

# Effect of Community Based Skilled Birth Attendant Service on Maternal and Newborn Care Practices in Rural Bangladesh

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## Summary:

**Objective** To evaluate the effect of community-based skilled birth attendant (C-SBA) program on maternity care practices in the community.

**Methods:** We conducted a quasi- experimental study in 4 randomly selected sub districts of Bangladesh- 2 had had C-SBA programs for 3-4 years (intervention areas) and 2 were control areas without C-SBA. Data were collected during 2007 by interviewing 1008 mothers who had delivered in the preceding year.

**Results:** More women used professional care during antenatal and postnatal periods in the intervention areas than in the control areas (82.5% vs 65.8% and 71.3% vs 39.8% respectively). Delivery by specialist doctor was 14.1% vs 2.4% in intervention and control areas respectively. C-

SBA provided 39.1% of antenatal care, 5.6% of delivery care and 1.6% of postnatal care. Use of best practices for maternal and newborn care was more prevalent in intervention areas.

**Conclusion:** Although the proportion of services rendered by C-SBA was limited, the effect can be ascribed to increased use of professional services and positive practices of maternal and newborn care in the community because of presence of C-SBA among them. It is recommended to scale up the program and also utilize the CSBAs for delivery care in primary care facilities to see significant improvement in maternal health indicators.

**Key words:** Community SBA, Safe Motherhood ,antenatal care ,delivery care , Newborn care

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## Introduction:

The population of Bangladesh is increasing at a rate of 2.3% with annual birth of close to 3.5 million. Only 26.5% are conducted by medically trained personnel<sup>1</sup>. The maternal mortality ratio and infant mortality rate are reported to be 194 per 100,000 live births and 43 per 1000 live births respectively<sup>1,2</sup>. It is estimated that about 32 mothers die everyday due to pregnancy related complications amounting approximately 12,000 deaths in a year<sup>2</sup>. Although the South Asian region is home to 22% of the world's population it accounts for 30% of the world's maternal deaths<sup>3</sup>.

The survival of the newborn is vitally dependent on maternal health. The complication that affects women during pregnancy and childbirth affects the fetus and newborn as well and most newborn deaths result from

inappropriate management of labor<sup>4</sup>. It is estimated that for each maternal death, fourteen perinatal deaths occur while three fourths of the babies born to mothers who die will also die within first year of birth<sup>4</sup>. Skilled care at delivery has been identified as one of the key interventions for reducing maternal mortality and improving neonatal outcomes as most obstetric complications are difficult to predict and any women can suddenly and without warning may develop a life threatening emergency<sup>5</sup>.

A skilled attendant is an accredited health professional, such as a midwife, doctor, or nurse, who has been educated and trained to attain proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth, and immediate postnatal period, and to identify, manage, or refer women and newborns with complications<sup>6</sup>. Industrialized countries halved their maternal mortality by providing professional midwifery care at childbirth and it was further reduced by improving access to better technologies and improved quality of care<sup>7</sup>. Countries of Asia that have attained considerable success in reduction of maternal mortality (e.g. Malaysia, Sri Lanka, Thailand) has developed a cadre of community-based skilled birth attendants to

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improve obstetric care coverage and, equally important, they are backed up by a well functioning health system<sup>8,9</sup>.

Beginning in 1994, the Government of Bangladesh (GOB) pursued the strategy of strengthening emergency obstetric care (EmOC) services at the district hospitals and selected Upazila (subdistrict) health complexes. However, these services are under-utilized by the community<sup>10</sup>. It is reported that only 3.1% expected births took place at facilities able to provide emergency obstetric care (EmOC) and they met only 14.8% of the need of obstetric complications<sup>11</sup>. The Maternal health strategy of Bangladesh has targeted to increase the rate of deliveries assisted by skilled attendants from 13% to 50% by 2010<sup>12</sup>. Evidence showed that maternal survival can be improved by posting midwives in the community with close monitoring and supervision by the professionals<sup>13</sup>. The existing social norms favor home delivery, the need of a cadre of providers skilled in safe delivery at home was commonly felt. A need assessment study conducted by WHO in 2001 found that retraining family welfare assistants and female health assistants in midwifery skills would be a feasible option for such purpose<sup>14</sup>. The family welfare assistants (FWA) and female health assistants (FeHA) are community-based health workers of government of Bangladesh, accountable to their government supervisors, responsible to provide preventive and promotive maternal and child health care services like distribution of contraceptives, immunization and advise on sanitation and nutrition<sup>15</sup>.

