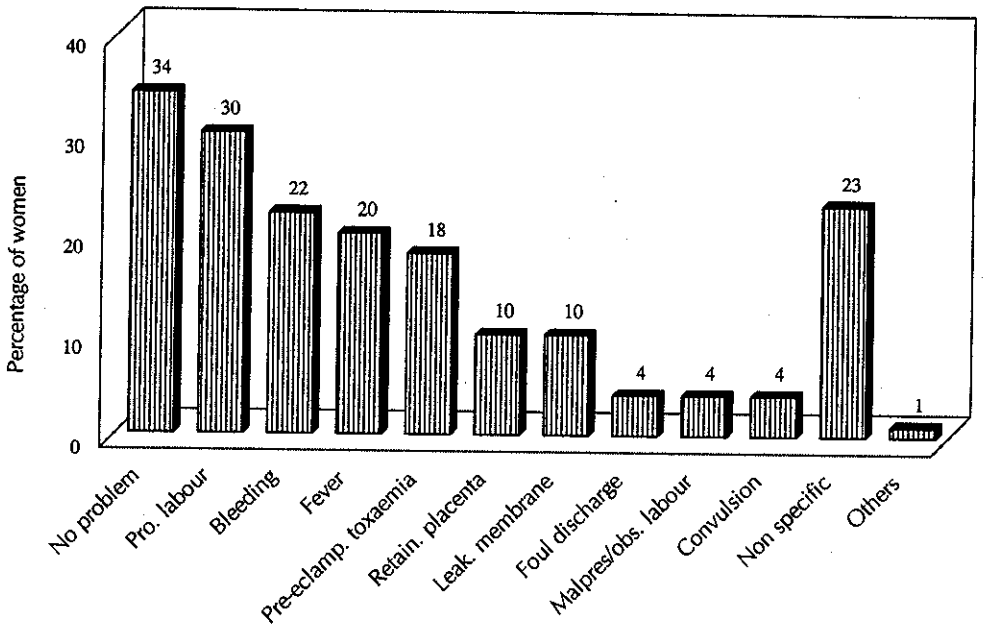


Fig. 2. Pattern of women's reported obstetric complications* (n = 2,105)

* Multiple responses were recorded

Morbidity during the antenatal period

During the antenatal period, 35 percent of the women experienced complications, 18 percent complained of pre-eclamptic toxaemia (PET), 15 percent fever, 10 percent leaking membrane, 7 percent vaginal bleeding, and 2 percent convulsion (Fig. 3). The mean number of morbid conditions during the antenatal period was 0.5 per woman.

Morbidity during delivery

Forty-one percent of the women reported at least one morbid condition during their last delivery. Twenty-nine percent reported prolonged labour and 12 percent abnormal bleeding. Retained placenta was reported by 10 percent of the women, and only a few reported malpresentation and convulsion (Fig. 3). The mean number of delivery-related morbid conditions per woman was 0.6.

Postpartum morbidity

Nearly one-fifth (19%) of the women reported having at least one type of morbid condition within 42 days of delivery. Fever was reported by 10 percent and severe bleeding by 9 percent, whereas 4 percent reported foul smelling discharge and 2 percent reported convulsion (Fig. 3). The mean number of postpartum morbid condition per woman was 0.2.

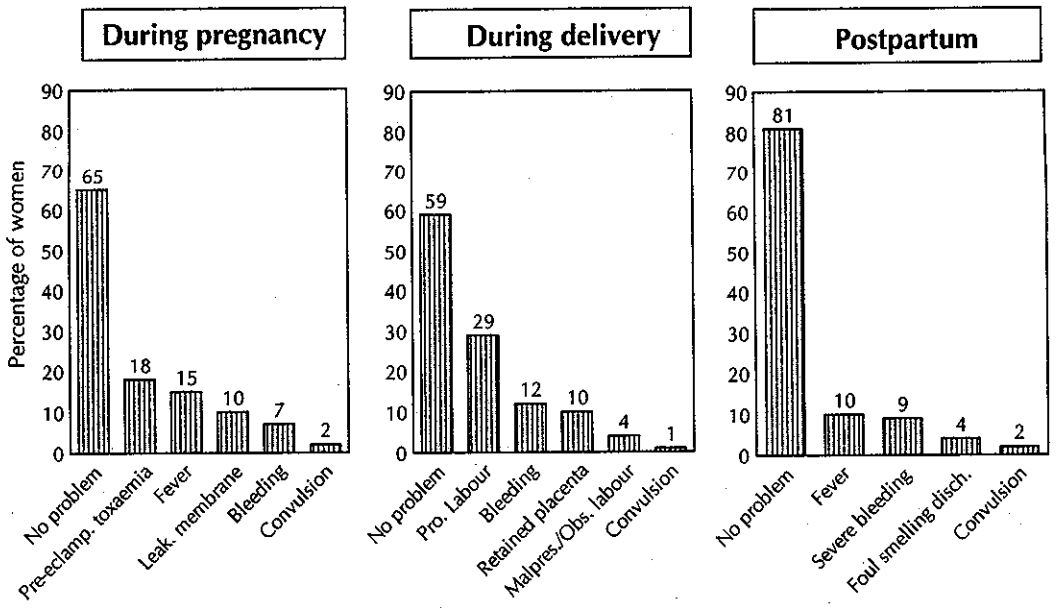


Fig. 3. Pattern of reported obstetric complications* at different times (n = 2,105)

* Multiple responses were recorded; problems reported as others were excluded.

Factors associated with reported morbidity

Table 2 shows the association between reported obstetric morbidity and selected factors. It was observed that women aged 20-23 and 35+ years were more likely to report complications during their pregnancy and/or childbirth compared to those aged less than 20 years.

