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Determinants of Antenatal Care-seeking Behaviour in Rural Bangladesh

Md. Mafizur Rahman
Barkat-e-Khuda
Thomas T Kane
Khorshed A Mazumder
Md. Masud Reza

MCH-FP Extension Project (Rural)
Health and Population Extension Division

ICDDR,B
CENTRE
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POPULATION RESEARCH

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Mohakhali, Dhaka 1212, Bangladesh

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Fax: 880-2-871568 and 880-2-883116
E-mail: barkat@cholera.bangla.net

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Abstract

Antenatal care practice affects maternal morbidity and mortality. Empirical evidences suggest that, in many developing countries, rural women are reluctant to seek antenatal services from health centres, even when they are provided free of charge. In Bangladesh, the use of antenatal care facilities in rural areas is very low. This study examines the antenatal care practices in rural Bangladesh, and investigates the demographic, socioeconomic, cultural and programmatic factors associated with antenatal care-seeking behaviour of rural women. The data for this study were drawn from a survey conducted in 1994 in six rural sub-districts, with a sample of 10,368 rural women of reproductive age. The data show that over one-third of the women did not consult anyone for antenatal care during their last pregnancy. Among those who consulted someone, the majority consulted unqualified persons (i.e. quacks, homeopathic practitioners, community workers, relatives, neighbours, etc.) not competent enough to provide antenatal care. Almost all the deliveries were conducted at homes by untrained traditional birth attendants, neighbours and relatives, generally in unsafe and unhygienic conditions. Over one-third of the women, some time suffered from delivery-related complications, and the majority consulted quacks and homeopathic practitioners who were not competent enough to provide antenatal care.

Results of logistic regression analysis show that certain demographic, socioeconomic, cultural and programmatic factors were associated with antenatal care-seeking behaviour of rural women. The young and educated women are more likely to seek antenatal care. The poor women, as well as women with lower parity are less likely to seek antenatal care. Women who have ever visited health care centres are more likely to seek antenatal care. Poor and illiterate women are also less likely to consult a qualified person (e.g. doctor, nurse, and paramedic) for antenatal care. Those women who have ever visited health care centres are more likely to consult a qualified person for antenatal care. The uneducated and older women with higher parity are less likely to have their pregnancy conducted by a qualified person, such as doctor, midwife, paramedic, and trained traditional birth attendant.

However, the results suggest that emphasis be given to information, education and communication (IEC) activities to educate the community, particularly the poor and uneducated women, on the need for regular antenatal check-ups and safe delivery by a qualified health personnel. Female education should also be promoted.

Introduction

Globally, over half a million women die of pregnancy-related complications each year, and 99 per cent of these deaths occur in developing countries [1-2]. The situation in South Asia is more precarious, which accounts for about half of the global maternal deaths [3]. In Bangladesh, although there has been some improvement over the last decades, the current level of maternal mortality (4.9 per 1,000 live- births in the rural areas) is still very high, even by the standards of other developing countries [4].

Antenatal care is an acknowledged measure for the reduction of maternal mortality [5]. It can help detect and treat anaemia, hypertensive disorders during pregnancy, and certain infections and diseases, including reproductive tract infections and sexually transmitted diseases. Results of research have shown that women who do not obtain adequate antenatal care significantly reduce their chances of a favourable pregnancy outcome [6]. Ekwempu [7], in his research, found antenatal care to be associated with lower maternal mortality. However, access to emergency obstetric services to deal with emergencies that arise during child birth is also an important factor in reducing maternal mortality.

The high rate of maternal mortality in Bangladesh can partially be reduced through changes in antenatal care practices in the rural areas. Results of a survey show that most rural mothers do not receive antenatal care. Among births that occurred in the three years before the 1994 DHS survey, almost three quarters of the mothers received no antenatal care during pregnancy. Moreover, 96 per cent of births were delivered at homes by illiterate traditional birth attendants or relatives or the woman herself, generally in unsafe and unhygienic conditions [4]. Proper antenatal care during pregnancy and delivery in hygienic conditions by trained personnel can significantly reduce the risk of maternal mortality.

To bring maternal mortality down to an acceptable level, the Government of Bangladesh has been striving to provide maternal health care to rural women through the national health and family planning programme. The government health centres, such as Thana Health Complexes (THCs), Health and Family Welfare Centres (HFWCs), and Satellite Clinics, provide

maternal and child health services to the rural population free of charge. However, the use rates of these health centres are very low, resulting in high maternal and neonatal mortality [8]. Among the women visiting the HFWCs, only 8 per cent came for antenatal care [9].

