

**VALIDATION OF BASELINE INFORMATION OF
REPRODUCTIVE HEALTH AND DISEASE
CONTROL PROGRAMME**

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EXECUTIVE SUMMARY

The Reproductive Health and Disease Control (RHDC) programme of BRAC has been in operation since 1996 to improve health status of the people. Baseline information is crucial to observe changes in programme achievement. This study was conducted in the RHDC programme areas to validate the accuracy of baseline information as collected by the programme. Selected process indicators, such as use of antenatal care, assistance during delivery by the trained personnel, contraceptive prevalence rate, and continuation and discontinuation rate of methods were chosen to compare between the programme and survey data. For use of antenatal care and trained personnel during delivery, the 30-cluster sampling method was used for convenience. A sample of 210 women who gave birth during January-December 1996 was drawn from among the members of village organisations (VOs). For contraception, 450 currently married women were randomly selected from the same VOs. Data were collected during March and April 1998 by interviewing the selected respondents and were matched with programme records. Women whose information were missed in programme records but were found to have received services in survey were considered as service recipients in data analysis.

Findings reveal that the validated data of the programme were in close agreement with the survey data. For use of antenatal care, 99% of the programme data were found to be accurate. Of the women who received assistance during delivery, 91% were confirmed by the survey. High predictive value in use of antenatal care and trained personnel during delivery indicate very close agreement between programme and survey findings.

While comparing between survey and programme data, 90% of the mothers received antenatal care in survey and 91% in programme records. Comparison of

assistance during delivery between programme and survey indicate that 46% of the women received assistance during delivery from trained personnel while in program records it was 48%. A very high percentage of women (94%) were delivered at home as indicated by both survey and programme records.

For contraceptive prevalence, accuracy was validated in 95% of the cases. Continuation rate of methods during 1996 as validated by survey was 83% and discontinuation rate 23%. Predictive value of contraceptive prevalence is high, but that of the discontinuity of methods is very low. Contraceptive prevalence rate was found to be 54% in the survey and 51% in programme records. Similarly, little difference was observed between the survey and programme in method wise contraceptive prevalence. Furthermore, continuation rate of methods was 81% in survey and 77% in programme records while discontinuation rate 19% in survey and 23% in programme records.

It has been suggested that due to the high accuracy of programme data, it can be used as a reliable source of information. However, validation of programme data can be done from time to time to check its accuracy. More importantly, record-keeping systems should be well-maintained and SSs' activities particularly with regard to contraception well-supervised. Furthermore, improvement in programme performance should be seriously considered.

ABSTRACT

The Reproductive Health and Disease Control (RHDC) programme has been in operation since 1996. This study was conducted in RHDC programme areas to validate the accuracy of baseline information as collected by the programme. Selected process indicators, such as use of antenatal care, assistance during delivery by the trained personnel, contraceptive prevalence rate and continuation and discontinuation rate of methods were chosen to compare data between the programme and survey. For use of antenatal care and trained personnel during delivery, a sample of 210 women who gave birth during January-December 1996 was drawn from among the members of village organisations (VOs). For contraception, 450 currently married women were randomly selected from the same VOs. The validated data of the programme were found in close agreement with the survey data. For use of antenatal care, 99% of the programme data were found to be accurate. Of the women who received assistance during delivery, 91% were confirmed by survey. Accuracy was validated in 95% of cases for contraceptive prevalence. Continuation rate of methods during 1996 as validated by the survey was 83% and discontinuation rate 23%. Predictive value of use of antenatal care, use of trained personnel and contraceptive prevalence is very high but in contrast that of discontinuity of methods is very poor. It has been suggested that due to very high accuracy rate of programme data, it can be used as a reliable source of information. However, validation of programme data can be done from time to time to check its accuracy. Moreover, record-keeping system should be well-maintained and SSs' activities well-supervised.

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INTRODUCTION

In 1991 BRAC, a national non-governmental organisation (NGO) implemented Women's Health and Development Programme (WHDP) in 10 thanas located in the central and northern part of Bangladesh.¹ The goal of the project was to improve maternal and child health, and to develop capacities among the people to sustain its activities. Due to changes in programme strategies, in 1996 the programme has been renamed as Reproductive Health and Disease Control (RHDC) programme.² The goal of RHDC is same as that of WHDP but instead of approaching the target group (TG) population, the programme has now shifted its focus only to members of BRAC's credit programme to fulfil its ultimate goal of alleviating poverty and empowering people. Keeping pace with the activities of the Rural Development Programme (RDP), the previous 30 operating areas of WHDP have been reduced to 21 areas.