Table 2. Association of reported maternal morbidity with selected factors (n = 2,105)

Factor	Odds ratio
Age (years)	
<20 (RC)†	1.00
20-34	1.57
35+	1.45
Education (in years)	
No schooling (RC)	1.00
1-5	0.70**
6+	0.78*
No. of pregnancy	
1-2 (RC)	1.00
3-4	0.74**
5+	0.98
Husband's education (in years)	
No schooling (RC)	1.00
1-5	1.15
6-10	1.01
11+	0.94
Knowledge of obstetric morbidity	
Don't know (RC)	1.00
1-2 morbidity	0.87
3+ morbidity	1.62**

*($p < 0.10$), **($p < 0.01$)
† RC = Reference category

Women who had 1-5 years or more of schooling were 30 percent less likely ($p < 0.01$) and those having 6 or more years of schooling were 22 percent less likely to have reported complications than those who had no schooling. Women having 3-4 pregnancies were less likely to report complications compared to women having 1-2 pregnancies. Reporting of complications had a significant relationship with women's perception about 3 or more complications that require medical help were more likely to report complications during their pregnancy and/or child birth.

Care-seeking behaviour

Of the women who reported to have at least one obstetric morbidity, 81 percent sought care. Of them, 19 percent reported that they had consulted multiple providers, which included both qualified and non-qualified providers. Nearly one-quarter of the women who reported obstetric complication(s) received care from trained providers, such as the MBBS doctor, nurse and paramedics, either at their home or family members consulted the providers and bought the prescribed medicines for the women. Nearly half the women (47%) who reported obstetric complications consulted untrained providers such as the village practitioner (41%), the homeopath (11%), and the kabiraj and religious healers (6%) as shown in Fig. 4. Only 13 percent of the women who reported obstetric complications visited any government facility for management. Of them, three quarters visited the THC and the rest visited the district hospital, H&FWC, or the satellite clinic.

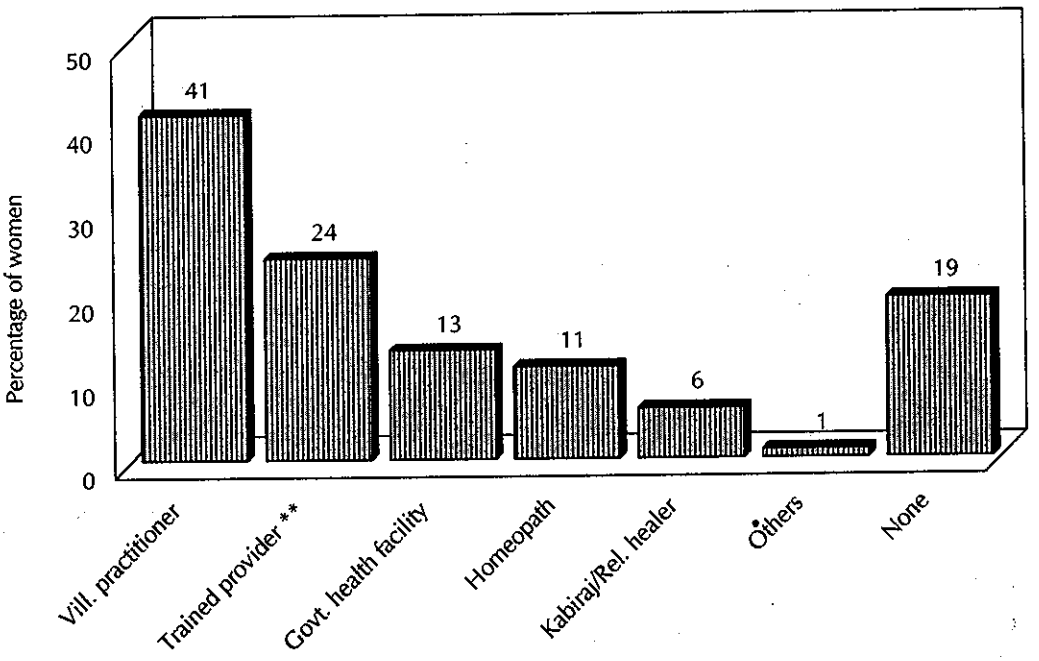


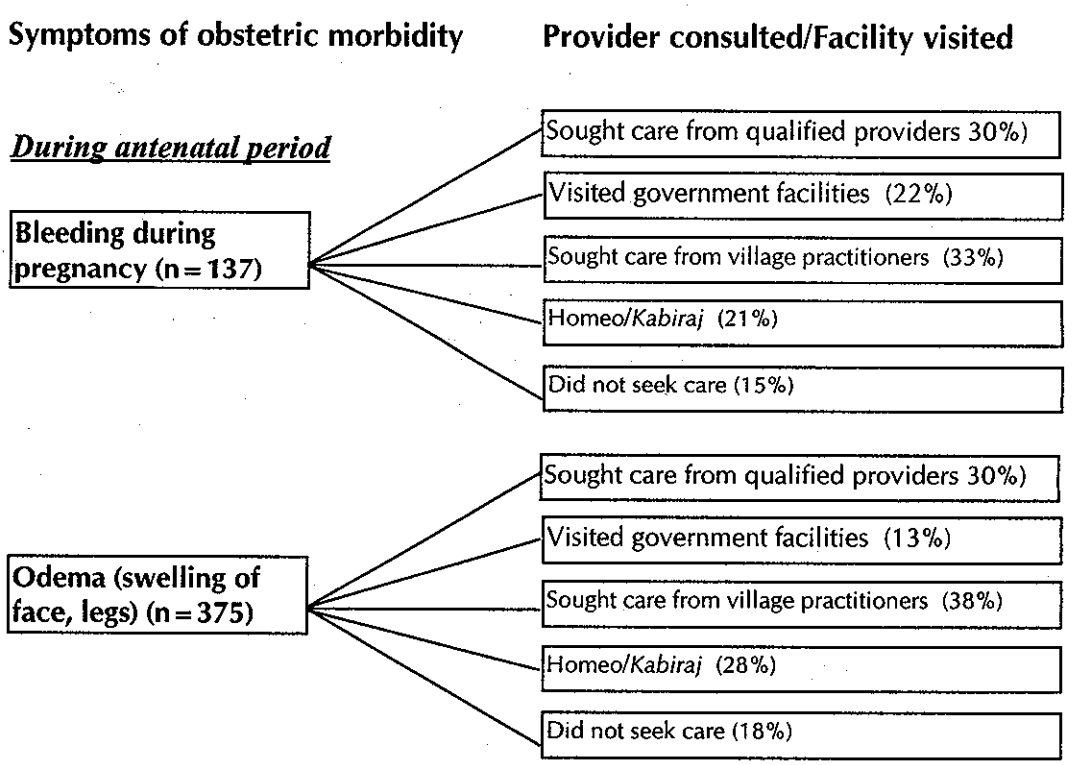
Fig. 4. Types of providers/facilities used for the management of obstetric complications* (n = 1,379)