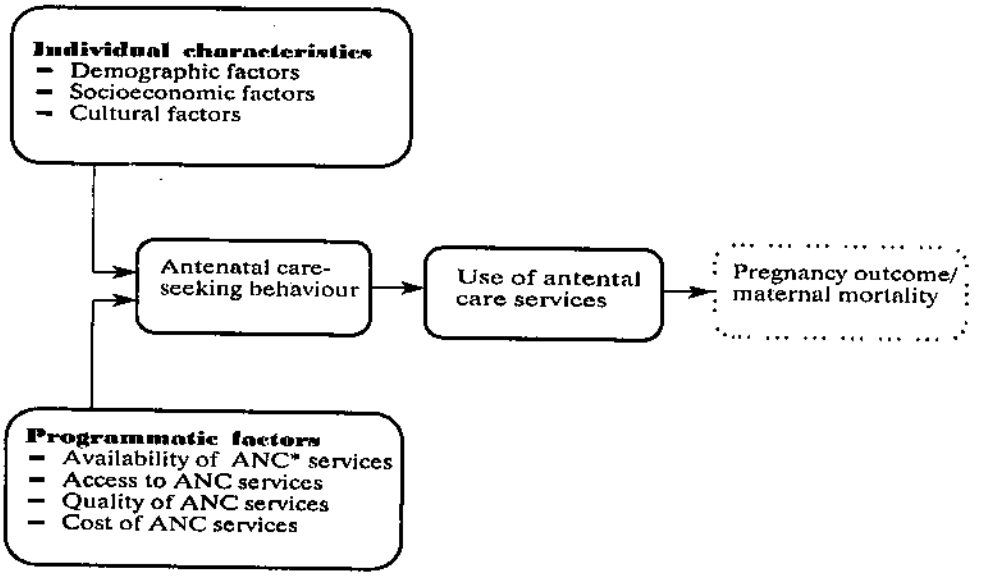
About 80 per cent of women in developing countries go through pregnancy and delivery without receiving any form of antenatal care. In these countries, maternal and child health services, including screening and referral of high-risk cases to better equipped institutions, have to be integrated into social development schemes and designed in such a way that they are acceptable to the community [10].

The problem of antenatal care in developing countries may be considered from two aspects: a) areas where antenatal facilities are either absent or inadequate, and b) areas where antenatal facilities are adequate, but for some reasons they are not adequately used. Illiteracy or ignorance, traditional and cultural beliefs, prejudices, and the subordinate status of women are the most important reasons for not adequately using the antenatal care facilities in developing countries [11]. A study in Bombay, India shows the apathy of pregnant women to come forward to avail of the antenatal care though available even free of charge nearby [12]. Another study in India shows that social, cultural and economic factors are important determinants of using antenatal services [13].

Conceptual Framework

Although there are provisions for antenatal care and safe delivery in the rural areas throughout the country through the Health and Family Welfare Centres (HFWCs) and Satellite Clinics (SCs) under the national health and family planning programme, rural women seem reluctant to avail of the

services of these health centres. There are likely to be several socioeconomic, demographic, cultural and programmatic factors that influence the antenatal care-seeking behaviour of rural women. This could be explained by the following diagram:



ANC refers to antenatal care

Moller *et al.* [5] and Joseph [6] observed that antenatal care services can significantly reduce the risk of maternal mortality in all societies. The use of antenatal care services in the rural areas is largely influenced by the antenatal care-seeking behaviour of rural women, which is influenced by the client characteristics, such as socioeconomic, demographic and cultural factors. Again, antenatal care-seeking behaviour is also affected by programmatic factors, such as availability, accessibility, quality and cost of antenatal services. Antenatal care-seeking behaviour leads to the use of antenatal services, which affects the pregnancy outcomes. Those who use antenatal services during their pregnancy have more favourable pregnancy outcomes.

Objectives

The study examines the antenatal care practices in rural Bangladesh, and investigates the demographic, socioeconomic, cultural and programmatic factors associated with antenatal care-seeking behaviour of rural women. The specific objectives are:

a) to investigate the antenatal care practices in rural areas;

b) to investigate the demographic, socioeconomic, cultural and programmatic factors associated with seeking antenatal care;

c) to investigate the socioeconomic, cultural, demographic and programmatic factors associated with consulting a qualified person (e.g. doctor, nurse, and paramedic) for antenatal care;

d) to investigate the demographic, socioeconomic, cultural and programmatic factors associated with conducting delivery by a qualified person (e.g. doctor, nurse, paramedic, and trained traditional birth attendant).

Rationale

To reduce maternal mortality to an acceptable level, the antenatal care-seeking behaviour of rural women needs to be changed. The rural women must be willing to seek antenatal care during pregnancy. It is, therefore, important to identify the demographic, socioeconomic, cultural and programmatic factors associated with antenatal care-seeking behaviour. Once these factors are identified, strategic and programmatic measures could be undertaken to encourage rural women to seek antenatal care from the health centres.

Limitations

Besides the demographic, socioeconomic, cultural and programmatic factors which have been included in the analysis of this study, a host of other

programmatic (e.g. accessibility, quality and costs of antenatal services, etc.) and cultural factors (e.g. religiosity, prejudices, women's role in decision making process, subordinate status of women, etc.) are also likely to influence the antenatal care-seeking behaviour of rural women. Unfortunately, due to lack of necessary data, the effects of these programmatic and cultural factors on antenatal care-seeking behaviour could not be examined in this study. Besides, the available data do not also permit us to examine in great details all aspects of the antenatal care practices in rural areas.