The RHDC has been in operation for two years and will continue its activities till the year 2000. The programme has its own management information system (MIS) that continuously gathers data on its various activities. However, baseline information is imperative to see changes in process and impact of programme activities. As the programme has an existing data gathering system and baseline data was not collected separately at the beginning of the programme, the MIS data has been preferred to be used as a baseline. However, validation of MIS data was felt necessary to check its accuracy. Due to financial and time constraints, process indicators of RHDC programme have been preferred to be validated as opposed to impact indicators. Among the various components of RHDC programme, this study only addressed maternal health and family planning; in consequence, selected indicators, such as use of antenatal care, assistance by

trained personnel during delivery, contraceptive prevalence and continuation and discontinuation rate of methods have been chosen as suggested in the project proposal of RHDC.²

Like many other developing countries, under-reporting in the record-keeping system has been common in Bangladesh.³ As a consequence, many data has been considered inadequate to measure performance of various programme activities. In fact, validation of a study could provide precise estimates of accurate programme data, yet such studies are rare in developing countries. Nevertheless, in Matlab, a validation study of pregnancy histories reported that 7% of birth events were missed in forward-history questionnaire and 4% in backward-history questionnaire, and for matched events, about half of the reported dates were correct.⁴ Later, in 1993-1994 another validation study conducted in Matlab on the Demographic Health Survey (DHS) suggested that it accurately estimated fertility rate and infant mortality rate prior to five years, ensuring confidence to the reliability of the data gathered by the national DHS.⁵ Such a lesson can be effectively translated in programs with an existing MIS. In BRAC, accuracy in birth and death recording was checked in 1992 and 1995 in WHDP areas which found a substantial improvement in birth recording but a little less in death recording.⁶⁻⁷ Three year later, still there has been serious concern about the quality of programme data. Having been concerned with the reliability of programme data, this study was conducted in RHDC programme areas to validate the accuracy of baseline information.

Objective

The objective of the study was to validate programme data on antenatal care, assistance during delivery by trained personnel, contraceptive prevalence rate and continuation and discontinuation rate of methods.

METHODS AND MATERIALS

BRAC operates the RHDC programme in Bogra, Dinajpur and Mymensingh region covering a population of 2.98 million. Antenatal care is being provided to pregnant women through antenatal care centres (ANCCs) run by BRAC and through satellite clinics (SCs) run by the government along with BRAC. BRAC employed health workers called programme organisers (POs) render services to pregnant women at the ANCCs. Trained TBAs provide assistance to pregnant women during their delivery. BRAC POs maintain record-keeping related to maternal health. Contraceptive distribution at the field level is being executed by the community health volunteers known as *shasthya shebikas* (SSs) under the supervision of a PO. SSs collect information on contraception and pass it on to POs who maintain its record-keeping.

The study was carried out in three regions of RHDC during March and April 1998. The study population included women only from the VOs. The study addressed two groups of women, one to assess the use of antenatal care and trained personnel during delivery, and the other to assess contraceptive prevalence and continuation and discontinuation rates of methods.

Use of antenatal care and trained personnel during delivery

Women VO members who had given birth during January 1 to December 31 1996 were included in the study population. The 30-cluster sampling method as used by the Expanded Programme on Immunisation (EPI) was used for convenience. Ten areas were selected randomly from among 21 areas of RHDC and three VOs from each area. The VO member lists of 1996 were collected from the RDP office. Seven women were randomly selected from each VO totalling a sample of 210 (30x7=210). However, if the target was not achieved, more women were selected from the adjacent VOs.

Contraceptive prevalence and discontinuation rate

The study was carried out among the VO members who were currently married with age between 15 and 49 years. The sample size of 384 was determined by assuming anticipated population proportion = 50%, confidence level = 95%, level of significance $P = 0.05$ and $\epsilon = 0.10$. From the previously selected 30 VOs, a total of 450 currently married women were randomly selected to effect the criteria of sample selection.

