

Abortion in Rural Bangladesh: Evidence from the MCH-FP Extension Project

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ABSTRACT

Abortion is a major cause of maternal morbidity and mortality in Bangladesh. This paper analyzes trends in induced and spontaneous abortions in two rural areas of Bangladesh. The analyses are done using a unique data set obtained by the Sample Registration System (SRS) of the ICDDR,B's MCH-FP Extension Project (Rural) for the period 1982-1995. Three percent (454) of the total pregnancies resulted in induced abortion and 6% (828) in spontaneous abortion. Logistic regression analysis showed that the probability of abortion increased with mothers' age, number of living children and prior contraception. Alarming, one-quarter of the women went for abortion in the second trimester of pregnancy. Many women had multiple abortions. A large number of the cases performed their own abortions by themselves or had them performed by untrained personnel. Findings suggest that there is a strong need for greater emphasis on health education, family planning, and post-abortion contraceptive counselling in rural Bangladesh.

INTRODUCTION

Bangladesh, with a population of over 120 million people in 144,000 sq. kilometre area, has the highest population density in the world. The per capita income is 220 dollars, one of the lowest in the world. Over 60 per cent of the population live below the poverty line. The adult literacy rate is only 30 per cent with low female enrollment in school. About 96 per cent of deliveries in Bangladesh take place at home, resulting in high maternal and neonatal deaths. The infant mortality rate is 87 per thousand, and the maternal mortality ratio is about 5 per one thousand live births (1), which is one of the highest in the world.

Despite these socio-economic constraints in Bangladesh, the Family Planning Programme has, however, achieved remarkable success in terms of raising the contraceptive prevalence rate by six-fold in two decades, and consequently, bringing about fertility decline (1). Currently, the contraceptive prevalence rate among all married women of reproductive age (MWRA) is 45 per cent, and the total fertility rate (TFR) is 3.4. However, the Bangladesh Family Planning Programme remains plagued with such problems as low continuation rate, method failure due to reliance on temporary methods, and high unmet need for contraceptives, leading to increased induced abortions in the country. Existing laws in Bangladesh, derived from the Penal Code of India, 1860, prohibit abortion, except to save the life of a woman. However, menstrual regulation (MR), an early termination within 6-10 weeks, without pregnancy confirmation, is widely provided through the network of the government health services since 1978. Menstrual regulation is also provided by private practitioners. A significant proportion of abortions is unsafe, leading to a large number of maternal deaths.

Globally, it has been estimated that about half a million women die each year of pregnancy-related causes with 99 per cent of them in developing countries (2). One of the five major causes of death in women of reproductive age in many parts of the developing world is complication due to abortion. It has been estimated that abortion-related deaths account for a minimum of 23 per cent of all maternal deaths around the world (3). Two out of five abortion procedures are unsafe, and one out of every 400

women who undergo an unsafe abortion dies (4). Fourteen per cent of all maternal deaths in South Asia can be attributed to unsafe abortion procedures.

It is critical to note that, in Bangladesh, complications related to pregnancy and child birth continue to be the leading cause of mortality among women of reproductive age as in many parts of the developing world. About 5,000 women in Bangladesh die each year due to complications from abortion (5-6). These deaths account for more than one-quarter of all maternal deaths. Hemorrhage and complications of induced abortion accounted for almost 40 per cent of maternal deaths in Matlab in the period from 1976 to 1985 (7-8).

Early hospital-based studies in Bangladesh found that approximately half of the admissions in gynecological units in major hospitals identified cases of complications of abortion (9). In 1978, about 60 per cent of the induced abortions were being performed by untrained practitioners (10). The majority cases of clandestine abortions were performed by insertion of foreign bodies like roots, sticks, etc.

Several studies on abortion practice have tried to estimate the number of abortions done annually in Bangladesh. It was found to be as high as 780,000 in 1978 (10) and included all abortions done by the government service providers and by the private and traditional practitioners. More recent estimates were 241,442 in 1985 (11) and 261,894 in 1991 (6). The two later studies considered abortions performed only by providers trained under the government Menstruation Regulation (MR) training programme and did not include those done by private practitioners and traditional abortionists.

In the absence of adequate health care services and management of complications of abortion, lasting consequences, such as compromised reproductive function, infertility or even death, may occur. Regardless of whether it is legal or not, women resort to abortion to terminate unwanted pregnancies. One of the clearest indications of unmet need for family planning services is the high incidence of abortion worldwide (12).

Research has demonstrated that contraceptive use increases following an abortion (13). Women are highly motivated to use any method after they

have experienced the pain and trauma associated with an induced abortion or have come for treatment for complications from an abortion. There is evidence that more than 80 per cent of women coming to clinics for abortion have accepted a method immediately afterward (14-17).