Data Source

The data for this study were drawn from a cross-sectional survey conducted in six rural thanas during 1993-1994 by the MCH-FP Extension Project (Rural) of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B). Two of these six thanas are the field sites of the MCH-FP Extension Project (Rural), where different interventions and strategies are field-tested to improve the efficacy, effectiveness and sustainability of the government health and family planning programme in collaboration with the Ministry of Health and Family Welfare. These two thanas are referred to in this report as Project Area-I and Project Area-II. The other four thanas, which are termed here as "Non-Project Areas," are the areas where government health and family planning programmes are in operation. Out of these four non-project thanas, two thanas referred to as Non-Project Area-II are the comparison areas of the MCH-FP Extension Project. The thanas were selected purposively, and 10,368 currently married women of reproductive age were selected as samples from these selected 6 thanas following systematic random sampling procedures. The samples were interviewed, using a structured questionnaire, by the experienced and skilled interviewers (of ICDDR,B) to collect information on various demographic, socioeconomic, cultural and selected programmatic variables, including public health issues, such as antenatal care practices, use of services of government health care facilities, etc.

Data Analysis

Descriptive statistics and multi-variate regression methods were employed in analyzing data. To examine the effects of demographic, socioeconomic, cultural and selected programmatic factors on the antenatal care-seeking behaviour of rural women, three separate logistic regression models were used. The Model-I was designed to examine the effects of demographic, socioeconomic, cultural and programmatic factors on consulting someone for antenatal care during last pregnancy, while Model- II was designed to look into the influence of these factors on the type of persons consulted for antenatal care. The Model- III was used for investigating the effects of these factors on the type of persons conducting deliveries. The variables which were included in each of these models are listed below.

Model- I

Dependent Variable

Consulted someone for antenatal care during last pregnancy (Yes/No)

Independent Variables

Age of women
Parity
Education
Employment status
Family expenditure
Religion
Satellite Clinic (SC) visit
Family Welfare Center (HFWC) visit
Ownership of radio/TV
Geographical area

Model- II

Dependent Variable

Consulted qualified person (doctor/nurse/paramedic) for antenatal care during last pregnancy (Yes/No)

Independent Variables

The independent variables include all the variables which are listed for the Model-I.

Model- III

Dependent Variable

Delivery conducted by qualified person (doctor/nurse/paramedic/ trained traditional birth attendants) during last pregnancy (Yes/No)

Independent Variables

The independent variables include all the variables which are listed for the Model- I.

For the logistic regression analysis, only those women, who had at least one live-birth, were considered, and hence the total samples stood at 9,179.

Results

Antenatal Care Practices

Seeking antenatal care

Antenatal care during pregnancy is a crucial factor affecting maternal mortality. Proper antenatal care, such as regular antenatal check-up during pregnancy and delivery in safe and hygienic conditions, can substantially reduce the risk of maternal mortality [5-6]. However, the Figure 1 shows that

over one-third (41%) of the women did not consult anybody for antenatal care during their last pregnancy. Those who consulted someone, the majority, however, consulted unqualified persons not competent enough to provide antenatal care.

Table 1 shows that only a small proportion of the women consulted qualified persons, such as doctors (4%), nurses (0.3%), and Family Welfare Visitors (9%). However, the larger group (36%) consulted the female outreach workers of the national family planning programme, called Family Welfare Assistants (FWAs), during their routine home visitation. The FWAs themselves are not competent enough of providing antenatal care. During their routine home visitation, they are mandated to refer the pregnant women to the Health and Family Welfare Centres (HFWCs) and/or Satellite Clinics (SCs) for regular antenatal check-ups by FWVs. (Only 9 per cent of the women reported to have consulted FWVs for antenatal care.) The trained traditional birth attendants and dais (untrained traditional birth attendants) were seldom consulted by the pregnant women for antenatal care. However, over one-third of the women reported that they consulted 'others' which includes quacks (unqualified medical practitioners), homeopathic practitioners, community workers, and relatives.

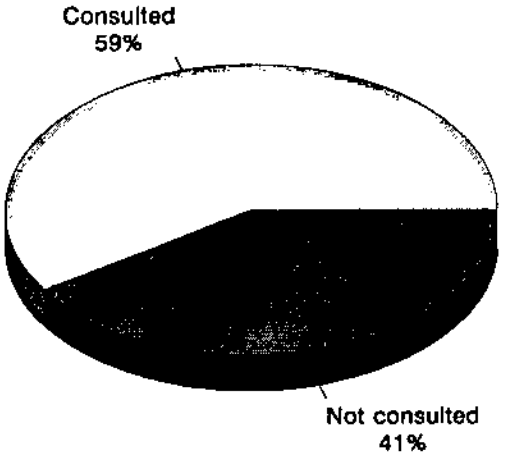


Fig.1. Percentage of women who consulted someone for antenatal care during last pregnancy

It is important to note that, although over half the women reported to have consulted someone for antenatal care, only 14 per cent actually received antenatal care from qualified persons. Among those who consulted someone, the majority of them consulted unqualified persons, such as quacks, homeopathic practitioners, FWAs, community workers and relatives, who are likely to be not competent enough to provide antenatal care.

Table 1. Types of persons who were consulted for antenatal care by women during last pregnancy

Types of persons	Consulted (%)	Not consulted(%)
Doctor	4.1	95.9
Nurse/Midwife	0.3	99.7
Family Welfare Visitor	9.3	90.7
Family Welfare Assistant	35.7	64.3
Trained TBA	0.6	99.4
Untrained TBA	0.8	99.2
Others	42.7	57.3

The Figure 2 shows the number of consultations made with someone for antenatal care by the pregnant women during their last pregnancy. It shows that 41 per cent did not consult anybody for antenatal care during last pregnancy. However, over one-fourth of the women consulted someone once or twice only for antenatal care. Only 5 per cent of the women received antenatal care 6 times or more during last pregnancy. According to Rule of Ten model of antenatal care, a pregnant mother needs to receive ten antenatal check-ups starting from week ten of pregnancy [14]. The data show that only one per cent received complete antenatal care as per Rule of Ten model of antenatal care.