Seven experienced data collectors previously employed in the field research team of the Research and Evaluation Division of BRAC were responsible for data collection. They had been given training for 3 days on how to select target population and administer questionnaires. A small pilot test of study design and of questionnaires was made to make necessary changes. Earlier the interviewers worked in three teams in Mymensingh region, and later on, one team one worked in Dinajpur and Bogra region. Each team comprised of two interviewers. Data collection, therefore, was delayed. The interviewers were instructed to make repeat call backs only once in the case of respondents absent from households. Everyday the interviewers checked survey data with programme

records and if any dissimilarity was found, it was clarified with the respective POs. Data collection was supervised by the investigators.

In accordance with the study objective, programme data were validated by matching with survey data. For women whose information were unavailable in programme records (due to missed antenatal cards and errors in programme registers) but were found to have received services in survey were considered as service recipients in data analysis. To validate programme data, women who were found to receive services in programme data were matched with the survey data.

In this study, clear and explicit definitions were used in defining the indicators used for validation. Use of antenatal care has been assessed by asking the respondents whether she received any antenatal care during pregnancy and the sources of antenatal care. Use of antenatal care has been defined as:

$$\text{Use of antenatal care} = \frac{\text{Proportion of women received antenatal care}}{\text{Total number of women}}$$

For assistance during delivery, women were asked about who assisted during delivery, ascertaining also the identity of the person. Assistance during delivery by trained personnel was calculated by:

Assistance during delivery by trained personnel =

$$\frac{\text{Proportion of women received trained personnel assistance during delivery}}{\text{Total number of women}}$$

For contraceptive prevalence, currently married women members of the VOs were asked during the survey about the current use of family planning method. Contraceptive prevalence is defined as the proportion of women who have been currently using contraceptives among the total number of currently married women:

$$\text{Contraceptive prevalence rate} = \frac{\text{Proportion of current user of contraceptives}}{\text{Total number of women}}$$

In defining continuation and discontinuation, we have used a definition that has been devised by Dr. Abdullahel Hadi, a senior demographer, in the Research and Evaluation Division of BRAC.⁸ The life table approach for calculating discontinuity rate is more appropriate and rational if used in prospective data but for retrospective data it is of little value. The method used in this study is an estimation of the cumulative incidence which does not provide a holistic picture of discontinuity, however, it does provide an estimates which can be comparable from place to place and from time to time. More importantly, it could easily be used in retrospective data. As suggested by Dr Hadi, in this study, the continuation rate has been calculated by dividing the number of women on contraception from January-December, 1996 by the total number of women who were on contraception in January 1996. On the other hand, the discontinuation rate has been estimated by dividing a number of women who discontinue contraception from January-December, 1996 by the total number of women were on contraception in January 1996.

Details of predictive value estimation have been discussed by following figure 1.

Figure 1. Comparison of programme records with survey findings

Programme records	Survey Findings		
	Yes	No	Total
Yes	a	b	a+b
No	c	d	c+d
Total	a+c	b+d	n

Sensitivity = ability of the programme records to be similar with survey findings if present ($a/a+c$). Specificity = ability of the programme records ruling out survey findings if not present ($d/b+d$). Positive predictive value = percent of those who are reported in

programme records and survey findings ($a/a+b$). Negative predictive value = percent of those who are not reported in programme records and survey findings ($d/c+d$). Percentage of agreement = percent of those whose reporting in programme records is consistent with survey findings ($a+d/n$). Kappa Statistic = percentage of agreement discounting the proportion of agreement that is to be expected according to chance alone ($(Po-Pe)/(1-Pe)$), where Po = percentage of agreement and Pe = expected agreement according to chance.

RESULTS

Validation of programme data

Validity of the programme data on use of antenatal care, assistance during delivery by trained personnel, contraceptive prevalence rate and continuation and discontinuation rate of methods was checked with survey data. Among 191 women who received antenatal care as reported by the programme, 99% were validated by the survey. Of 210 women, the programme data reported that 104 women received assistance during delivery from the trained personnel; the survey data confirmed 91% of the trained personnel-assisted-delivery. For contraceptive prevalence, 227 were reported by the programme to have received contraceptives from among 450 women. Among 227 who were on contraception, 95% of the programme data were validated by the survey. Continuation rate of methods during 1996 as validated by the survey was 83%, however, discontinuation rate was validated at 23% (Table 1).

Table 2 compares programme records with survey findings and Table 3 presents evaluation reports of programme records. Data reveal a very high sensitivity, specificity, positive predictive value and Kappa statistic in use of antenatal care and trained

personnel and contraceptive prevalence which indicate a very close agreement between programme records and survey findings. In contrast, a very poor agreement has been observed in case of discontinuity of methods.