According to the Programme of Action (POA) of the International Conference on Population and Development (ICPD) in Cairo, the highest priority should be given to prevention of unwanted pregnancies, and all attempts should be made to eliminate the need for abortion. In circumstances where abortion is not against the law, such abortion should be safe. In all cases women should have access to quality services for the management of complications arising from abortion (2).

Therefore, to improve maternal health, reduce maternal mortality and morbidity, and achieve further coverage of contraceptive use by satisfying the unmet need of the population, one of the foremost tasks of the Bangladesh Health and Family Planning Programme is to identify the characteristics of and contraceptive use by women who have had induced abortions. This will help design interventions targeting IEC activities for the women at risk, raise their awareness about service use, as well as ensure both provision of good quality services and use of such services.

The objectives of this study were to: (a) assess the trends in abortion during the study period; (b) identify the characteristics of rural Bangladeshi women who have had abortions, who conducted the abortions, where the abortions were performed, and the pattern of contraceptive use by women before and after abortion.

METHODOLOGY

The data for this study were obtained from the Sample Registration System (SRS), a longitudinal data collection system administered by ICDDR,B's MCH-FP Extension Project (Rural) in two rural areas. Working within the government system, the Project conducts operations research to improve the health and family planning service delivery in rural Bangladesh.

The SRS data from Abhoynagar and Sirajganj *thana* (subdistrict) during the period from 1982 to 1995 were used for this study. Abhoynagar is located to the south-west of the capital city Dhaka, and has good communications with the rest of the country. A sizeable portion of the labour force works in mills and factories. Literacy is slightly higher than the national rate (18). The contraceptive prevalence rate (CPR) in the project area in Abhoynagar has increased from 23.5 per cent in 1983 to about 56 per cent in 1995 (19). Sirajganj *thana* is located to the north-west of Dhaka on the banks of the Jamuna river. The economy is mainly agricultural and river is the primary route for travel. The literacy in this area lags behind the national average in Bangladesh as a whole. Most households own no arable land (18). The CPR has risen steadily from 7.5 per cent in 1983 to 40 per cent in 1991, and has remained unchanged since then (19).

The SRS field interviewers have been visiting sample households regularly once every three months since 1982. They record the vital events that have occurred since their last visit, including any pregnancy outcome events, menstrual and contraceptive use status of the eligible women, and the visitation dates of government field workers.

For the purpose of this paper, "induced abortion" is defined as any pregnancy terminated intentionally by deliberate action within 28 weeks of gestation. The termination could be performed by medical, non-medical or clandestine means. The SRS records a pregnancy termination as induced when the respondent has provided all these information to the interviewer to classify it as induced.

Any pregnancy termination within 28 weeks of gestation that occurred 'naturally' without deliberate action and intention to terminate the pregnancy is regarded as a spontaneous abortion. The SRS records a

pregnancy termination as "spontaneous" when the respondent replies affirmatively to the question "did this occur 'naturally' without any deliberate action?"

However, as the interviewer classifies the type of abortion after talking with the respondents, it is quite likely that some of the reported spontaneous abortions were actually induced. It must be mentioned that abortion has always been a sensitive issue, and researchers have consistently faced problems in obtaining reliable information about abortion. Induced abortion is usually under-reported due to the social stigma associated with it. The induced abortion cases in this study refer to those which have been recorded in the SRS as induced as stated by the women themselves. Thus, although spontaneous and induced abortions are different entities that reflect different issues of etiology, risks, consequences, and preventive measures (20), both have been included in this analysis.

A woman was said to be a contraceptive user prior to abortion if she was using the method within a three-month period before conception. To record the contraceptive use status after an induced abortion, women were followed for one year from the date of abortion. During the study period, 10,080 women were covered by the SRS system. The observation periods for women varied, depending on the time of entry and exit from the system.

The proportions of induced and spontaneous abortions were compared for different categories of independent variables like age, parity, number of living children, education, dwelling space, provider and place of abortion and contraceptive use, etc. Bivariate analyses were carried out to determine the association of independent variables with the type of abortion, provider chosen, and with post-abortion contraceptive use. Logistics regression was run to estimate the net association of the independent variables with both types of abortion.

RESULTS

Fourteen thousand eight hundred and ninety-three (14,893) pregnancy outcome events were studied for 6,668 married women. These events included 454 (3%) cases of induced abortion and 828 (6%) cases of spontaneous abortion recorded for 1,087 women. Of these women, 158 (15%) had repeated abortions. The highest number of repeated induced abortion was 4, and the highest number of spontaneous abortion was 7. Of the 1,282 abortion cases, the period of gestation could be calculated for only 863 cases as data regarding last menstrual period were collected only since 1986. More than half (one-third of the induced and about two-thirds of the spontaneous abortions) took place beyond 12 weeks of gestation.