* Multiple responses were recorded
** Paramedics, nurses, doctors and TTBA

Care-seeking behaviour by types of obstetric complications

A considerable proportion (12 - 30 percent) of the women did not seek any medical care at all. For complications like bleeding during and after delivery, fever for more than three days, pre-eclamptic toxaemia, leaking membrane, prolonged labour, etc., the majority of the women sought care from non-qualified persons rather than using the existing government health facilities which are supposed to provide services free of charge (Table 3). Also 56 percent of the women sought care from qualified persons for bleeding during pregnancy and delivery, whereas 32 percent went to trained persons for the management of retained placenta.

Table 3. Types of providers consulted or health facilities visited for different obstetric complications*



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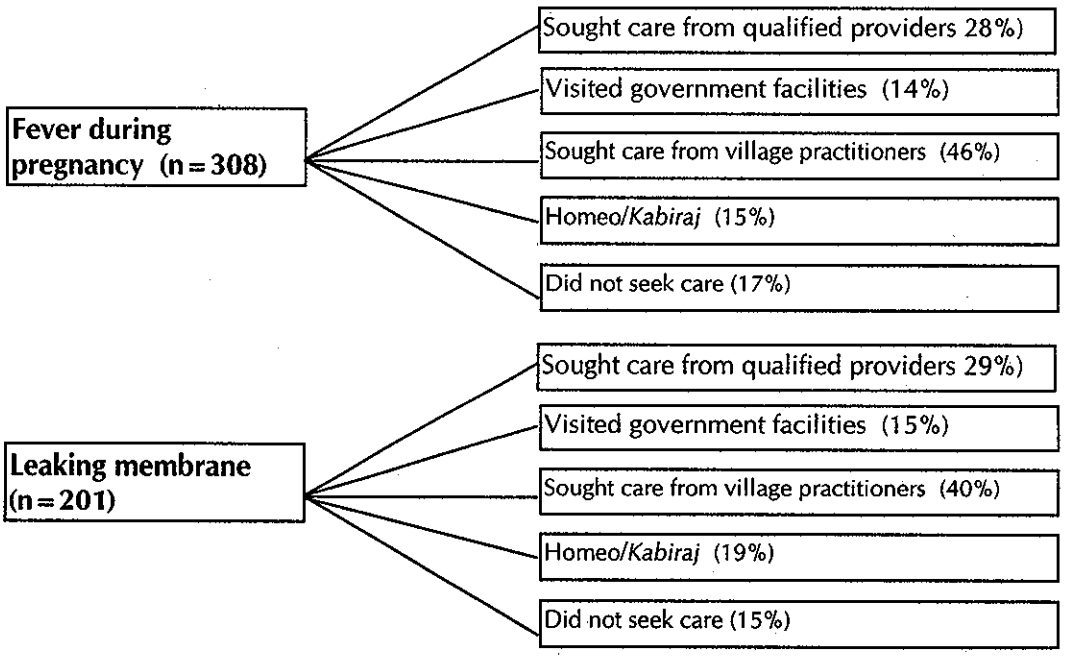
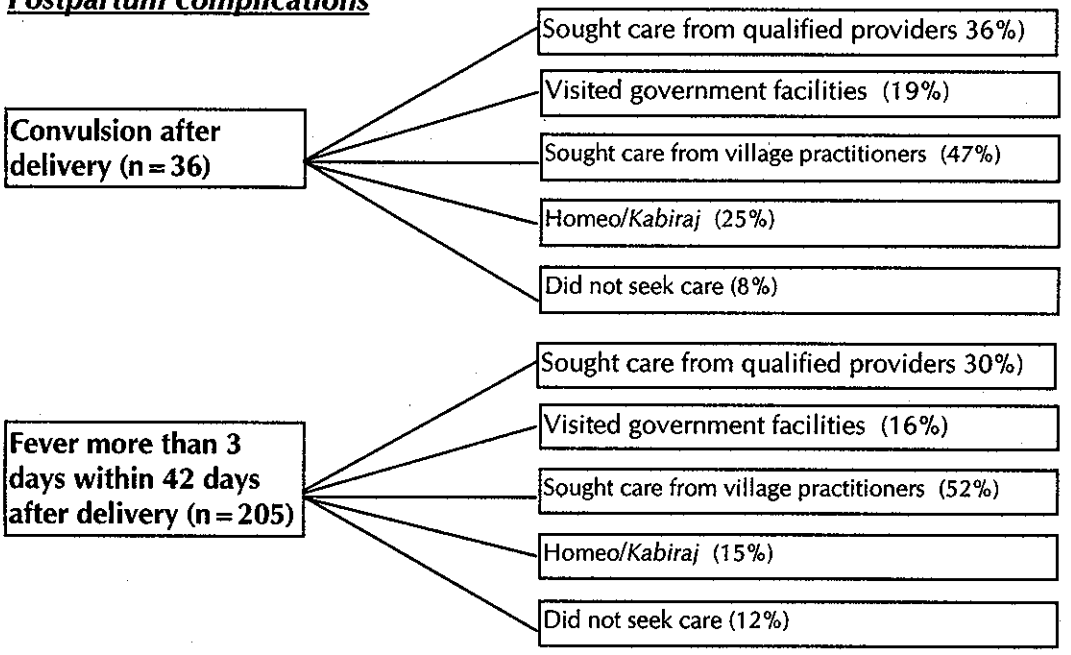