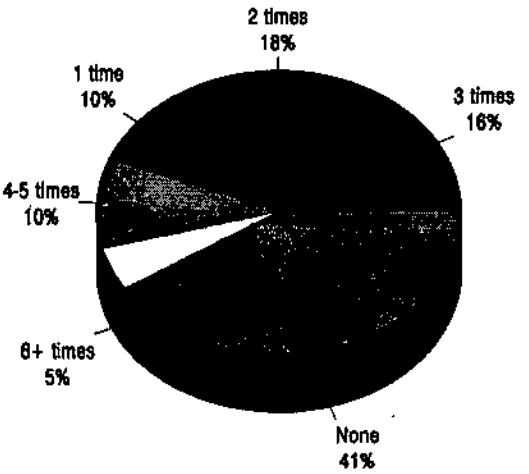


Fig. 2. Number of consultations made by women for antenatal care during last pregnancy

Delivery practices

Almost all the deliveries took place at homes, with only one per cent of the deliveries conducted at hospitals, Thana Health Complexes (THCs), and Health and Family Welfare Centres (FWCs). About three quarters of the deliveries were conducted at the homes of the women, while little less than a quarter of deliveries took place at their fathers' homes (Fig. 3). In fact, these deliveries were likely to be conducted in unsafe and unhygienic conditions, resulting in high maternal and neonatal mortality.

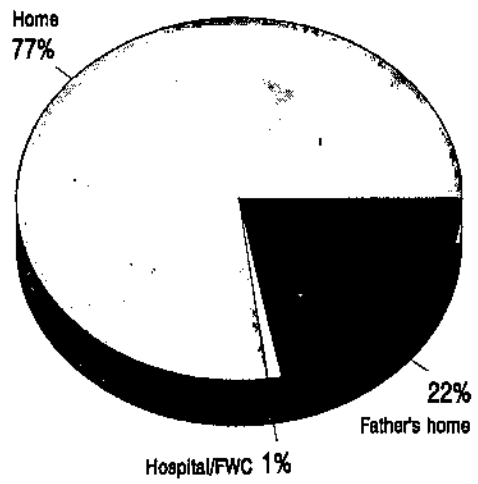


Fig.3. Distribution of places where deliveries were conducted

Most deliveries were conducted by untrained traditional birth attendants (Dais), relatives or neighbours generally in unsafe and unhygienic conditions, which often results in delivery-related complications, leading to maternal and neonatal morbidity and mortality. Only 2 per cent of the deliveries were conducted by doctors, nurses, and paramedics, while another 5 per cent were conducted by trained traditional birth attendants (TTBAs) (Fig. 4)

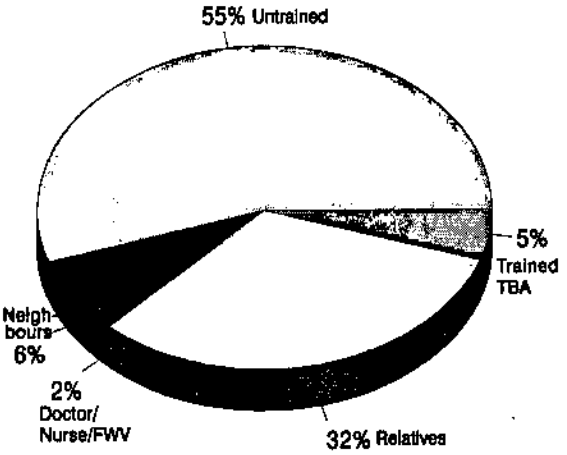


Fig.4. Types of persons conducting deliveries

Delivery-related complications

Delivery-related complication is one of the leading causes of maternal mortality [15]. Figure 5 shows the incidence of delivery-related complications, as reported by the sample women. It shows that over one-third of the women reported to have experienced delivery-related complications some time during their last pregnancy. The major delivery-related complications as reported by the women, included prolonged labour (71%), haemorrhage (18%), retained placenta (15%), eclampsia (7%), and laceration/tear (6%). (Fig.6).

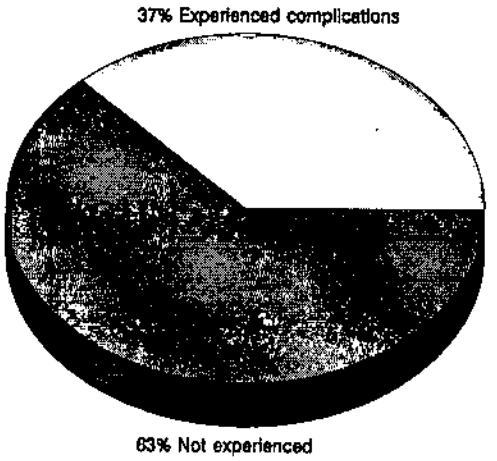


Fig.5. Pregnant mothers experiencing delivery-related complications

The incidence of delivery-related complications may be too high, because they are self-reported by the women who experienced them during their last pregnancy, and. as such, there is a probability of exaggeration or incorrect reporting. Among those who reported to have experienced delivery-related complications, 71 per cent reported "prolonged labour" which is undoubtedly very high. Many women may not recall the actual duration of their labour period during their last pregnancy, and, as such, there is a chance of exaggeration. Moreover, normal labor period might also be perceived by some women as "prolonged labour," which might have increased the incidence of reported delivery-related complications.