Antenatal care

Table 4 and 5 summarise comparison of use and sources of antenatal care between the survey and programme data. The survey data indicate that 90% of mothers received antenatal care. On the other hand, due to missing records, the programme data reported use of antenatal care at 78% whereas non-use at 3%. While cross-checking the data, 41 women who were missed in programme records but were found to have received antenatal care in survey were adjusted to programme data. After adjustment 91% of women received antenatal care.

Due to similar reasons, a difference between the programme and survey data has been observed in the use of antenatal care sources. The survey results show that 49% of women attended ANCCs and 35% SCs while the programme data reported use of ANCCs at 53% and use of SCs at 37%. In comparison to government served areas, attendance of pregnant women at the SCs was quite high in BRAC areas because 98% of SCs were actually held in 1996 in RHDC programme areas as reported by MIS data.¹

Assistance during delivery

Comparison of assistance during delivery between the programme and survey data has been summarised in Table 6. The survey data indicate that 46% of women received assistance during delivery from trained personnel and the rest from untrained. As about 21% of data were missed in programme records, the findings show that 42% of women

¹ During January-December 1996, 26435 ANCCs and 20649 SCs were expected to be held; of those 25974 (98%) and 20214 (97.9) were actually held respectively.

received assistance from trained personnel during delivery. After adjustment of programme data, a slight improvement in service delivery by trained personnel (48%) reduced the difference between programme and survey. However, the 1996 annual MIS report on the assistance of trained personnel during delivery (68%) showed a substantial difference from that found in survey as well as programme records.⁹

Place of delivery

Table 7 compares place of delivery between the programme and survey data. Survey results show that 94% of women were delivered at home while the rest used institutional care. Although the programme data indicate that 73% of women were delivered at home, adjusted data on home delivery was found to be similar with the survey.

Contraception

There is little dissimilarity between the survey (54%) and programme (51%) in contraceptive prevalence, a cross-check showed 89% similarity in contraceptive prevalence, 11% under-recording and 6% over-recording (Table not shown). Similarly, a little difference has been observed between the survey and programme in contraceptive prevalence by method. Furthermore, continuation rate of methods was 81% in survey and 77% in programme records while discontinuation rate was 19% in survey and 23% in programme records (Table 8 and 9).

DISCUSSION

The validation study of baseline information conducted in the RHDC areas demonstrated a close agreement with programme data, which is of great value to the programme planners and policy-makers. This study could give assurance to others to use programme's existing data as a valuable resource of information. A substantial improvement has been made in recording system of WHDP and RHDC programme. A study on birth and death recording in 1992 reported an under-recording of birth at 29% and death at 33%. A follow-up study in 1995 showed a remarkable improvement, particularly in birth recording, which was estimated at 11% but slightly less in death recording. Despite programme's effort to improve the recording system, its record-keeping was not maintained well. In consequence, due to missing information, an enriched data set may not necessarily be utilised for further planning.

The RHDC programme has been unique, particularly, in recording the use of antenatal care, assistance of trained personnel during delivery, and contraceptive prevalence. A wide difference, however, has been observed in the validation of discontinuation rates. Accuracy in the first two indicators is likely to be due to recording of such information by the POs during the sessions of ANCCs and SCc. Contraceptive prevalence was a single-shot data point, quite easily validated by the survey data. The survey data slightly overestimated contraceptive prevalence in comparison to programme data. It is likely that there is more chance of missing some information on contraception as it is being collected by the community health workers who are illiterate, get very little incentives for their work and inadequately supervised. Likewise, a wide disparity in

discontinuity rates of contraceptive methods has been observed. A retrospective collection of such a data through survey may raise questions about its accuracy.

The findings of the study give us greater assurance in using programme records as a useful source of information. One must understand which data would be more appropriate and sound for planning and policy-making. Despite the unique nature of recording system of RHDC, its validation should be done from time to time to check its accuracy. Moreover, record keeping should be well maintained. Data collection on contraception through community health workers must be well supervised.