Postpartum complications



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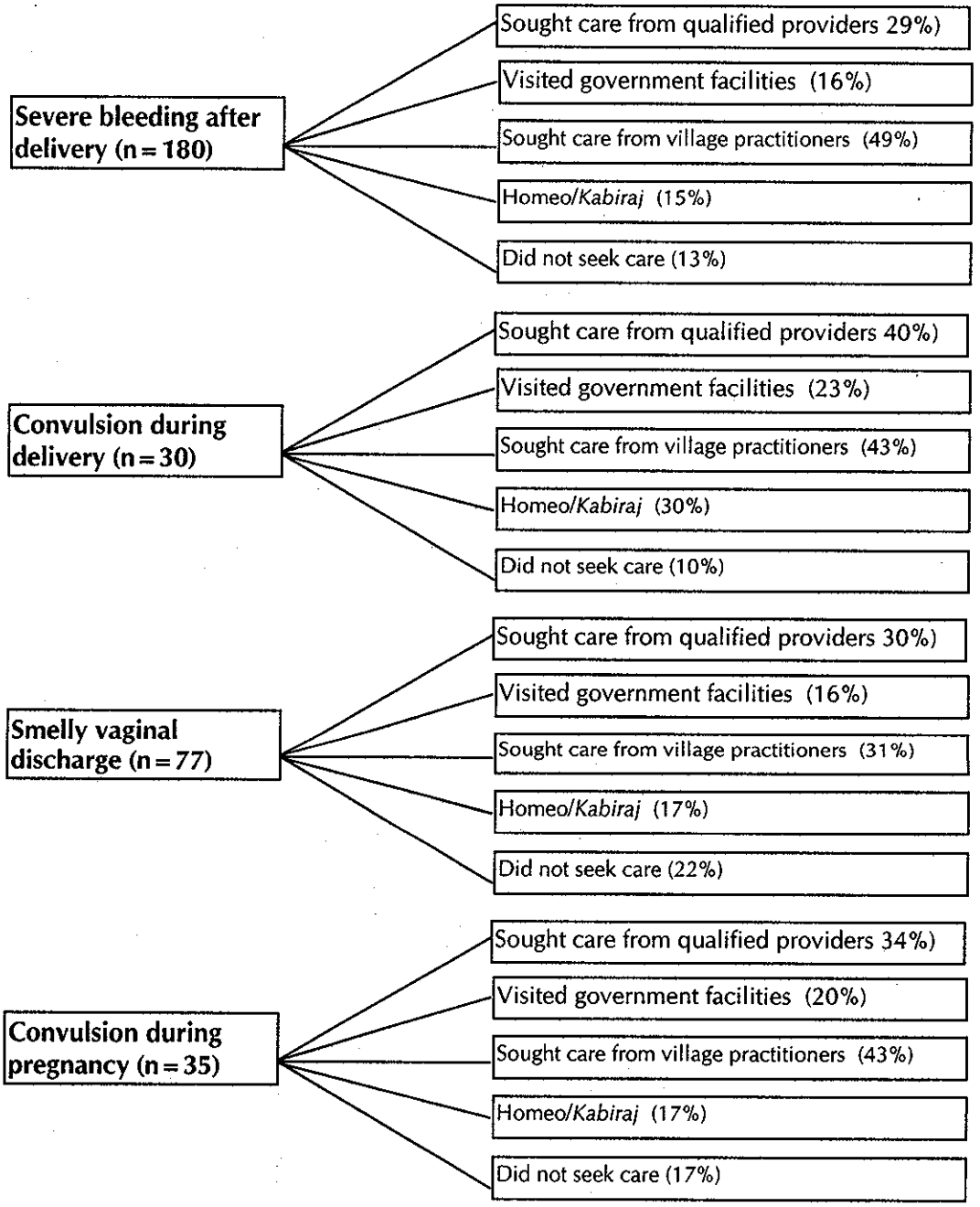

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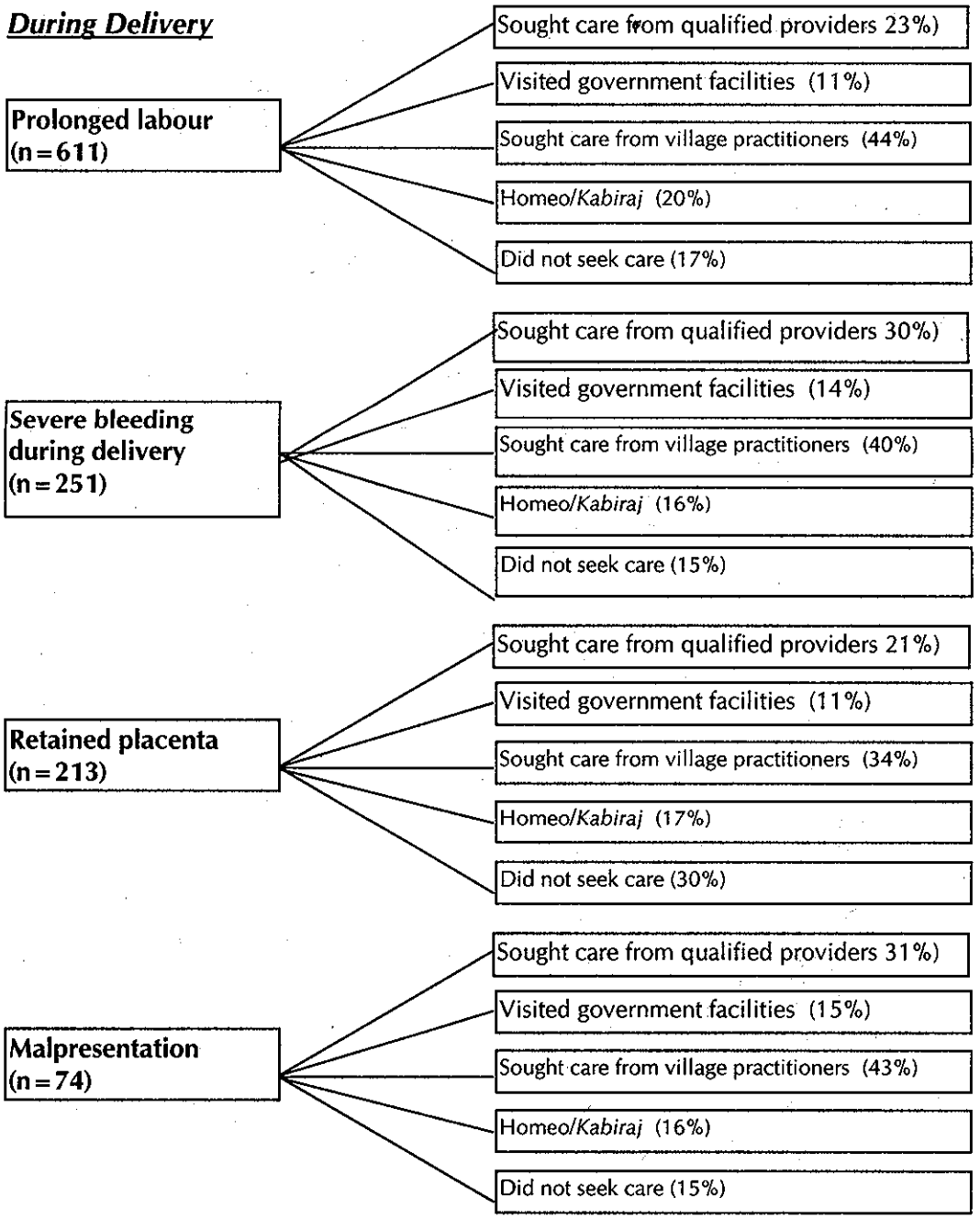