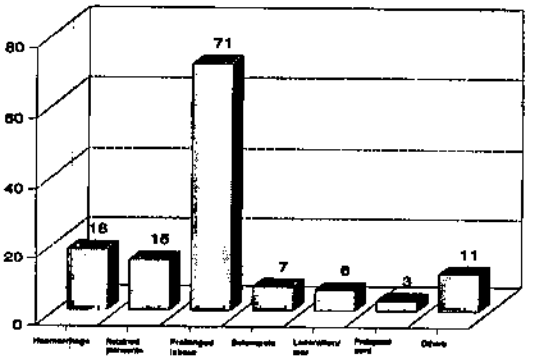


Fig. 6. Types of delivery-related complications

* Multiple responses were accepted

For the treatment of delivery-related complications, the majority of the women (55%) went to quacks or homeopathic practitioners who may not be competent of providing delivery services. Only 5 per cent consulted government health care providers, such as government doctors, FWVs, MAs, and FWAs, for the treatment of delivery-related complications, while another 11 per cent consulted qualified private physicians (medical graduate) for the same purpose. However, approximately one-third of the women, who had suffered some sorts of delivery-related complications, did not consult anybody (Fig. 7)

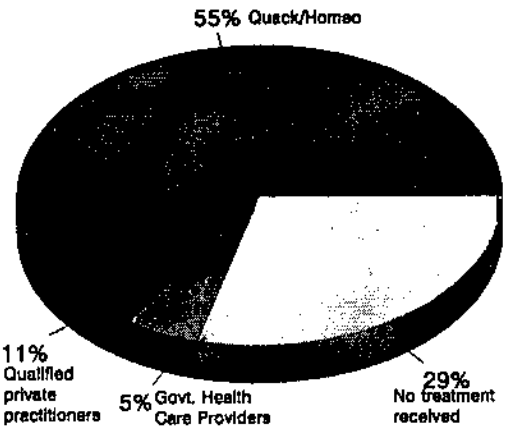


Fig. 7. Types of persons consulted for treatment of delivery-related complications

Determinants of Antenatal Care-seeking

Factors associated with seeking antenatal care

Viegas *et al.* [10] observed that about 80 per cent of women of the developing countries went through pregnancy and delivery without receiving any form of antenatal care. The data of the present study also show that 41 per cent of the rural Bangladeshi women did not seek antenatal care from anyone during their last pregnancy. It indicates that the current high rate of maternal mortality in Bangladesh can be reduced substantially through changes in antenatal care-seeking behaviour of the rural women. To investigate the demographic, socioeconomic, cultural and programmatic factors associated with seeking antenatal care, a logistic regression analysis was done. In this analysis, the dependent variable was: consulting someone for antenatal care during last pregnancy (dichotomous variable), and the independent variables included a number of demographic, socioeconomic, cultural and programmatic variables (see Data Analysis at page 6). The result of this analysis are presented in Table 2. It shows that certain demographic,

socioeconomic, cultural, and programmatic factors are significantly associated with seeking antenatal care.

Table 2: Logistic regression odds ratios: demographic, socioeconomic, cultural and programmatic factors associated with consulting someone for antenatal care

Variable	Odds ratio	Variable	Odds ratio
Age of women (years)		**Religion**	
<20 (RC)†	1.00	Hindu (RC)	1.00
20-24	0.80	Muslim	1.17*
25-29	0.41***		
30-34	0.18***	**Satellite Clinic visit**	
35-39	0.08***	Never visited (RC)	1.00
40+	0.04***	Ever visited	1.50***
Parity			
1-2 children (RC)	1.00	**HFWC visit**	
3-4 children	1.36***	Never visited (RC)	1.00
5+ children	2.36***	Ever visited	1.17***
Education			
No education (RC)	1.00	**Ownership of Radio/TV**	
1-4 years	1.07	None (RC)	1.00
5+ years	1.48***	Radio	0.96
		TV	1.20
Employment		Both Radio & TV	1.20
Housewife (RC)	1.00		
Work for earning	0.09		
		Geographical Area	
Monthly family expenditure		Project Area - I	0.71***
<Tk.1,000 (RC)	1.00	Project Area - II	1.66***
Tk.1,000-1,999	1.19*	Non-Project Area- I	1.24**
Tk.2,000+	1.36**	Non-Project Area-II (RC)	1.00

* $p<0.05$; ** $p<0.01$; *** $p<0.001$;
† RC = Reference category

Younger women are more likely to seek antenatal care than older ones. Women aged less than 20 years have nearly twice the probability of consulting someone for antenatal care than those who fall in the age-group of 35 years and above. The plausible reasons might be that younger women are relatively more exposed to the modern ideas, including the use of health-care facilities, which lead them to seek antenatal care.

As expected, seeking antenatal care is positively associated with parity. Women with more than four children have over two times probability of seeking antenatal care than those who have less than three children. This could be explained by the fact that women with higher parity have a higher risk of pregnancy-related complications, which leads them to seek antenatal care.