Figures 1-4 show the rising trend in abortion rates in the study areas during the observation period. During 1994-95, 130 of 1,000 pregnancy outcomes were terminated in abortion. There has been a steady rise in spontaneous abortion over the years in both the study areas. In comparison, induced abortion has increased at a much higher rate at Abhoynagar. This may suggest that women at Abhoynagar, being socio-economically better-off, are less inhibited to disclose their experience of induced abortion than those in Sirajganj.

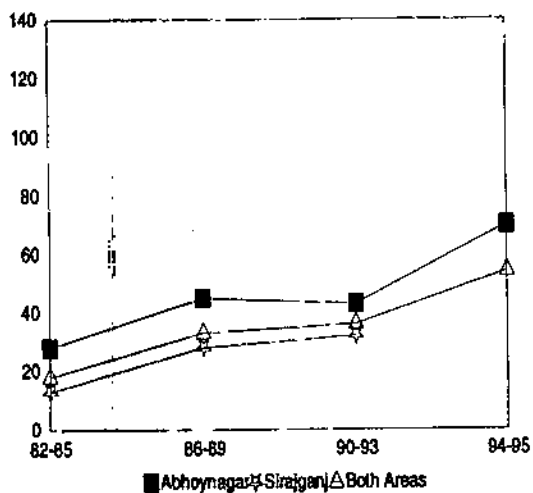


Fig. 1. Rate of induced abortion per 1000 pregnancy events

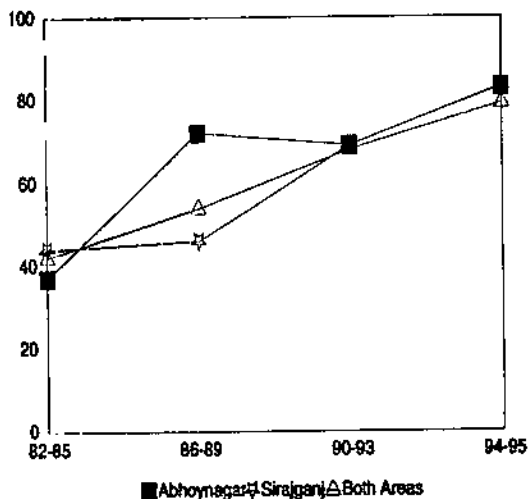


Fig. 2. Rate of spontaneous abortion per 1000 pregnancy events

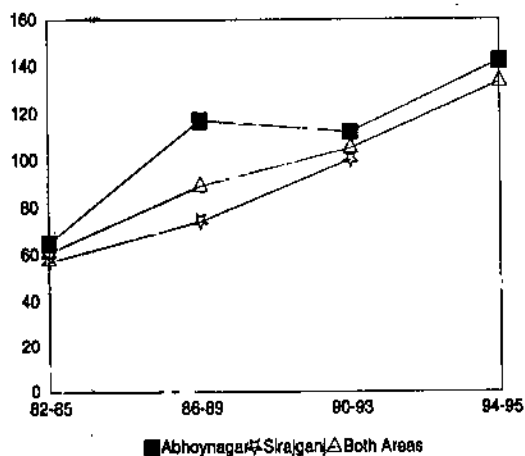


Fig. 3. Rate of total abortion per 1000 pregnancy events

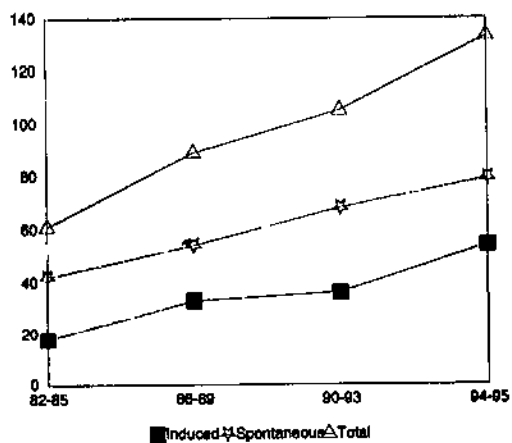


Fig. 4. Rate of abortion per 1000 pregnancy events

The mean age of women at the time of induced abortion was 28.9 years (median 28 years), and for spontaneous abortion, the mean age was 24.9 years (median 23 years). The youngest woman having an induced abortion was 14 years, and the oldest was 50.5 years. Two-thirds of all women in the study had no education, nearly one-quarter belonged to the below-primary level education group and about 11 per cent had education above the primary level. One out of every eight women was non-Muslim. Less than 2 per cent of all women were working outside their homes, and this population included 39 students. Table 1 presents the percentage of pregnancies aborted by different socio-demographic variables.

