

H. AIA 7-7

Prevalence of Post-partum Genital Tract Infections in the mother and Selected Neonatal Infections in Rural Bangladesh

*Rukhsana Gazi
AMR Chowdhury
Shah Noor Mahmud
Fazlul Karim*

May 1996

**Research and Evaluation Division, BRAC
66, Mohakhali C/A, Dhaka 1212**

Abstract:

The present study was designed to estimate the prevalence of post-partum infection and two neonatal infections in rural Bangladesh and to identify the factors and determinants related to these infections. In this study, a total of 400 women (200 from WHDP area and 200 from comparison area) were interviewed retrospectively through structured questionnaire.

In general, the prevalence of post-partum infection and selected neonatal infection were lower in WHDP area than those of the comparison area. But the difference in prevalence rates between the program and comparison areas were not statistically significant. Again, the presence of trained TBAs during delivery could not provide beneficial effect in the outcome of post-partum infection in the program area. In the program area, the mothers were still found to be using indigenous materials on cord of the neonates. Although, the results were less conclusive due to small number of samples, the delivery complications (prolonged labour, leaking membrane etc.) and the cultural factors such as using unclean water for washing the materials used as vaginal pads found to be associated with increased risk of post-partum infection.

<u>Table of contents:</u>	<u>Pages</u>
1. Introduction.....	1
2. Study Objectives.....	2
3. Methods and Materials.....	3
4. Findings.....	3
5. Discussion.....	7
6. Conclusions.....	9
7. Recommendations.....	9
8. References.....	10
9. Appendix1.....	12
10. Appendix2.....	13

- 4.1.2. Ante and post-natal care received by the mothers

Out of 186 women in the program area 164 (88.1%) received at least one antenatal visit by BRAC program organizers and 155 (83.3%) women received at least one post-natal visit by BRAC program organizers. Of the total 186 women in the program area, 155 (83.7%) completed the TT vaccination during pregnancy. Whereas, the rate of completion of vaccine in the comparison area was 79.2%.

4.1.3 Relationship between post-partum infection and delivery practices

The rate of infection among women who were delivered by the trained TBAs in the program area was 10.1% which was higher than that of the group delivered by the untrained TBAs in the program area (8.4%)(Table-8). Within the program area, the infection rate was higher (12.5%) in the deliveries where the TBAs did not wash her hands before conducting delivery than the deliveries where the TBAs washed her hands (8.6%) (Table-9). However, the data did not show any relationship between hand washing and risk of infection in the comparison area. Similarly, within the program area, the rate of infection was higher (9.8%) among deliveries where the TBAs inserted hands inside the birth canal than the deliveries where this practice was not performed (8.6%)(Table-10). In the deliveries where TBAs put oil inside the birth canal of the mother during delivery, the infection rate was 10.7% in the comparison area which was higher than in the program area (6.7 %)(Table-11).

In the program area, there were 11 mothers who had experienced an early rupture of embryonic membrane (before 24 hours of delivery) but none developed an infection (Table-12). In the comparison area, 15 mothers had an early rupture of the membrane and 2 developed infection. Among the mothers who had experienced a perineal tear during delivery, 13.5% mothers developed infection following delivery in the comparison area which was higher than that of the program area (7.3%). The infection rates were higher among mothers who had experienced a prolonged second stage of labour (time interval since the foetal part is seen through the birth canal to delivery) than those who had no such history both in program and comparison area. However, the infection rate was higher in the program area (15.7%) than in comparison area (14.4%) among mothers who experienced a prolonged second stage of labour (Table-12).

4.1.4 Relationship between post-partum infection and traditional practices of seclusion after childbirth

Among women who observed seclusion for seven days, the rate of infection was higher in the comparison area (14.3%) than that of the program area (7%) (Table-13). Among the mothers observing seclusion for more than seven days, the infection rates were similar in the two areas (10%). But the data did not show a consistent result in program and comparison area showing correlationship between period of seclusion and rate of infection. Women both in program and comparison area used rags (part of old saree) or old jute mats to absorb the lochial discharge (Table-14). The infection rates were higher among women who used jute mats and who washed these rags or mats with unsafe water (water from a ditch, pond or river)(Table-15).