Female education is significantly associated with seeking antenatal care by rural women. Women who are educated for more than four years have a 48 per cent higher chance of seeking antenatal care than those who have no education.

Economic condition was also significantly associated with seeking antenatal care. The poor women are less likely to seek antenatal care. The probability of seeking antenatal care was higher for women belonging to households with average monthly family expenditure of Tk.2,000.00 or above compared to those with monthly household expenditures of less than Tk.1,000.00.

Religion was found to be associated with seeking antenatal care. The muslim women are more likely to seek antenatal care than Hindus.

Visit to Satellite Clinics (SC) and Health and Family Welfare Centres (HFWC) by the women was associated with seeking antenatal care. The women who had never visited SCs and/or HFWCs prior to their pregnancy are less likely to seek antenatal care than those who had visited these health centers.

A significant areal differential in terms of seeking antenatal care is found. The women living in Project Area-II and Non-Project Area-I area are more likely to seek antenatal care than those living in Non-Project Area-II, while the women in Project Area- I are less likely to seek antenatal care.

Factors associated with consulting a qualified person for antenatal care

As noted earlier, a small proportion of pregnant women (14%) consulted qualified persons, such as doctors, nurses, and paramedics (FWVs) for antenatal care during last pregnancy. To investigate the demographic, socioeconomic, culture and programmatic factors associated with consulting qualified persons, a logistic regression analysis was done. In this analysis, the dependent variable was: consulting qualified persons (e.g. doctors, nurses, and paramedics/FWVs) for antenatal care during last pregnancy (dichotomous variable), and independent variables included a number of demographic, socioeconomic, cultural and programmatic variables (see Data Analysis at page 6). The results of this analysis are presented in Table 3. It shows that certain socioeconomic, cultural and programmatic factors were significantly associated with consulting a qualified person for antenatal care.

Female education was significantly associated with consulting qualified persons for antenatal care. Women who have 5 years or more education have twice the probability of consulting a qualified person for antenatal care compared with the uneducated women.

As expected, poor women are less likely to go to the qualified persons for antenatal care. The women whose monthly family expenditure was Taka 4,000.00 or above have 65 per cent higher probability of consulting a qualified person than those whose monthly family expenditure was less than Taka 1,000.00 only. This relationship is very much expected, since consulting a qualified person always involves some costs on the part of the client. Poor rural women can not afford the consultation fees of qualified private practitioners and the cost of medicine prescribed by them. Besides, although health services at the Thana Health Complexes and Family Welfare Centres are provided free of charge, the clients are often required to spend money for transportation and, in many cases, for buying medicine.

Table 3: Logistic regression odds ratios: demographic, socioeconomic, cultural and programmatic factors associated with consulting qualified persons for antenatal care

Variable	Odds ratio	Variable	Odds ratio
Age of women (years)		**Religion**	
<20 (RC)†	1.00	Hindu (RC)	1.00
20-24	1.08	Muslim	1.30*
25-29	1.01		
30-34	0.94		
35-39	0.77	**Satellite Clinic visit**	
40+	0.94	Never visited (RC)	1.00
		Ever visited	1.68***
Parity			
1-2 children (RC)	1.00		
3-4 children	0.88		
5+ children	0.77	**HFWC Visit**	
		Never visited (RC)	1.00
Education		Ever visited	1.65***
No education (RC)	1.00		
1-4 years	1.32**	**Ownership of Radio/TV**	
5+ years	2.05***	None (RC)	1.00
		Radio	1.06
Employment		TV	1.60
Housewife (RC)	1.00	Both Radio & TV	1.40
Work for earning	0.79**		
		Geographical Area	
Monthly family expenditure		Project Area - I	1.23*
<Tk.1,000 (RC)	1.00	Project Area - II	1.72***
Tk.1,000-1,999	1.44**	Non-Project Area- I	0.95**
Tk.2,000 +	1.65***	Non-Project Area-II(RC)	1.00

* $p<0.05$; ** $p<0.01$; *** $p<0.001$

† RC = Reference category

Contrary to the commonly held views, housewives are more likely to consult a qualified person than those who work for earnings. One plausible reason might be that the housewives were economically better off than those who work for earnings. In rural areas, the scope of salaried job is very

limited, and, as such, economically better off women do not work. Usually, the poor women work as day labourers for earning money. Another plausible reason might be that the working women have less available time to go to qualified persons for antenatal care.

It is interesting to note that religion was associated with consulting a qualified person for antenatal care. The Muslims are more likely to consult qualified persons for antenatal care than the Hindus. One plausible reason might be that the Muslim households are relatively more visited by the family planning field workers (FWAs) [16], and, as such, they are more exposed to IEC activities of field workers, educating them about the need for and availability of antenatal care services.

Familiarity with HFWC and Satellite Clinic seems to have effects on consulting qualified persons for antenatal care. Those women who have ever visited the FWC and/or Satellite clinic are more likely to consult qualified persons (e.g. doctors, nurse, and FWVs) than those who have never visited these centres.

There is again significant variation among geographical areas with regard to consulting a qualified person for antenatal care. Women living in both the project areas are more likely to consult qualified persons than those living in the non-project areas. This could be explained by the fact that the Satellite Clinics and HFWCs are more regular, and their services are relatively better in the project areas compared to those in the non-project areas. Moreover, because of the project's interventions, the women of the project areas are more knowledgeable of the services provided from HFWCs and Satellite Clinics.