* Multiple responses were recorded.

Reasons for not using THC for delivery

Of the women who reported having complications during delivery, only about 5 percent delivered at the thana health complex (THC), while the rest delivered at home. Of them who did not go to the THC, 38 percent did not feel the necessity of going to a hospital, 16 percent had family objections, 6 percent were afraid of the surgical procedure, 20 percent feared that it would cost a lot of money, 6 percent did not go due to lack of availability of medicines, 6 percent for the transportation problem, 5 percent did not go as they had none at their homes to take care of the children, 4 percent were not aware of the availability of these services at the THC, and 2 percent were not happy with the behaviour of the staff.

Factors associated with care-seeking behaviour

Table 4 shows the association between care-seeking from trained personnel and selected factors. Women aged 20-34 years were more likely to go to trained providers than those aged less than 20 years. Education of women as well as their husbands had a significant association with seeking care from trained providers. Women with 6 or more years of schooling were two times more likely to seek care from trained providers ($p < 0.001$) than those woman who had no schooling. Women whose husbands had 11 or more years of schooling were more likely to go to a trained provider for the management of obstetric complications than those whose husbands had no schooling. Women having perception about 3 or more obstetric complications that require hospital care were more likely to seek care from trained providers for their obstetric complications.

Table 4. Association of selected factors associated with care-seeking from trained providers for the management of reported maternal morbidity (n=1,379)

Factor	Odds ratio
Age (years)	
<20 (RC)†	1.00
20-34	1.40*
33+	1.52
Education (in years)	
No schooling (RC)	1.00
1-5	1.10
6+	2.02**
No. of pregnancy	
1-2 (RC)	1.00
3-4	1.09
5+	0.94
Husband's education (in years)	
No schooling (RC)	1.00
1-5	1.12
6-10	1.14
11+	2.18*
Knowledge of obstetric morbidity	
No knowledge (RC)	1.00
1-2 morbidity	1.08
3+ morbidity	1.67*

* ($p<0.01$), ** ($p<0.001$)
† RC = Reference category

Decision-makers

In 60 percent of the cases, husbands were the principle decision-makers for the treatment of obstetric complications of their wives followed by relatives and mothers-in-law. In 14 percent of the cases, women made their own decision to consult a provider (Fig. 5).

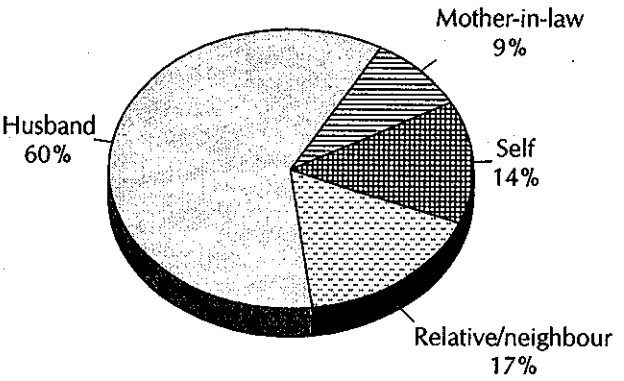

Fig. 5. Percentage distribution of decision-makers for care-seeking for obstetric complications

Cost of services for obstetric care

Women were asked about the cost incurred for the management of their obstetric complications. Cost included all types of expenditures, such as service charge, cost of medicines, cost of transport, and others. The cost ranged from Taka 1 to Taka 8,000. Majority of the women who consulted any trained provider or visited any health facility for the management of their complications paid between 100-500 Taka. A considerable proportion of women received services free of charge from the Health and Family Welfare Centre/Satellite Clinic. It is also important to mention that the women who received services from TTBAs, one-third did not pay at all. Homeopaths were less expensive than other providers. However, cost was found to be the highest for those who visited the district hospital compared to those who consulted other providers or visited any other facility (Table 5).

Table 5. Cost of obstetric care services

Place/provider	No charge (%)	Tk. 1-100 (%)	Tk. 101-500 (%)	Tk. 501-1,000 (%)	Tk. 1,001-2,000 (%)	Tk. 2,001+ (%)	N
FWC	50	27	23	-	-	-	22
SC	100	-	-	-	-	-	14
THC	15	25	37	10	4	9	136
District Hospital	-	29	14	19	16	22	16
MBBS at home	-	15	63	16	3	3	64
MBBS consulted	-	22	51	14	6	7	240
FWV at home	18	24	30	16	12	-	25
TTBA	33	47	20	-	-	-	15
Kabiraj	26	46	24	4	-	-	85
Homeopath	-	82	16	2	-	-	147
Village doctor	-	42	48	7	2	1	566

Knowledge of obstetric complications

More than half (60%) of the women had knowledge about 1-2 symptoms of complications and nearly one-third (31%) could mention three or more morbid conditions related to pregnancy and/or childbirth. Nearly one-tenth (9%) did not know about any of the obstetric complications that require management by trained providers or institutional care as shown in Fig. 6.