4.2 Umbilical Cord Infection

The rate of umbilical cord infection (foul smelling and discharging umbilicus) among neonates was lower in the program area (3.8%) than in the comparison area (6.2%) (Table-16). Of the 7 umbilical cord infection cases in the program area, 6 occurred within the first week after birth. Of 12 infections in the comparison area, 9 occurred during this period. The rates of infection were higher among neonates who had traditional materials such as: vermilion, talcum powder, ash, oil, spit, blood from the cord, milk applied to the cord. Again, among the neonates who had such history, infection rate was higher in the comparison area (6.5%) than in the program area (4%). Strawmats were used for cord cutting in 14 cases in the comparison area, whereas, this practice was performed in only one case in the program area. The data could not show any association between use of unboiled instruments for cord cutting and tying and infection, because of small samples.

4.3 Neonatal Eye Infection

The rate of neonatal eye infection (sticky and watery red eye) in the program area was lower (5.9%) than in the comparison area (7.8%) (Table-16). Of 11 neonatal eye infections in the program area 8 resulted within the first week of life, whereas 10 eye infections out of 15 infection cases in the comparison area resulted within this period.

5. DISCUSSION

For BRAC it is important to know whether interventions such as ante-and post-natal care and TBA training could play a role in preventing post partum infections. Although in this study we found a lower rate of post-partum infection in the program area, the difference between the program and the comparison areas was not significant. In general, the prevalence of post partum infection found in the present retrospective study population (9.7-10.2%) was lower than that reported by the prospective study by Goodburn et al (14.7%)⁷. A recent validation study in the Philippines has reported that the best predictor of post-partum sepsis could be a combination of symptoms like the presence of high fever during labor or delivery or post-partum and a very foul vaginal discharge during post-partum¹³. In rural Bangladesh, 68% women with such symptoms had evidence of vaginal, cervical, or pelvic infections confirmed by physical examinations and laboratory tests¹⁴. Maternal Morbidity study⁷ in rural Bangladesh also found a good correlation between the diagnosis of infection based on responses to questions and uterine tenderness as determined by physical examination. Abnormal discharge might be identified by women if specific question about suspicious characteristics of discharge in terms of colour, texture, odour etc. are asked¹⁵.

This type of investigation should ideally adopt a prospective study design to minimize the recall bias, but this could not be done because of logistical problems. Another limitation of the study is that we could not use laboratory tests for the confirmatory diagnosis of post-partum infections. It is obvious that laboratory examinations provide the best representation of disease conditions, but they are also very expensive, and it is logistically difficult to apply medical tests in rural communities.

We did not find any association between the training of TBAs and a lower rate of post-partum infection. Either this particular intervention had no impact because the TBAs failed to apply their learning, or because safe birth practices themselves have no capacity to control post-partum infection. We found a positive correlation between the absence of hand washing before conducting delivery or the insertion of hands inside birth canal, and the development of an infection. A prolonged second stage of labour was found to be associated with an increased risk of infection, which was consistent with the findings of a study done Nairobi, Kenya¹. These findings indicate that the trained TBAs in the program area are still performing harmful

practices such as manipulation, especially in the cases of prolonged and difficult deliveries. Observational studies needed for confirmation of this finding.

Post-partum infection was found more common among the mothers where the occupation of the household heads were day labor and agricultural work. TG mothers are always socio-economically more vulnerable than the NTG and the. In this study an increased level of education did not lower the risk of infection. A lower infection rate in the program area was seen in the non-educated group; accessibility of mothers to maternal health information and education perhaps played a positive role. Infection was found to be associated with a younger age, multi parity, and multi-gravidity; this is consistent with other studies^{12,16}. Relatively unalterable factors such as; multi parity, older age, previous abortion or stillbirth were found to be equally important in the program and comparison areas. More than 80% of the mothers in the program area received ante and postnatal visits. The infections which were attributed by delivery related complications such as prolonged labour, leaking membrane, perineal tear were mostly unpredictable.

Traditional practices after childbirth related to infection such as using rags and jute mats as vaginal pads and using unsafe water for cleaning are still being practiced. Another study¹⁷ from rural Bangladesh on post-partum infection has also reported that use of old rags to absorb lochial discharge provides the highest attributable risk for the outcome of post-partum infections. The program should give more importance to particular hygiene-related issues immediately after delivery and during post-natal visits. Program organizers need to better educate mothers and TBAs about perineal hygiene after childbirth.

Most of the post-partum infections occurred in the first week after delivery. Among women who observed seclusion for 1-7 days, post-partum infection rate was two times higher in the comparison area than in the program area. Home care (post-natal visits) during this period of seclusion might have some beneficial effects.