The government of Bangladesh has implemented the community based skilled birth attendant (C-SBA) program since 2003 to improve home maternity care<sup>16</sup>. The training consists of 6 months competency-based intensive training according to a curriculum which emphasize clinical and community practice<sup>17,18</sup>. It covers specified 74 essential midwifery skills recommended by Safe Motherhood Interagency group 2001<sup>19</sup>. On completion of C-SBA training the Female Health Assistants and Family Welfare Assistants are assessed and accredited by Bangladesh Nursing Council as "Community Skilled Birth Attendant" to conduct normal delivery in the community and refer complicated cases as required.

However, accessibility of a particular service does not always correspond linearly with its use. Along with the

availability, there should be convenience of the service in terms of cost and time and perceived need of potential user and it should be acceptable as well. AS CSBA program has been taken as a priority intervention to attain MDG-5 goals it was necessary to explore the effect of the program in terms of contribution towards maternity care services and any changes of the practice in the community.

This study has been done to determine the proportion of antenatal, delivery, postnatal and newborn care conducted by community skilled birth attendant at home, and to compare maternal and newborn care practice in the community after introduction of C-SBA program.

### Methods

This was a quasi experimental study.

**Sample selection:** The C-SBA program was implemented by Government of Bangladesh in 12 districts during first phase of the program. Among them two districts (Manikganj and Narayanganj district) were selected randomly. Among 7 upazilas of Manikganj district Harirampur upazila and among 5 upazilas of Narayanganj District Rupganj upazila were randomly selected as intervention or experimental area. The control upazilas were Sirajdikhan (Munshiganj District) and Gazipur Sadar (Gazipur District), were randomly selected from list of 46 districts where there is no C-SBA program.

**Data collection:** Data was collected during September to November 2007 through interview of mothers who had childbirth in the preceding twelve months using structured questionnaire. Sample size was 1002 (502 in intervention and 500 in control area respectively). The mothers were selected through household survey in the selected areas and a written consent was obtained from all respondents. Women who gave birth in preceding year was selected to minimize recall bias regarding use of antenatal, delivery, postnatal and newborn care services in their last pregnancy and childbirth. The data collectors were 16 in number (4 in each site), recruited locally, received extensive training for 7 days and was supervised by the researchers in the field.

**Analysis methods.** Descriptive analysis including mean and proportion on different variables were done. To measure the statistical differences in various variables

in the intervention and control areas Chi square test was done at 95% CI. Both EPI INFO and SPSS software were used for analyzing data.

### Results

**Demographic characteristics:** Mean age of respondents (1002) was  $23.7 \pm 4$  and  $23.5 \pm 4$  years, 5.4% and 4.2% were self employed i.e earn money through sewing, raising poultry or micro credit schemes. About 32.5% and 22.8% studied up to 5 years in school in intervention and control areas respectively (Table 1).

**Obstetric care:** Antenatal and postnatal care availed during pregnancy was significantly more in intervention area (Table 2). C-SBAs provided 39.1% antenatal care (Fig 1). Traditional birth attendants conducted majority

of deliveries in both intervention and control areas (66.5% vs. 55.2%) respectively and C-SBA conducted 5.6% of the deliveries (Fig 2).

**Best practices:** The practices of checking blood pressure, use of clean, clean, boiled tools for delivery, avoiding repeated vaginal examination were significantly more in intervention areas (Table 3). The negative practices like hanging by legs, slapping on back, mouth to mouth breathing for delayed crying of newborn, giving prelacteal feed were significantly more in the control area. Good practices like initiation of breast feeding within half hour of birth, tying cord with boiled braided thread, colostrum feed, and first bath after 72 hours were significantly more in intervention areas (Table 4).

**Table-I**

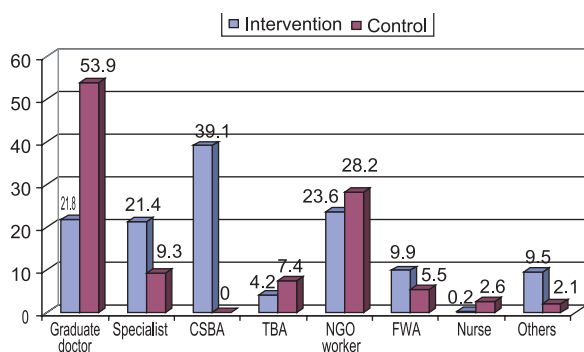
*Distribution according to Socio demographic characteristics of the respondents*