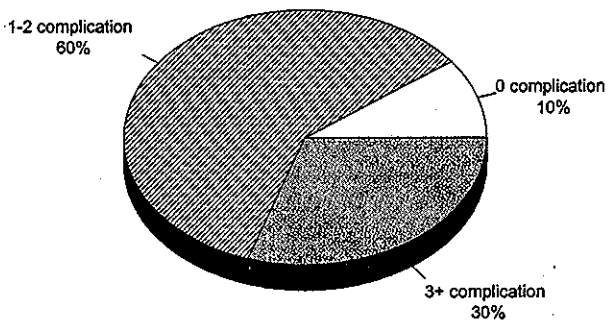

Fig. 6. Distribution of women by their knowdedge of obstetric complications (n=2105)

More than half of the women (52%) had knowledge about prolonged labour and a little more than one-third knew about malpresentation. One-fifth of the women knew about the importance of seeking medical care for pre-eclampsia, abnormal vaginal bleeding and convulsion. Very few had knowledge of retained placenta (11%), leaking membrane (7%), and fever for more than 3 days during pregnancy, or postpartum (4%) as shown in Fig. 7.

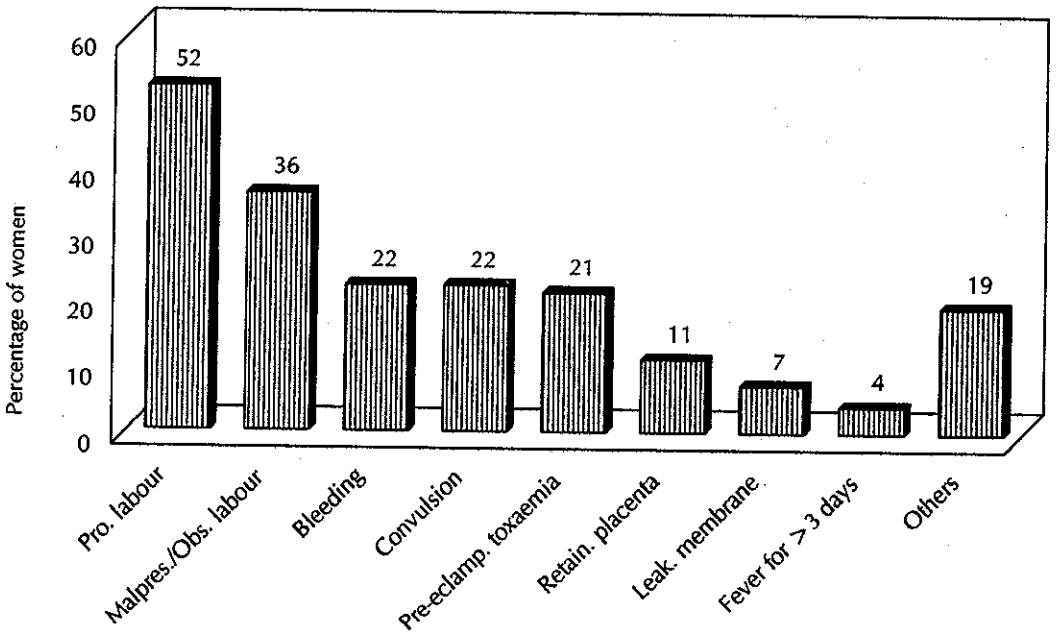

Fig. 7. Women's knowledge about obstetric complications* that require medical help (n=2,105)

* Multiple responses were recorded.

Factors associated with women's knowledge

Table 6 shows women's knowledge about obstetric complications that require medical help by selected factors. Women's knowledge about obstetric complications was found to be associated with their education, parity and their husbands' education.

Table 6. Women's knowledge of obstetric complications by selected factors (n = 2,105)

Characteristic	No knowledge (%)	1-2 complications (%)	3+ complications (%)
Age (years)			
<20	9	61	31
20-29	9	60	32
30-39	11	59	30
40+	2	59	32
Education (years)**			
No Schooling	11	62	27
1-5	7	59	34
5+	6	55	39
Husband's education (years)**			
No schooling	12	62	27
1-5	7	60	34
6-10	8	59	33
10+	5	5	46
Parity*			
No child	11	70	19
1-3 child	8	60	32
4-6 child	11	58	31
7-9 child	11	55	34

*p<0.10 **p<0.001

Antenatal care

Thirty-seven percent of the women who had a pregnancy outcome went for at least one antenatal care visit to qualified providers, such as paramedics, nurses, and doctors, during their index pregnancy. Some of them received such care from multiple providers, such as 25 percent from paramedics and 16 percent from nurses or doctors. Only 20 percent of the women were contacted by the female field workers for antenatal care.

Pregnancy outcome, place of delivery and birth attendants

As shown in Fig. 8 seventy-two percent of the deliveries were attended by untrained traditional birth attendants (TBA) or relatives, and nearly a quarter (24%) were attended by trained providers, such as trained TBAs (14%), paramedics (7%), nurses or doctors (3%). Ninety-two percent delivered at home. Only 7 percent of the women, including some having abortions, went to institutional facilities, such as H&FWC at the village level, THC at the subdistrict level, the district hospital, and private clinic. Eighty-nine percent of the women had a live-birth, nearly three percent had still-births, and the rest had either induced or spontaneous abortion as the outcome of their last pregnancy.