Though the rates of the two selected neonatal infections was lower in the program area, the difference not significant. Moreover, within the program area mothers are still applying traditional materials to the umbilical cord. The program should motivate mothers not to use traditional materials on the umbilical cord.

A randomized trial of prophylactic antibiotics during labour was conducted in prevention of post-partum infection in Uganda¹⁸. This study found that prophylactic antibiotics given in labour

may have a role to play in reducing the incidence of post-partum infection. However, there may be a risk of indiscriminate use of antibiotics if these are routinely prescribed for mothers. Therefore, mothers who experienced complications during labour could be targeted for the prophylactic treatments and antibiotics could be prescribed through BRAC Health Centres.

6. CONCLUSIONS

The prevalence of post-partum infection and neonatal infections were statistically similar in the program area and in the comparison area, but there was a trend to lower infection rates in the program area.

The trained TBAs in the program area are still involved with harmful birth practices such as inserting hands inside the birth canal.

Complications during delivery such as prolonged labour, perineal tear, leaking membrane were found to be associated with an increased risk of infection.

The traditional practices of using unclean water for washing the materials used as vaginal pads (old rags and jute mats) was found to be associated with an increased risk of post partum infection.

7. RECOMMENDATIONS:

The competence of POs should be optimized to educate the mothers about perineal hygiene after childbirth.

TBA training should stress on perineal hygiene and on less contact with the perineal area during delivery processes.

The mothers should be educated not to apply anything on the umbilical cord of the baby at any point in time.

The program might consider prophylactic antibiotic treatment for mothers who experience complications (prolonged labour, perineal tear) during delivery.

8. REFERENCES:

1. Plummer F A, Laga M, Brunham R C et al, 1987. Post-partum Upper Genital Tract Infections in Nairobi, Kenya: epidemiology, etiology and risk factors. J Infect Dis 1987; 156 (1): 92-8.
2. Mason P R, Katzenstein DA, Chimbira T H K, Mtimavalye L, 1989. Puerperal Sepsis Study Group. Vaginal flora of women admitted to hospital with signs of sepsis following normal delivery, cesarean section or abortion. Cent Afr J Med 1989; 35:344-50.
3. Mahokha A E, 1980. Maternal mortality: Kenyatta National Hospital 1972-1977. East Afr Med J 1980; 57:451-60.
4. Howard D, "Aspects of Maternal Morbidity; the experience of less developed countries". In: Advances in international maternal and child health. Volume 7. 1987, edited by D B Jelliffe and E F P Oxford, England, Clarendon Press, 1987: 1-35.
5. Bhuiyan B (1992). Pelvic Inflammatory Disease: A study of 100 cases in Gynae Outpatient Department of DMCH. This paper was presented in the 12th National Conference of BIRPERHT held on 12-13 September, 1992, in Dhaka, Bangladesh.
6. Meheus A, 1992. Women's Health: Importance of Reproductive Tract Infections, Pelvic Inflammatory Disease and cervical Cancer. In Reproductive Tract Infections, global impact and priorities for women's reproductive health, edited by Germain A, Holmes K K, Piot P, Wasserheit J K, Plenum Press, New York, 1992.
7. Goodburn E A, Chowdhury M, Gazi R, Marshall T, Graham W, Karim F (1994). Maternal Morbidity in Rural Bangladesh : An Investigation into the Nature and Determinants of Maternal Morbidity Related to Delivery and Puerperium November 1994. BRAC in collaboration with LSHTM. Dhaka, Bangladesh.
8. BIRPERHT Brief Paper. Maternal Morbidity; vol.1, March, 1994, BIRPERHT, Dhaka, Bangladesh.
9. Akhter H H, Rahman M H, Mannan I, Elahi M E, Khan A K Z (1995). Review of Performance of trained TBAs. Bangladesh Institute of Research for Promotion of Essential and Reproductive Health and Technologies (BIRPERHT), Dhaka. August, 1995.
10. Gazi R, Goodburn E A, Chowdhury M, Karim F (1995). Case Studies on Practices During Post-Partum Period in Rural Bangladesh. BRAC Report (Unpublished).
11. Huq N and Khan R M (1991). Menstruation: Beliefs and Practices of Adolescent Girls. BRAC Report (Unpublished).
12. Dixon-Mueier R and Wasserheit J, 1991. The culture of Silence: Reproductive tract infection among Women in the third World. New York: International Women's Health Coalition.