Characteristics	Intervention	Control
Mean age (Yrs)	23.7± 4.4	23.5±4.2
Self employed (%)	5.4	4.2
Education (%) Illiterate (can not read or write) Primary (studied up to 5 years in school)	15.1 32.5	24 22.8
Mean Monthly income (US\$)	97.9±96.04	95.7±108.3
Mean Monthly expenditure (US\$)	74.4±51.3	74.3±64.9
Visit by any health worker at home in last two months		
None	15.1	50.8
One visit	35.3	22.8
Two visit	49.4	26.4

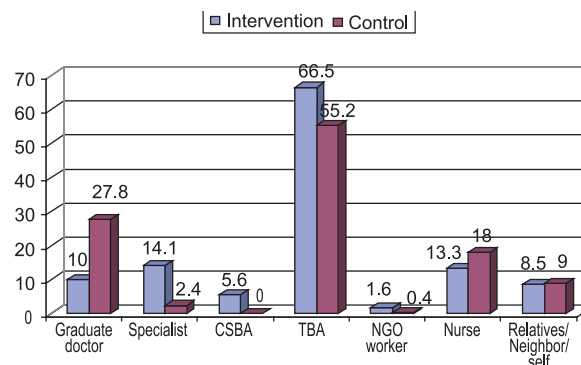
**Table-II**

*Distribution according to use of antenatal, delivery and postnatal services*

	Intervention	Control	P value
Took antenatal care in last pregnancy	90.2	83.8	<0.01
First ANC visit d"3 months gestation	41.4	37.8	<0.01
ANC by Skilled Birth Attendant (doctor, nurse, C-SBA)	82.5	65.8	<0.01
Treatment sought for pregnancy complication	70.3	56.3	<0.01
Took PNC in last delivery	71.3	39.8	<0.01
Took PNC within 10 days	38.9	29.6	<0.01
PNC by SBA (Doctor, nurse, C-SBA)	69.4	66.3	<0.01
PNC by C-SBA	1.6		



**Fig-1:** Distribution according to type of Health Care Provider giving Antenatal care



**Fig-2:** Distribution according to person conducted delivery

**Table-III**

*Distribution according to service received during pregnancy and labour*

	Intervention	Control	P value
Abdominal examination during pregnancy	77.3	61.4	<0.01
Checking blood pressure during pregnancy	69.5	60.4	<0.01
Use of drugs for enhancing labour pain	23.9	29.2	p>0.05
Taking liquid diet during labour	22.9	19.3	<0.01
Repeated vaginal examination during delivery	30.7	42.5	<0.01
Use of clean, boiled tools	32.8	33.1	<0.01

**Table-IV**

*Distribution according to care provided to newborn*

Activity	Intervention	Control	P value
Weight taken after birth	36.3	33	p>0.05
Spirit/antibiotic applied over umbilicus	25.8	44	P<0.01
Cord tied with boiled braided thread	76.9	63.2	P<0.01
Hanging by holding legs for crying	38.6	81.4	P<0.01
Slap on back for delayed crying	32.3	73.6	P<0.01
Mouth to mouth breathing	42	65	P<0.01
Initiate breast feeding within ½ hour	84.9	68.4	P<0.01
Prelacteal feed given	36.4	59.6	P<0.01
Colostrum feed given	79.5	56.4	P<0.01
First bath given within 72 hours	10.3	7.6	P<0.01

## Discussion

The number of C-SBAs were 19 in Harirampur upazilla that has a population of 1.7 million and in Rupgong upazilla there were 15 C-SBAs which has a population of 0.4 million. Considering the approximate number of deliveries in the study areas number of C-SBAs were

limited to cover delivery care but women also did not use them fully. One of the reasons may be the unfamiliarity about C-SBA's new role in the community. However, the effect of their overall services can be assumed to be resulting from the difference in the practices related with maternal and neonatal care in the

study areas. Socioeconomic characteristics were comparable between intervention and control areas. However, proportion of illiterate women were more in control area but lower than the national figure which indicates that 45% of women of age 15-49 years in Bangladesh are illiterate<sup>1</sup>.

BDHS 2007 shows that 18 percent of births are attended by medically trained person and nearly two in three births are still assisted by dais or traditional birth attendants<sup>1</sup>. Among the institutional deliveries (15%) half of them are in private/NGO facilities. This is consistent with the present study. National data shows that only 21% of mothers received postnatal care from a medically trained person and 19% received the care within first two days<sup>1</sup>. In our study 71.3% in intervention area and 39.8% in control area reported to have received postnatal care within forty days of child birth.