Factors associated with conducting delivery by qualified person

In rural Bangladesh, most deliveries are conducted by untrained traditional birth attendants called Dais, relatives, and neighbours, generally in a unsafe and unhygienic conditions, which often result in delivery related complications leading to maternal morbidity and mortality. Only seven per cent of the deliveries are conducted by qualified persons, such as doctors, nurses, paramedics, and trained traditional birth attendants (TTBA). To investigate the demographic, socioeconomic, cultural and programmatic factors associated with conducting delivery by a qualified person, a logistic

regression analysis was done. In this analysis, the dependent variable was: conducting delivery by a qualified person (dichotomous variable), and the independent variables included a number of demographic, socioeconomic, cultural, and programmatic variables (See Data Analysis at page 6). The results of this analysis were presented in Table 4. It shows that certain demographic and social factors were significantly associated with conducting delivery by a qualified person.

Table 4: Logistic regression odds ratios: demographic, socioeconomic, cultural and programmatic factors associated with conducting delivery by qualified persons

Variable	Odds ratio	Variable	Odds ratio
Age of women (years)		**Religion**	
<20 (RC)†	1.00	Hindu (RC)	1.00
20-24	0.95	Muslim	1.24
25-29	0.77		
30-34	0.52***		
35-39	0.41***	**Satellite Clinic visit**	
40+	0.35***	Never visited (RC)	1.00
		Ever visited	1.09
Parity			
1-2 children (RC)	1.00		
3-4 children	0.84		
5+ children	0.72*	**HFWC visit**	
		Never visited (RC)	1.00
Education	Ever visited	1.12	
No education (RC)	1.00		
1-4 years	1.06	**Ownership of Radio/TV**	
5+ years	2.01***	None (RC)	1.00
		Radio	1.22*
Employment		TV	2.24**
Housewife (RC)	1.00	Both Radio & TV	0.86
Work for earning	1.06		
		Geographical Area	
Monthly family expenditure		Project Area - I	1.41*
<Tk.1,000 (RC)	1.00	Project Area - II	2.58***
Tk.1,000-1,999	0.99	Non-Project Area- I	2.92***
Tk.2,000+	1.14	Non-Project Area-II(RC)	1.00

* $p<0.05$; ** $p<0.01$; *** $p<0.001$.
† RC = Reference category

The younger women and women with lower parity are more likely to have their delivery conducted by a qualified person. The plausible reason is that the 1st order birth usually carries some pregnancy-related complications, and, as such, these deliveries are more likely to be conducted by a qualified person.

As expected, illiterate women are less likely to have their deliveries conducted by a qualified person. Women with 5 years or more education have two times probability of having their deliveries conducted by a qualified person than the uneducated women.

Access to radio and TV was significantly associated with conducting delivery by a qualified person. The women who have radio or TV are more likely to have their deliveries conducted by a qualified person.

Significant variations in terms of conducting delivery by a qualified person among the geographical areas were also observed. Women living in the project areas, and in the Non-Project Area-I have higher probability of having deliveries conducted by a qualified person.

Discussions and Conclusions

Antenatal care is an acknowledged measure for the reduction of maternal mortality [15]. Antenatal care-seeking behaviour is a crucial factor that affects the use of antenatal care facilities. A study conducted in India shows apathy of pregnant women to come forward to avail of the antenatal care, though available even free of charge [12]. The results of this study suggest similar conclusion. The data show that only 41 per cent of the women came forward to consult someone for antenatal care. The national health and family planning programme provides antenatal care to rural women free of charge through its health centres (such as, Thana Health Complexes, Health and Family Welfare Centres, and Satellite Clinics), but the rural women seem reluctant to avail of the antenatal care services from these health centres. A very small proportion of the women (14%) consulted doctors nurses/midwives, and paramedics (FWVs) working in these health centres for antenatal care. For the treatment of delivery-related complications, only 5 per cent of the women went to the government health-care providers. This indicates gross under utilization of the government health-care facilities.

Among those who sought antenatal care, the majority of them consulted unqualified persons (e.g. quacks, homeopathic practitioners, field workers, relatives, and neighbours, etc.) who are not competent enough to provide antenatal care. It indicates that the rural women are not either aware of the availability of antenatal services provided from the health centres, or not conscious of the need for regular check-up during pregnancy by competent health personnel.

According to Rule of Ten model of antenatal care, pregnant mothers need to receive 10 antenatal check-ups starting from week ten of pregnancy (14). The data show that only one per cent of the pregnant women received complete antenatal care as per Rule of Ten model.

Most deliveries were conducted at homes by the untrained traditional birth attendants *(Dais)*, relatives, and neighbours, generally in a unsafe and unhygienic conditions. (Only 2 per cent deliveries were conducted by doctors, nurses, and paramedics, while another 5% were conducted by the trained traditional birth attendants). It indicates under-use of a large number of trained traditional birth attendants (one for each village) who have been provided training and delivery kits by the government.

The results of the logistic regression analysis show that certain demographic, socioeconomic, cultural and programmatic factors are significantly associated with antenatal care-seeking behaviour of rural women. The poor women are less likely to seek antenatal care and to consult a qualified person (e.g. doctor, nurse, and paramedic) for antenatal care. This is very much expected in a rural Bangladeshi society, because consulting a qualified person always involves some cost on the part of the clients. It is very difficult for a poor rural woman to afford the consultation fees for qualified private practitioners and the cost of medicine prescribed by them. Besides, though antenatal services are provided free of charge from the government health centres, the clients are often required to spend money for transportation and, in many cases, for buying medicine.