13. Stewart M K, Festin M (1995). Validation Study of Women's Reporting and Recall of Major Obstetric Complications Treated at the Philippine General Hospital. International Journal of Gynecology and Obstetrics 48 Suppl. (1995) S 53- 566.
14. Wasserheit J N, Jeffrey R H, Chakraborty, Kay B A and Mason K J (1989). Reproductive Tract Infections in a Family Planning Population in Rural Bangladesh. Studies in Family Planning: Vol 20, Num 2, 1989, 69-80.
15. Huda Z, Khattab H, Younis N, Kamal O, Helw E M (1993). A Comparison of Woman's Report and Medical Diagnosis of Reproductive Morbidity Conditions in Rural Egypt. A paper contributed to the session on reproductive health in developing countries IUSSP General Conference, Montreal, 24 August to 1 September, 1993.
16. Younis N, Khattab H, Zurayk H, El-Mouelhy M, Amin M F, Farag A M (1993). A community study of Gynecological and related morbidities in rural Egypt. Studies in family Planning: May-Jun; 24 (3): 175-86.
17. Faisal A J(1989). Post-Partum Infection and Hemorrhage in Rural Bangladesh. 1985-86. Master's Thesis (Unpublished), 1989 Aug. X, 76 p. Emory University, 1989.
18. Kampikaho A; Irwig L M (1993). A randomized trial of penicillin and streptomycin in the prevention of post-partum infection in Uganda. International Journal of Gynecology and Obstetrics. Apr; 41 (1) : 43-52.

9. Appendix-1

Degrees of severity of post-partum genital infection (source; Obstetrics by Ten Teachers, edited by Lewis T L T and Chamberlain G V P: fifteenth edition)

Mild infection

In the mildest cases, the infection remains localized to perineal, vaginal or cervical lacerations, to the birth canal or at the placental site.

Moderate infection

Direct spread of infection take place from the vagina or cervix into the pelvic cellular tissue.

Severe infection

Severe infection may involve the general peritoneal cavity causing general peritonitis, or spread into the blood stream to produce septicaemia.

10. Appendix 2

Table-1: Prevalence of post-partum infection by the time course by program and comparison areas

Days after delivery	Program (N=186)		Comparison (N=193)	
	Infection cases	%	Infection cases	%
1 - 7	12	6.45	17	8.8
8+	6	3.22	4	2.0
Total	18	9.7	21	10.8

Table-2: Prevalence of post-partum infection by target group and non-target group by program and comparison areas

Socioeconomic status	Program			Comparison		
	Total N=186	Infection N=18	%	Total N=193	Infection N=21	%
TG	117	14	11.9	108	13	12
NTG	69	4	5.8	85	8	9.4

Table-3 Prevalence of post-partum infection by occupation of the household head by program and comparison areas

Occupation of the household head	Program			Comparison		
	Total N=186	Infection N=18	%	Total N=193	Infection N=21	%
Agriculture	57	4	7.0	64	5	7.8
Day labour	77	9	11.7	95	13	13.7
Service	19	3	15.8	13	-	-
Business	31	2	6.5	17	3	17.6
Others	2	-	-	4	-	-

Table-4: Prevalence of post-partum Infection by level of parental education

Maternal education	Program			Comparison		
	Total N=186	Infection N=18	%	Total N=193	Infection N=21	%
No education	103	8	7.8	129	17	13.2
Primary	53	6	11.3	36	2	5.6
Secondary and above	30	4	13.3	28	2	7.1
Paternal education			%			%
No education	103	10	9.7	103	17	16.5
Primary	29	2	6.9	49	3	6.1
Secondary and above	54	6	11.1	41	1	2.4

Table -5: Prevalence of post-partum infection by age of the mother by program and comparison areas

Age in years	Program			Comparison		
	Total N=186	Infection N=18	%	Total N=193	Infection N=21	%
< 20	60	4	6.7	78	9	11.5
21 - 30	103	11	10.7	87	10	11.5
31+	23	3	13.0	28	2	7.1

Table-6: Prevalence of post-partum infection by gravidity and parity of the mother by program and comparison areas