Bhuiyan et al evaluated the performance of the C-SBAs in 2004 in six pilot upazillas and that was conducted 6 months after completion of their training. Data was collected by interviewing currently pregnant women and those who delivered in the preceding three months in the study area. It was found that in the C-SBA's catchments area about 29% of the home deliveries, 52% antenatal and 44% of postnatal care were provided by C-SBA<sup>20</sup>. In our study, 39.1% antenatal care and 5.6% of delivery and 1.6% of postnatal care were provided by C-SBA. This lowered performance could be a reflection of declining supervision and monitoring from higher authorities and limited accountability of the services. This could also be a low reporting of C-SBA performance due to the unfamiliarity of the specific term, of "C-SBA" and their maternity care services likely to be masked by other services like immunization, and family planning. Bangladesh Maternal mortality survey, 2010 reported that assistance during delivery by C-SBA was 0.3%, however, in C-SBA areas it was 2.5%<sup>22</sup>. This could be due to their inadequate numbers at the national level.

Bhuiya et al reported that those who availed delivery service of C-SBA expressed that main reasons for such decisions was that C-SBA could conduct delivery properly, and next important reason was that they were easy to get. The same report has shown that in non CSBA areas 39% deliveries are performed by doctors, nurses, FWVs and trained traditional birth attendants

(TTBAS)<sup>20</sup>. The findings are close to our study as well where women who availed C-SBA service for delivery said C-SBA could conduct delivery properly (75.9%) and they are easy to get because of nearness to house (62.1%).

The impact of SBA services can be assumed from some features related with care during pregnancy, delivery, postnatal period and newborn care. It was noted that components of care provided during antenatal, delivery and postnatal period was better in C-SBA area. Regarding immediate newborn care, some good practices like wrapping, put to mothers lap immediately and early initiation of breast feeding were more in intervention area and some bad practices like hanging by holding legs and slap on back for delayed crying were significantly more existent in control (non C-SBA) area. Those could be a reflection of creating awareness and improvements of knowledge of newborn care through the C-SBA's services.

Cost is an important factor for services utilization. Cost was analyzed in terms of provider fee, cost of medicine, transport, Hospital fee and other informal expenditure. Among them most commonly cited expenditure was between 51-500 taka equivalent to dollar (0.75-3\$) during pregnancy period for provider fee or for purchasing medicine. Informal fees or tips are often expressed as a deterrent factor for non utilization of hospital services, as found in different qualitative studies<sup>21,23</sup>. However, only less than 3% of respondents mentioned about such expenses during antenatal, post natal and new born care. Relatively greater proportion of women in control area mentioned about the expenses for provider fee, hospital charge and medicine during delivery period that could be a reflection of delay in identification of complication and referral made by unskilled person at birth that had made the problem worse and required greater expenses. Common practice of over the counter dispense of medicine is reflected in cost statement for postnatal mother and new born.

The basic requirement of skilled attendance of delivery includes back up of appropriate referral services, so the existing health care facilities should be strengthened. It is said that C-SBAs are replacing the services of TBA's; however, the efficacy of their services should be carefully interpreted<sup>20</sup>. The deployment of sufficient number of C-SBAs in the community will create further demand for skilled care and that would likely to change the health

seeking behavior towards availing facility based care<sup>15,20</sup>. Care seeking from doctors and specialists were more in intervention areas in this study indicating better referral by the C-SBAs. Successful country programs in different developing countries like in Malaysia, Srilanka has shown that after implementation of community based skilled maternity care, the rate of institutional delivery increased tremendously<sup>4</sup>

Limitations of the study: The study was a small scale one and the findings can not be generalized to the total C-SBA program. Obstetric and neonatal practices were reported by the respondents who may not have been in a position to know about good practices of clean delivery especially about the maintenance of sterility of the equipment used.

### Conclusion:

The proportion of services rendered by C-SBAs was small. However, implementation of Community Based Skilled Birth Attendant program has shown better utilization of professional care during pregnancy, delivery and postnatal period. Some improvements in the newborn care practices was also noticed. To produce any visible change in overall maternal health indicators the program needs to be scaled up. It is also necessary to strengthen different level of service delivery simultaneously. We can also think of utilizing the CSBAs for delivery care in primary care facilities like community clinics and Family welfare centres in addition to their home based services. .

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