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APPENDIX

Table 1. Accuracy in program data on use of antenatal care, assistance during delivery and contraceptive prevalence

Accuracy in program data					
	Total Number of women	Reported by program	Validated by survey	Difference in recording	Kappa
Received antenatal care	210	191	189 (99.0)	+2 (1.0)	.944
Assistance during delivery by trained personnel	210	101	92 (91.1)	+9 (8.9)	.866
CPR	450	227	215 (94.7)	+12 (5.3)	.822
Continuation rate	190	139	116 (83.0)	+23 (17.0)	
Discontinuation rate	190	51	12 (23.0)	+39 (77.0)	

Table 2. Comparison of programme records with the survey findings on use of antenatal care, use of trained personnel during delivery and contraceptive prevalence

Programme records	Survey Findings		
	Yes	No	Total
Use of antenatal care			
Yes	189	2	191
No	-	19	19
Total	189	21	210
Use of trained personnel			
Yes	92	9	101
No	5	104	109
Total	97	113	210
Contraceptive prevalence			
Yes	215	12	227
No	28	195	223
Total	243	207	450
Discontinuation of methods			
Yes	12	39	51
No	116	23	139
Total	128	62	190

Table 3. Evaluation of programme records

	Sensitivity	Specificity	Predictive value		Agreement	Kappa
			Positive	Negative		
Use of antenatal care	100.0	90.5	99.0	100.0	99.0	.94
Use of trained personnel	94.8	92.0	91.1	95.4	93.0	.87
Contraceptive prevalence	88.5	94.2	94.7	87.4	91.0	.82
Discontinuity of methods	9.4	37.1	23.5	16.6	18.4	-.41

Table 4. Comparison of antenatal care use between survey and program

Use of antenatal care	Survey	Program	(%) of women
			Program data after adjustment
Received care	90.0	77.6	91.0
None	10.0	2.9	9.0
Information not recorded	-	1.4	-
Card not available	-	18.1	-
Total	100.0 (210)	100.0 (210)	100.0 (210)

Table 5. Comparison of different sources of antenatal services between survey and program

Sources of antenatal services	(% of women)		
	Survey	Program	Program data after adjustment
None	10.0	2.9	9.0
ANCC	49.0	44.3	51.5
SC	35.2	31.4	36.5
Hospital	3.3	1.4	3.0
BHC	1.9	-	0.5
Home-visit by PO	0.5	0.5	0.5
Card not available	-	18.1	-
Information not recorded	-	1.4	-
Total	100.0 (210)	100.0 (210)	100.0 (210)

Table 6. Comparison of assistance during delivery between survey and program data

Assistance during delivery	(% of women)		
	Survey	Program	Program data after adjustment
Trained TBAs	39.5	36.2	41.2
Hospital	6.7	5.7	6.8
Untrained TBAs	53.9	37.6	52.0
Information not recorded	-	2.4	-
Card not available	-	18.1	-
Total	100.0 (210)	100.0 (210)	100.0 (210)

Table 7. Comparison of place of delivery between survey and program data

Place of delivery	(% of women)		
	Survey	Program	Program data after adjustment
Home	93.8	72.9	93.8
Hospital	5.2	4.8	5.2
BHC	1.0	1.0	1.0
Information not recorded	-	3.3	-
Card not available	-	18.1	-
Total	100.0 (210)	100.0 (210)	100.0 (210)

Table 8. Comparison of contraceptive prevalence and methods of contraception between survey and program

	(% of women)		
	Survey	Program	Program data after adjustment
Contraceptive prevalence	54.0	50.5	52.0
No contraception	46.0	46.2	48.0
Information not recorded	-	3.3	-
Total	100.0 (450)	100.0 (450)	100.0 (450)
<u>Modern method of contraception</u>			
Pill	32.4	30.2	32.0
Injection	6.2	5.1	5.0
Condom	0.9	1.3	1.3
IUD	0.9	0.9	0.9
Norplant	0.2	0.2	0.2
Ligation	9.6	9.1	9.9
Vasectomy	3.6	3.6	3.7
Information recorded	-	4.4	-
None	46.0	45.1	47.0
Total	100.0 (450)	100.0 (450)	100.0 (450)

Table 9. Contraceptive continuation and discontinuation rates

	Survey		Total	Programme		Total
	Continuation rate	Discontinuation rate		Continuation rate	Discontinuation rate	
General	81.0	19.0	162	73.0	27.0	190
Pill	82.0	18.0	124	73.0	27.0	145
IUD	76.0	24.0	13	71.0	29.0	14
Injection	79.0	21.0	24	74.0	26.0	27
Condom	100.0	-	1	50.0	50.0	4