The percentage of pregnancies which ended in abortion was higher among educated women, and women who were employed including students. The probability of abortion was slightly higher for non-Muslim women. Induced abortion rose with age, while the pattern was less clear regarding spontaneous abortion.

Table 1. Percentage of pregnancies aborted and number of pregnancy outcomes by socio-demographic variables at Abhoynagar and Sirajganj: 1982-1995

Characteristics	Induced abortion (n = 454)	Spontaneous abortion (n = 828)	Total abortion (n = 1,282)	Total no. of pregnancies† (n = 14,893)
Education (year)**				
0	2.3	5.5	7.8	10,292
1-5	4.1	5.5	9.6	3,330
5+	5.9	6.0	11.9	1,271
Age (year)**				
< 20	1.8	6.5	8.3	3,932
20-24	1.8	5.2	7.0	4,436
25-29	3.4	4.9	8.3	3,050
30-34	5.2	5.4	10.6	1,918
35-40	6.3	4.8	11.1	1,113
40+	7.8	7.4	15.2	444
Occupation*				
Housewife	3.0	5.5	8.5	14,719
Working	8.0	7.5	15.5	174
Religion				
Muslim	2.9	5.6	8.5	13,367
Non-Muslim	3.9	5.0	8.9	1,526
Living children**				
0	1.3	6.7	8.0	4,450
1-2	2.1	4.6	6.7	5,825
3-4	3.9	4.1	8.0	2,964
5+	9.5	8.2	17.7	1684

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

† Including livebirths and stillbirths

The percentage of induced abortion increased with the number of living children, especially when the number was more than two. Spontaneous abortion was seen to be quite high during the first pregnancy in this study. Also, the rate of any types of abortion was high, when the age of the last born living child was less than one year (Table 2).

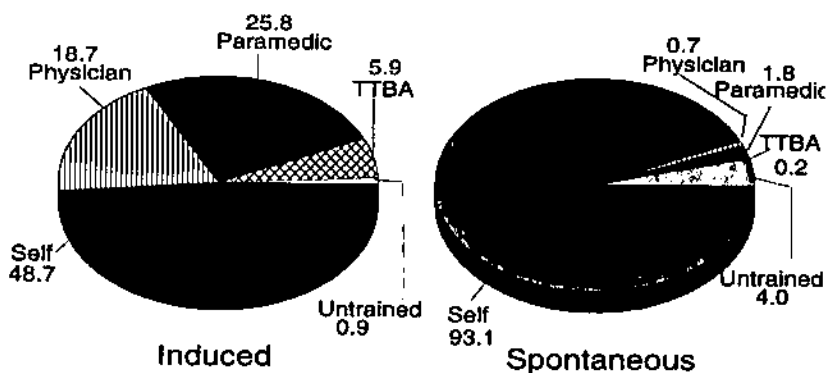
Table 2. Percentage of pregnancies aborted and number of pregnancy outcomes by age of the last born living child at Abhoynagar and Sirajganj: 1982-1995

Age of last born living child	Abortion			Total no. of pregnancies† (n = 14,893)
	Induced (n = 454)	Spontaneous (n = 828)	Total (n = 1,282)	
No previous birth	1.5	6.8	8.3	3,724
0 - 12 months	14.0	17.4	31.4	242
13 - 24 months	4.3	6.3	10.6	2,213
25 - 36 months	2.2	4.4	6.6	3,872
37 - 48 months	2.6	4.3	6.9	2,293
49 - 60 months	2.8	4.7	7.5	1,158
61 - 72 months	2.8	3.5	6.3	598
72 + months	9.0	5.9	14.9	793

† Including livebirths and stillbirths

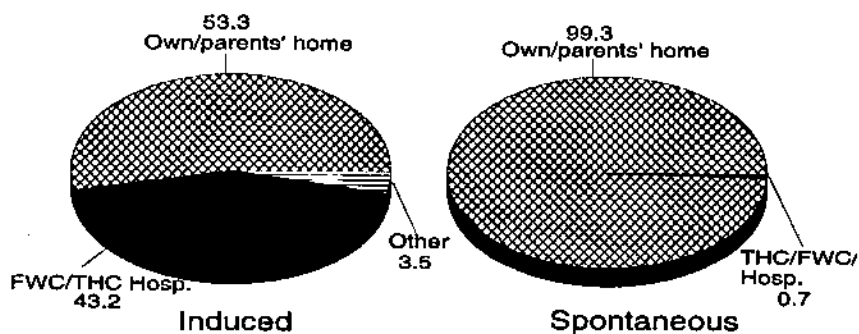
Place and Provider of Abortion Services

Figure 5 and 6 present data regarding place and provider of induced and spontaneous abortion services. Although home-delivery is universal in rural Bangladesh, this study shows that a substantial number of rural women sought medical help for induced abortion. It is, nevertheless, alarming that half of the induced abortions were performed by the woman herself or by untrained personnel. Also, 57 per cent of the induced abortions were performed at home or at non-medical facilities.