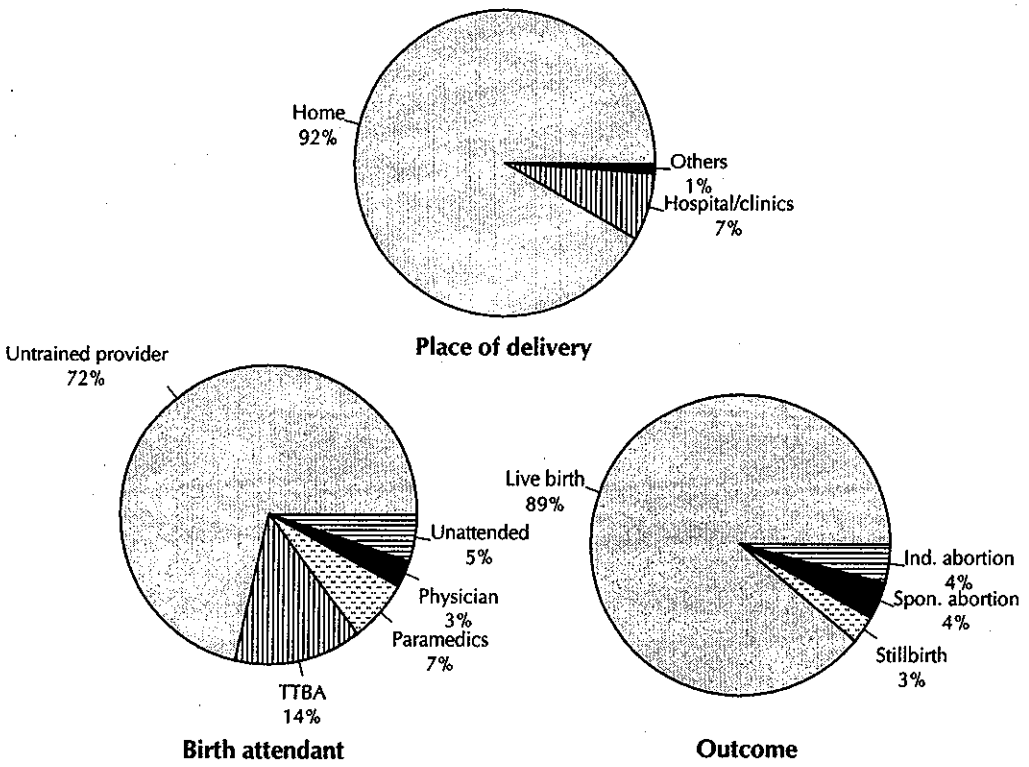

Fig. 8. Percentage distribution of women by place of delivery, birth attendant, and pregnancy outcome (n = 2,105)

Of the women who received antenatal care, 32 percent of the deliveries were attended by trained providers, while of the women who did not receive antenatal care from such providers, only 19 percent were attended by trained providers during delivery. Analysis shows that there is a significant association ($p < 0.0001$) between antenatal care received from trained providers and trained birth attendants.

Women who were delivered by trained providers also sought care from trained providers for their postpartum complications as compared to those who had their deliveries attended by untrained providers ($p < 0.001$).

Association of reported morbidity with the place of delivery and birth attendant

Women who had hospital deliveries were more likely to have reported complications compared to those who had their deliveries at home. This was also true for the type of birth attendants used. Women who had their deliveries attended by physicians followed by paramedics and trained TBAs were more likely to report complications (Table 7).

Table 7. Association of reported obstetric complications with the type of birth attendant and the place of delivery

Factor	Obstetric complications (%)	Total (n=2,105)
Place of delivery*		
Home	65	1910
H&FWC	14	14
THC	74	81
Clinic	80	87
District hospital	100	13

Contd...

Table 7 *(contd.)*

Factor	Obstetric complications (%)	Total (n=2,105)
Birth attendant		
Untrained relatives	65	1493
Trained provider		
TTBAs	60	291
Paramedics	67	140
Physicians	80	66
Un-attended/self	73	41
Others	77	56
Missing	50	18

* ($p<0.001$)

Association between the place of delivery and outcome of pregnancy

Still-births were found to be higher in women who had hospital deliveries, i.e. the delivery took place at a THC, a district hospital, or any other clinic. On the other hand, most of the live-births took place at home while the H&FWC was mostly used for abortion services rather than delivery (Table 8).

Table 8. Association between the place of delivery and outcome of pregnancy

Place of delivery	Outcome				
	Live-birth (%)	Still-birth (%)	Spontaneous abortion (%)	Induced abortion (%)	Total (n=2,105)
Home	92	2	4	1	1910
H&FWC	7	-	-	93	14
THC	58	5	4	33	81
Dist. hospital	85	15	-	-	13
Private clinic	72	3	-	21	87

Effect of obstetric complications on pregnancy outcome

Higher proportion of still-births and comparatively less live-births were observed in women who had reported any symptom of obstetric morbidity during their index pregnancy and child-birth (Table 9). The relationship between the pregnancy outcome and reported morbidity during pregnancy/delivery was highly significant ($p < 0.001$).

Table 9. Reported complications during pregnancy and childbirth and pregnancy outcome (n = 2,105)

	Outcome	
Complication	Live-birth (%)	Still-birth (%)
No (n = 988)	91	0.6
Yes (n = 1,117)	87	4.1

$p < 0.001$

Discussion

The findings of the present study show that prolonged labour, bleeding, fever, and pre-eclamptic toxaemia were the most common obstetric complications. These findings are similar to a recent study covering several areas of Bangladesh [9]. However, the prevalence of bleeding during pregnancy in the present study was found to be nearly three times higher, and prolonged labour four times higher compared to the above study. Reported complaints during the postpartum period were found to be double in that study compared to the present study.

In the present study, reported symptoms of maternal morbidity could not be validated. Results of a study, conducted in Turkey on reproductive morbidity, showed that the prevalence of both prolapse and urinary tract infection both were 19 percent, whereas the medical diagnosis showed these figures to be 27 percent and 7 percent respectively. The same study also reported that the self-reported prevalence of reproductive tract infection (RTIs) was 43 percent, while the medically diagnosed, prevalence was 20 percent [18]. Therefore, further

research is needed to validate women's reported morbidity through proper medical diagnosis, so as to sift out the severity of the obstetric complications.

Age, education, and parity of women and their knowledge about the symptoms of obstetric complications were associated with reporting of obstetric morbidity in the present study. Similar findings were shown in a study conducted in Matlab [19].

Only 24 percent of the women in the present study consulted trained providers, while the utilization of the government health facilities which are supposed to provide services free of charge was found to be poor at 13 percent only. Most women actually either visited untrained providers or did not consult anybody. This is similar to the findings of the study conducted by Akhter *et al.*, Barkat *et al.* [9-10] reported that 35 percent of the women with obstetric complications did not consult any medically qualified person.