The young women, and those who have education for 5 years or more are more likely to seek antenatal care than the older and uneducated women. The plausible reasons might be that the young, and educated women are more exposed to the modern ideas, including the availability of health-care facilities which lead them to seek antenatal care.

Visit to health care centres prior to pregnancy appears to have an effect on antenatal care-seeking behaviour. The women who have already visited health centres (HFWCs and SCs) are more likely to seek antenatal care and to consult a qualified person than those who have never visited these health centres. This reinforces the inference that knowledge of the availability of health-care facilities leads to seek services from these facilities.

Younger women with lower parity are more likely to have their delivery conducted by a qualified person, such as doctor, nurse, paramedic, or trained traditional birth attendant. The plausible reasons might be that 1st order birth usually carries some pregnancy related complications, and as such these deliveries are more likely to be conducted by a qualified persons.

Recommendations

The results of the study suggest that there is a strong need for strategic measures to be undertaken to increase the use of health-care facilities, such as Thana Health Complexes (THCs), Health and Family Welfare Centres (HFWCs) and Satellite Clinics(SCs). Emphasis should be given to the information, education and communication activities of the national health and family planning programme so that the community people, particularly the uneducated and poor women could be educated on the need for regular antenatal check-ups and safe delivery by competent health personnel, i.e. doctors, nurses, and paramedics. Trained TBAs should be linked with the health and family planning service-delivery systems at different levels to ensure their better utilization. Female education should also be promoted.

Lastly, there is a need of further investigation to look into the effects of programmatic (e.g. accessibility, quality and cost of antenatal services) and cultural factors (e.g. religiosity, prejudice against antenatal care, women's role in decision-making process, subordinate status of women, etc.) on the antenatal care-seeking behaviour of rural Bangladeshi women.

References

1. International Conference on Population and Development (ICPD). Program for Action, Cairo, United Nations, 1994.

2. United Nations Children Fund. *Annual report 1996*. New York: UNICEF, 1996

3. World Health Organization . *Wkly Epidemiol Rec* 1991;47.

4. Mitra SN, Ali MN, Islam S, Cross AR, Saha T. Bangladesh demographic and health survey 1993-1994. Dhaka: National Institute of Population Research and Training, 1994.

5. Moller B, Lushino O, Meirik O, Gebre-Medhin M, Lindmark G. A study of antenatal care at village level in rural Tanjania. *Gynaecol Obstet* 1989;30:123-31.

6. Joseph CL. Identification of factors associated with delayed antenatal care. *J Natl Med Assoc* 1989;81:57-63.

7. Ekwempu CC. The influence of antenatal care on pregnancy outcome. *Trop Obstet Gynaecol* 1988;1:667-71.

8. Juncker T. Clientele and topics of services at the Family Welfare Centers and Satellite Clinics in rural areas of Bangladesh. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh, 1994. (MCH-FP Extension Project (Rural), Working paper, 109).

9. Khanum PA, Wirzba H, Haque I, Mirza T, Juncker T. Service delivery at the Union Health and Family Welfare Centers: the clients' perspective. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh, 1996. (MCH-FP Extension Project (Rural) Working paper, 118; ICDDR,B Working paper, 55).

10. Viegas OA, Singh K, Ratnam SS. Antenatal care: when, where, how and how much. *In:* Abdel R, Omran AR, Martin J, Hamza B, editors. High risk mothers and newborns: detection, management and prevention. Thun, Switzerland: Ott Publishers, 1987:287-302.

11. Nylander PP, Adekunle AO. Antenatal care in developing countries. *Baillieres Clin Obstet Gynaecol 1990;*4:169-86.

12. Pandit RD. Role of antenatal care in reducing maternal mortality. *Asia-Oceania J Obstet Gynaecol* 1992;18:1-6.

13. Kanitkar T, Sinha RK. Antenatal care services in five states of India. *In*: Singh SN, Premi MK, Bhatia PS, Bose A, editors. Population transition in India. Vol.2. Delhi: B.R. Publishing, 1989:201-11.

14. Dawn CS. How effective is antenatal care in India. *Obstet Gynaecol Fam Welf* 1994;1:9-10.

15. Ahmed S, Haque I, Barkat-e-Khuda, Hossain MB, Alam S. Abortion in rural Bangladesh: evidence from the MCH-FP Extension Project. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh, 1996. (MCH-FP Extension Project (Rural) Working paper, 121; ICDDR,B Working paper, 63).

16. Rahman MM, Haaga JG, Maru RM, Hossain MB. Access of rural women to family planning service: a study in Bangladesh. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh, 1993. (MCH-FP Extension Project (Rural) Working paper, 87). [Unpublished].

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 *Vibrio cholerae* 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.

CENTRE
FOR HEALTH AND POPULATION RESEARCH

MCH-FP Extension Project (Rural
Health and Population Extension Division (HPED)
International Centre for Diarrhoeal Disease Research, Bangladesh
GPO Box 128, Dhaka 1000, Bangladesh
Telephone: 871751-871760 (10 lines)
Fax: 880-2-871568 and 880-2-883116