Data source: SRS

Fig. 5. Percentage distribution of abortions by provider at Abhoynagar and Sirajganj: 1982-1995



Data source: SRS

Fig. 6. Percentage distribution of abortions by place at Abhoynagar and Sirajganj: 1982-1995

Education of women played a significant role in determining the provider and place of induced abortion services (Table 3). The proportion of women who used Trained Traditional Birth Attendants (TTBAs), paramedics, and physicians, was higher among those with above primary education, and more than 60 per cent of them had these abortions in hospitals or other medical facilities.

Table 3. Percentage distribution of type of provider and place of abortion by women's education at Abhoynagar and Sirajganj: 1982-1995

Provider/Place	Induced abortion			Spontaneous abortion		
	No education (n=239)	Up to primary (n=139)	Above primary (n=76)	No education (n=568)	Upto primary (n=183)	Over primary (n=77)
Provider:						
Untrained						
- Relative	0.8	0.0	0.0	3.7	3.3	5.2
- Non-relative	0.4	0.7	0.0	0.2	0.6	0.0
Trained TBA	3.3	8.0	10.5	0.0	1.0	0.0
Other paramedic	22.6	29.0	30.3	1.0	3.3	4.0
Physician	14.0	18.0	35.5	0.5	0.0	4.0
Other (self)	59.0	44.6	23.7	93.5	91.2	84.2
No inform.	0.0	0.0	0.0	1.1	0.6	2.6
Total	100.0	100.0	100.0	100.0	100.0	100.0
Place:						
Own/parents' home	65.3	46.7	27.6	99.0	100.0	95.0
FWC/THC/Hospital	31.8	51.1	63.2	1.0	0.0	5.0
Other	2.9	2.1	9.2	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

Area of dwelling space - an indicator of household economic status - was related to the type of provider sought for induced abortion. For example, the larger the dwelling space, the more likely were the women to go to paramedics and physicians (Table 4). About one-third of the induced

abortion cases attended by paramedics and about one-fifth of those attended by physicians were done at home. However, 77 per cent of the cases attended by paramedics and 62 per cent of the cases attended by medical doctors were operated in a medical facility (Table 5). Interestingly, trained TBAs also used medical facilities for performing abortions. Out of the 828 cases of spontaneous abortions, only 21 were attended by trained paramedics or doctors, and only five managed at medical facilities.

Table 4. Percentage distribution of type of provider of induced abortion services by dwelling space at Abhoynagar and Sirajganj: 1982-95

Provider	Dwelling space (square ft.)		
	0 - 150 (n = 40)	150 - 300 (n = 126)	Over 300 (n = 187)
Untrained relative	0.0	0.8	0.5
Untrained non-relative	0.0	0.8	0.5
Trained TBA	5.0	3.2	8.0
Other paramedic	20.0	28.6	26.2
Physician	12.5	13.5	22.0
Other (self)	62.5	53.2	42.8

Table 5. Percentage distribution of place for induced abortion by type of provider at Abhoynagar and Sirajganj: 1982-95

Provider	No.	Own home	Other's home	Parents' home	FWC/THC/Hospital	Other
Untrained relative	2	50.0	0.0	50.0	0.0	0.0
Untrained non-relative	2	100.0	0.0	0.0	0.0	0.0
Trained TBA	27	3.7	3.7	3.7	85.2	3.7
Other paramedic	117	24.0	4.3	3.4	66.0	2.5
Physician	85	13.0	1.2	3.5	73.0	9.3
Other (self)	221	75.0	1.4	6.3	15.0	2.3

Patterns of Contraceptive Use and Abortion

Contraceptive use patterns among women who have had induced abortions are shown in Figure 7. There was no pre-abortion contraceptive information for 59 women. Although post-abortion contraceptive information was available for these women, they were excluded from this particular analysis. Contraceptive use following induced abortions increased from 37 to 59 per cent during 1982-88 and from 47 to 76 per cent during 1989-95. During the period 1982-88, pill use more than doubled, and there was an increase in the use of intrauterine device (IUD). Use of injectables rose from zero to 6 per cent. In the period 1989-95, post-abortion pill use nearly doubled with a marked increase in both injectable and IUD use. There were two cases of