Gravidity	Program			Comparison		
	Total N=186	Infection N=18	%	Total N=193	Infection N=21	%
Primi gravida	70	5	7.1	73	7	9.6
Multi gravida	116	13	11.2	120	14	11.7
Parity			%			%
Primi para	74	6	8.1	81	9	11.1
Multi para	112	12	10.7	112	12	10.7

Table-7: Prevalence of post-partum infection by previous still birth and abortion by program and comparison areas

Previous still birth	Program			Comparison		
	Total N=186	Infection N=18	%	Total N=193	Infection N=21	%
Yes	16	1	6.3	21	4	19.9
No	170	17	10.0	172	17	9.9
Abortion			%			%
Yes	11	3	27.3	17	3	17.6
No	175	15	8.6	176	18	10.2

Table -8: Prevalence of post partum infection by training status of the birth attendants by program and comparison areas

Birth attendants	Programme			Comparison		
	Total N=186	Infection N=18	%	Total N=193	Infection N=21	%
Trained TBA	79	8	10.1	-	-	-
Untrained TBA	95	8	8.4	178	16	9.0
Others*	12	2	16.7	15	5	33.3

*Others included doctors/nurse/no birth attendants

Table -9: Prevalence of infection in relation to TBAs hand washing before conducting delivery

Washed hand	Program			Comparison		
	Total N=186	Infection N=18	%	Total N=193	Infection N=21	%
Yes	139	12	8.6	79	8	10.1
No	32	4	12.5	99	8	8.1
DK*	3	-	-	-	-	-
NA**	12	2	16.6	15	5	33.3

* DK- do not know ** doctors/nurses/ no birth attendant

Table -10: Prevalence of post-partum infection in relation to hand insertion inside birth canal by TBAs by program and comparison areas

TBAs inserted hand inside birth canal	Program			Comparison		
	Total N=186	Infection N=18	%	Total N=193	Infection N=21	%
Yes	102	10	9.8	54	4	7.4
No	70	6	8.6	124	12	9.7
NA*	14	2	14.3	15	5	33.3

* no birth attendant doctor or nurse delivered at home

Table -11: Prevalence of post partum-infection by the history of putting oil inside birth canal during delivery by the program and comparison areas

TBA put oil inside birth canal	Program			Comparison		
	Total N=186	Infection N=18	%	Total N=193	Infection N=21	%
Yes	89	7	7.9	56	6	10.7
No	97	11	11.3	137	15	10.9

Table -12: Prevalence of infection by delivery complications (leaking membrane, perineal tear, prolonged labour) by program and comparison areas

Leaking membrane	Program			Comparison		
	Total N=186	Infection N=18	%	Total N=193	Infection N=21	%
Yes	11	-	-	15	2	13.3
No	175	18	10.3	178	19	10.7
Perineal tear						
Yes	55	4	7.3	52	7	13.5
No	131	14	10.7	141	14	9.9
Prolonged 2nd stage of labour						
Yes	83	13	15.7	90	13	14.4
No	100	5	5.0	103	8	7.8
Not stated	3	-	-	-	-	-

Table -13: Prevalence of infection by the length of seclusion after delivery by program and comparison areas

Length of seclusion period	Program			Comparison		
	Total N=186	Infection N=13	%	Total N=193	Infection N=21	%
1-7 days	43	3	7.0	35	5	14.3
8+	143	15	10.5	158	16	10.1

Table -14: Prevalence of post-partum infection by materials used for the absorption of lochial discharge by program and comparison areas

Materials used	Program			Comparison		
	Total N=186	Infection N=13	%	Total N=193	Infection N=21	%
Clo rags	165	15	9.1	171	16	9.4
Clo jute mats	19	2	10.5	13	2	15.4
Not stated	2	1	-	9	3	-

Table -15: Prevalence of post-partum infection by use of unsafe water for washing the clothes used as vaginal pads by program and comparison areas

Used Unsafe Water	Program			Comparison		
	Total N=186	Infection N=13	%	Total N=193	Infection N=21	%
Yes	55	5	9.1	45	6	13.3
No	131	13	9.9	148	15	10.1

* Unsafe water included water from ditch/ pond/ river

* Safe water was tube well water

Table - 16: Prevalence of neonatal infections by program and comparison areas

Umbilical cord infection	Program N=186		Comparison N=193	
	Infection	%	infection	%
Present	7	3.8	12	6.2
Absent	179	96.2	181	93.8
Neonatal eye infection		%		%
Present	11	5.9	15	7.8
Absent	175	94.1	178	92.2