Women with complications in the present study were often found to consult one or more providers in the community before they visited a health facility. Most of these providers are untrained village practitioners who are either drug-sellers, or have gathered experience from working with a medically trained provider. Similar findings were observed in nationally representative studies [9-10]. This high use of village practitioners could be due to the fact that they are easily accessible, are not expensive, can defer charges if necessary, and are the only providers at hand. However, going to the village practitioners may cause delay in getting timely and appropriate care, as well as increase cost to the patient. Since most women go to village practitioners, it is important to improve the knowledge of these providers regarding the complications of pregnancy and childbirth, so that they can refer women to the appropriate facilities without delay.

Sixty percent of the women in the present study had some knowledge about obstetric complications that require hospital care or management by trained personnel. However, only a few knew about more than three of such conditions. One-tenth of the women could not mention any of the complications that require medical help. Analysis showed that the women's knowledge about symptoms of obstetric complications was associated with the use of trained providers or health facilities. This suggests the need for educating pregnant women about the symptoms of obstetric complications and where to go to for appropriate management.

A higher proportion of still-births was found in women having complications and those having hospital deliveries in this study. This goes to show that women are often late in seeking medical care or that women who do visit the hospital come with serious complications. The delay in seeking medical care may be due to socio-economic or cultural factors. Results of a multi-country collaborative study, carried out in Bangladesh, Egypt, India, and Indonesia, have shown that even for serious complicated conditions a significant proportion of women did not perceive the severity, and in some cases, although severity was perceived, medical care was not sought [20]. Most women with obstetric complications fail to receive timely and appropriate care, and die at home or on the way to hospital due to the following three types of delays: (a) delay in deciding to seek medical care, (b) delay in reaching a medical facility where adequate care is available, and (c) delay in receiving care at that facility [17]. The family members usually make delay in taking the woman with obstetric complications to a facility due to their ignorance about the consequences, or because they do not know where to seek help from. There is often a fear of the financial implications, or of a bad experience at the health facility.

In this study, it was observed that husbands played an important role in making decisions regarding the treatment of the obstetric complications of their wives. This is similar to the findings of other studies [21,9,10]. One of these studies also documented that husbands had relatively less knowledge about the symptoms of maternal morbidity compared to that of their wives [10]. Therefore, males, especially husbands, need to be targeted in all awareness-raising efforts to ensure appropriate care on time for the women.

In this study, women who received antenatal care from trained providers were more likely to have their deliveries attended by trained providers. This is similar to the finding of a recent national survey [4]. Although 37 percent of the women, in this study, received antenatal care from trained providers, only 24 percent were delivered by trained personnel. This gap between antenatal care and delivery care by trained personnel could be due to either the lack of trained providers in the community or because women do not feel the necessity of a trained birth attendant. Another survey reported that 81 percent of women received antenatal care, and only 57 percent were subsequently attended by a trained attendant [22]. Although the effectiveness of antenatal care can be questioned, it may be argued that antenatal services can influence women to select a trained birth attendant. This, in turn, would help reduce the risk of

deaths from delayed referral, sepsis, obstructed labour, and morbidity associated with prolonged labour and other obstetric problems. Thus, efforts need to be made to encourage women to go for antenatal care so that they may be motivated to go to trained personnel for their deliveries.

In Bangladesh, cultural beliefs, and religious and family norms have been influencing the entire process of motherhood since hundreds of years [23-24]. 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 supernatural factors that cannot be treated by medical doctors [25]. So, although facilities may be built and made available, women may not use them. Thus, women and their families need to be made aware about the complications of pregnancy and childbirth and motivated to use the appropriate facilities without any delay. The Operations Research Project of the ICDDR,B has undertaken an intervention at its field sites for improving maternal health, emphasizing on awareness-raising efforts in the community on emergency obstetric care with appropriate referral and linkages.

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ORP's Publications

a. *Special publications:*

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3. Uddin JM, Bhuiyan MA, Uddin MA, Tunon C.
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b. *Working papers*

1. Ahmed S, Parveen SD, Islam A, Khanum PA.
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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. In 1982, the MCH-FP Extension Project (Rural) with funding from USAID began to examine in rural areas how elements of the Matlab programme could be transferred to Bangladesh's national family planning programme. In its first year, the Extension Project set out to replicate workplans, and record-keeping and supervision systems, 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, management information systems, and 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.

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: improving management, quality of care and sustainability of the MCH-FP programmes, and providing technical assistance to GoB and NGO partners. In 1994, the Centre began an MCH-FP Extension Project (Urban) 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 in international scientific journals.

In August 1997 the Centre established the Operations Research Project (ORP) by merging the two former MCH-FP Extension Projects. The ORP research agenda is focussed on increasing the availability and use of the high impact services included in the national Essential Services Package (ESP). In this context, ORP has begun to work with partners in government and NGOs on interventions seeking to increase coverage in low performing areas and among underserved groups, improve quality, strengthen support systems, enhance financial sustainability and involve t he commercial sector.

ORP has also established appropriate linkages with service delivery partners to ensure that research findings are promptly used to assist policy formulation and improve programme performance.

The Division

The Health and Population Extension Division (HPED) has the primary mandate to conduct operations research, to disseminate research findings to program managers and policy makers and to provide technical assistance to GoB and NGOs in the process of scaling-up research findings to strengthen the national health and family planning programmes.

The Division has a long history of solid 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 underserved and population-in-need. There are various projects in the Division which specialize in operations research in health, family planning, environmental health and epidemic control measures. These cut across several Divisions and disciplines in the Centre. The Operation Research Project (ORP) is the result of merging the former MCH-FP Extension Project (Rural) and MCH-FP Extension Project (Urban). These projects built up a considerable body of research and constituted the established operations research element for child and reproductive health in the Centre. Together with the Environmental Health and Epidemic Control Programmes, the ORP provides the Division with a strong group of diverse expertise and disciplines to significantly consolidate and expand its operations research activities. There are several distinctive characteristics of these endeavors in relation to health services and policy research. For one, the public health research activities of these Projects are focused on improving programme performance which has policy implications at the national level and lessons for the international audience also. Secondly, these Projects incorporate the full cycle of conducting applied programmatic and policy relevant research in actual GoB and NGO service delivery infrastructure, 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 program performance through systematic provision of technical assistance; and scaling-up of applicable findings from pilot phase to the national program at Thana, Ward, District and Zonal levels both in the urban and rural settings.

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