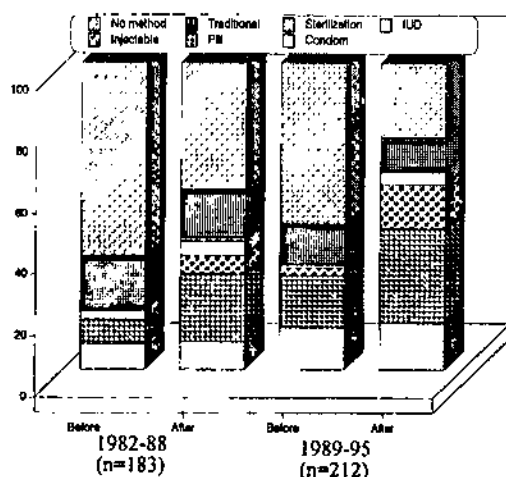


Fig. 7. Contraceptive use before conception and after-induced abortion at Abhoynagar and Sirajganj: 1982-1995

sterilization who became pregnant and had to undergo induced abortion. One was a case of tubectomy and the other's husband had a vasectomy done earlier. After abortion, the latter switched to pills but the woman who had tubectomy, did not accept any methods. Only two women went for sterilization after abortion during 1982-88, and there were no cases of sterilization during 1989-95, either before or after abortion, indicating the poor acceptance of permanent methods.

In the period 1982-88, post abortion contraceptive use was higher when the provider was a trained paramedic (Family Welfare Visitor). In the later period (1989-95), contraceptive use was higher among women having self-induced abortion. Table 6 shows that previous experience on the use

of a contraceptive method was related to the method adopted after abortion. About two-thirds of pill and condom users and 30 per cent of IUD users, prior to induced abortion, returned to their old method. Forty-five per cent of the traditional method users continued with the same method even after an induced abortion. Surprisingly, only half of the non-users adopted a FP method after abortion, and the remaining half continued without using any methods.

Table 6. Percentage distribution of post-abortion use of FP method by that of pre-conception FP method (induced abortion) at Abhoynagar and Sirajganj: 1982-1995

Pre-conception method use	Post abortion							
	Total (n=454)	FP method (n=164)	Cond (n=61)	Pill (n=113)	Inject (n=42)	IUD (n=18)	Sterili (n=2)	Trad (n=54)
No method	226	47	8	22	12	3.5	0.5	7
Condom	44	7	64	9	9	2	0	9
Pill	51	12	0	65	10	4	0	10
Injectable	5	20	20	20	20	20	0	0
IUD	7	29	14	0	14	29	14	0
Sterilization	2	50	0	50	0	0	0	0
Traditional	60	10	7	28	5	5	0	45
No information	59	64	17	12	0	2	0	5

Logistic regression analysis, incorporating all the differentials studied, was done using three different models: one for induced abortions only, one for spontaneous abortions only, and one for both together. Table 7 shows the result of the regression for all three models. The odds ratios of some of the more important variables are illustrated in Figure 8-11. The result of the logistic regression, by and large, confirmed the findings of the relationship of the different variables in the bivariate analyses. Women at Abhoynagar were 29 per cent more likely to experience an abortion, and 37 per cent more likely to have an induced abortion. These results were highly significant ($p < 0.001$). The number of abortions had increased over time, especially for spontaneous abortion. Induced abortion increased significantly with women's age; it also increased with education up to primary level although this finding was not significant. Women from households with less dwelling space were 30 per cent more likely to experience spontaneous abortion, but this relationship was not significant for induced abortions. Induced abortion was positively and significantly related to the number of living children ($p < 0.001$). The first pregnancy and any pregnancy within two years of the last live birth was twice as likely to be terminated either by spontaneous, or induced abortion. Use of contraceptive methods within a 3-month period prior to conception was highly significant for abortion, especially for induced abortion ($p < 0.001$). The logistic regression analysis also showed that housewives were twice as likely to undergo an induced abortion than women who were employed. However, it may be mentioned that there were only 14 working women compared to 440 housewives who had undergone induced abortion.

Table 7. Logistic regression odds ratios: association between socio-demographic factors and induced and spontaneous abortion at Abhoynagar and Sirajganj: 1982-1995

Factors	Induced abortion	Spontaneous abortion	Total abortion
Area			
Sirajganj (RC)†	1.00	1.00	1.00
Abhoynagar	1.37***	1.17	1.29***
Maternal age	1.04***	0.99	1.02**
Year of abortion			
1982-85 (RC)	1.00	1.00	1.00
1986-89	1.19	0.99	1.09
1990-93	1.20	1.29*	1.26*
1994-95	1.53	2.23***	1.95***
Maternal education			
No education (RC)	1.00	1.00	1.00
Primary	1.27*	0.91	1.10
Above Primary	1.10	0.98	1.04
Woman's occupation			
Working outside home (RC)	1.00	1.00	1.00
Housewife	2.12	1.75	2.06
No. of living children			
None (RC)	1.00	1.00	1.00
1-2	1.29***	0.96	1.07
3 +	2.01*	1.34	1.64**
Age of last born living child			
First birth	2.17***	1.59*	1.93***
Less than 2 years	2.03***	1.75***	2.03***
2+ years (RC)	1.00	1.00	1.00
Prior contraceptive use			
Non-user (RC)	1.00	1.00	1.00
User	2.39***	1.35*	2.00***
Mobility			
No (RC)	1.00	1.00	1.00
Yes	1.03	0.81	0.91
Dwelling space			
0-150 (RC)	1.00	1.00	1.00
151-300	1.05	0.69***	0.82*
300+	1.12	0.74*	0.89
Likelihood statistics			
-2 Log likelihood	4269	4163	6797
χ^2	268	79	255
Observation	9220	9220	9220
DF	16	16	16

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

Intercept

-5.78

-3.11

-3.84

† RC = Reference category

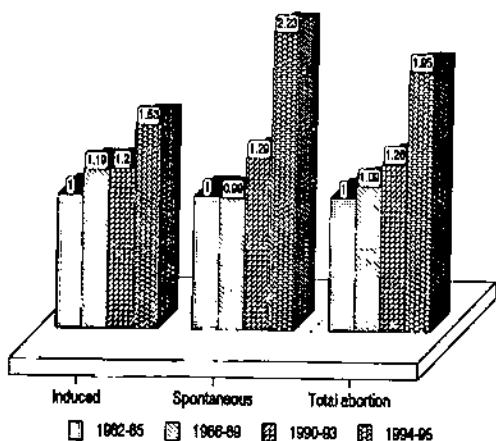


Fig. 8. Odds ratio of the effects of year on abortion controlling for the effect of other covariates

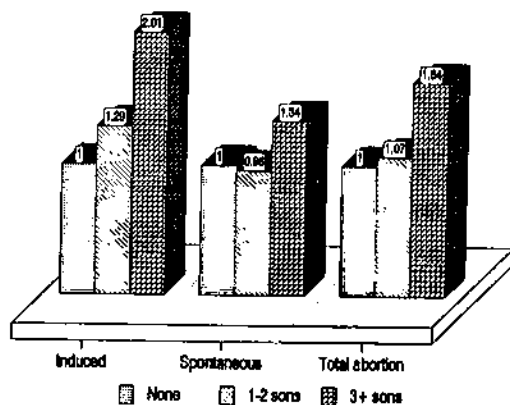


Fig. 9. Odds ratio of the effects of number of living children on abortion controlling for the effect of other covariates

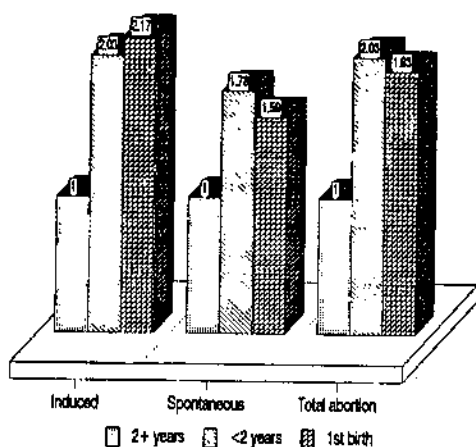


Fig. 10. Odds ratio of the effects of age of last born living child on abortion controlling for the effect of other covariates

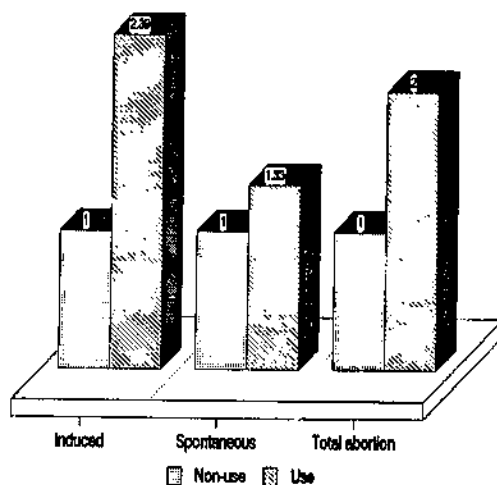


Fig. 11. Odds ratio of the effects of prior contraceptive use on abortion controlling for the effect of other covariates

DISCUSSION

Many rural Bangladeshi women are resorting to abortion, as indicated by the increase in the rate of abortion in recent years. The incidence of induced abortion in ICDDR,B's MCH-FP Extension Project (Rural) areas is comparable to that of the national average (21). In a recent study, based on data from another rural area of Bangladesh, the rate of abortion was found to be 20 per 1000 live births (22). Most of the study women have low education and economic status.

It is alarming to note in this study that more than half of all abortions, including one-third of the induced and two-thirds of spontaneous abortions, took place beyond 12 weeks of gestation. Data from a rural hospital in one of the study areas (23) also showed that more than 45 per cent of the cases of complications of abortion came after the first trimester of pregnancy. It is likely that some of the spontaneous abortions reported may have actually been induced. It is universally accepted that it is virtually impossible to obtain reliable data on abortion from demographic surveys (21). About 20 per cent of the respondents of the 1989 Bangladesh Fertility Survey reported having had a spontaneous abortion and only 3 per cent said that they had an induced abortion (21). Due to the social stigma attached to abortion, women usually try to conceal the fact. A woman may resort to abortion if she has little or no access to family planning services or has discontinued use because of side-effects or health-related reasons, and thereby, have an unwanted pregnancy. Therefore, to terminate an unwanted pregnancy, a woman is often willing to take any risk, including life-threatening assistance from non-medical and clandestine sources, or in extreme cases, even death.

|| That a substantial number of rural women seek medical help for induced abortion is perhaps a reflection of the impact of the Menstrual Regulation programme in Bangladesh. However, this also reflects unmet need for family planning.

The study has shown that women with two or more children have the highest probability of having an abortion if they have a subsequent pregnancy. This indicates that rural Bangladeshi women are determined to plan their family size. Previous studies (24-25) found that women who have

induced abortions have an average of three living children and at least one living son. The probability of a pregnancy ending in abortion was very high, if it occurred within one year of the last live birth.

The study shows that half of the induced abortions were potentially unsafe, done at home by non-medical persons or by women themselves. The less educated and economically disadvantaged women did not utilize the government services and resorted to unsafe abortions. Different types of life-threatening complications result from unsafe abortions. Infection, hemorrhage and incomplete abortion are common problems and may be further complicated by trauma to the reproductive system and toxic reactions to chemical drugs or herbs used for abortion (26).

Abortion has a complex interrelation with contraceptive use (13). Up to a certain point, a rise in contraceptive use is also accompanied with a rise in abortion. Higher contraceptive use leads to a higher contraceptive failure rate, and therefore, a greater need arises for termination of unwanted pregnancies. However, at a later stage of fertility transition, when effective use of modern contraceptive methods increases, abortion rates tend to fall (13). In a recent study based on data from Matlab, Bangladesh (27) where ICDDR,B has operated a comprehensive maternal and child health and family planning programme since 1977, it was shown that contraceptive failure is a major problem for users of all temporary methods except for injectables and the IUDs. The cumulative probability of contraceptive failure within one year of method acceptance for the pill was as high as 15 per cent. It was estimated that, even without considering the pregnancies terminating in abortion and stillbirth, about 25 per cent of births in Bangladesh reflect contraceptive failure (27). Data from later years show that side-effects are one of the main reasons for discontinuing modern methods (28). A number of women in the present study had used contraceptive methods, but had failed to continue due to various reasons. A few of these, including one tubectomy case, were contraceptive failure cases. Therefore, there is a need to strengthen health education for grassroots workers so that they can give appropriate messages to the community, such as, "contracept to avoid becoming pregnant and reduce the need for abortion in case of unwanted pregnancies."

In a study based on clinic data (29) it was shown that women with MR experience had better contraceptive continuation, especially when they were over 25 years and had more than two children. This is an indication that contraception is effective after induced abortion. Similarly, in the present study, contraceptive use increased following induced abortions. This was more marked during 1989-95 when contraceptive use after abortion rose from 47 to 76 per cent. This period coincides with time when the Government had increased the number of family planning field workers from 13,000 to 23,500. These workers supply contraceptives to women in their homes. It is important to note that the remaining cases who did not accept any method represent "missed opportunities" for family planning services. Therefore, providing good quality reproductive health and family planning services will result in higher acceptance and continuation of contraception, and thereby, reduce the incidence of abortion. Also, a better method-mix in favour of longer-acting methods should be promoted, especially among older, high-parity women, to reduce the discontinuation rate, and thereby, the need for abortion.

About 15 per cent of the women in this study had repeated abortions. This highlights the importance of post-abortion contraceptive counselling. The post-abortion period is an important time to accept contraceptives. Women who have unwanted pregnancies should have ready access to reliable information and compassionate counselling (2) so that they can take up an appropriate method and prevent another unwanted pregnancy. Thus, the accessibility and availability of reproductive health and family planning services need to be further improved by meeting the unmet demand for contraception.

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A Brief History of ICDDR,B

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