

A Rapid Procedure to Assess Awareness of, Accessibility to, and Utilization of Health and Family Planning Services

**Mizanur Rahman
Barkat-e-Khuda**



International Centre for Diarrhoeal Disease Research, Bangladesh
Mohakhali, Dhaka 1212, Bangladesh

1997

ICDDR,B Working Paper No. 72

Editing: M. Shamsul Islam Khan
Toni Rahman

Layout Design and Desktop Publishing: Jatindra Nath Sarker
S.M. Faruque Ahmed
Manash Kumar Barua

Cover Design: Asem Ansari

ISBN: 984-551-089-2

© 1997. International Centre for Diarrhoeal Disease Research, Bangladesh

MCH-FP Extension Project (Rural) Working Paper No. 127
ICDDR,B Working Paper No. 72

Published by:

International Centre for Diarrhoeal Disease Research, Bangladesh

GPO Box 128, Dhaka 1000, Bangladesh

Telephone: (880-2) 871751-60 (10 lines); Cable: CHOLERA DHAKA; Telex: 675612 ICDD BJ

Fax: (880-2) 871568 and (880-2) 883116

E-mail: barkat@cholera.bangla.net

Printed by Adprint, Dhaka

ACKNOWLEDGEMENTS

The MCH-FP Extension Project (Rural) is a collaborative effort of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) and the Ministry of Health and Family Welfare (MOHFW) of the Government of the People's Republic of Bangladesh, supported by the Population Council. Its purpose is to improve the delivery of maternal and child health and family planning services through the MOHFW programme.

This publication is funded by the United States Agency for International Development (USAID) under the Cooperative Agreement No. 388-0071-A-00-3016-00 with ICDDR,B. ICDDR,B is supported by the aid agencies of the Government of Australia, Bangladesh, Belgium, Canada, Japan, the Netherlands, Norway, Saudi Arabia, Sri Lanka, Sweden, Switzerland, the United Kingdom, and the United States; international organizations, including the Arab Gulf Fund, Asian Development Bank, European Union, the United Nations Children's Fund (UNICEF), the United Nations Development Programme (UNDP), and the World Health Organization (WHO); private foundations including Aga Khan Foundation, Child Health Foundation (CHF), Ford Foundation, Population Council, Rockefeller Foundation, Thrasher Foundation and the George Mason Foundation; and private organizations, including, East West Inc., Helen Keller International, International Atomic Energy Centre, Lederle Praxis, New England Medical Centre, Procter Gamble, RAND Corporation, Social Development Center of Philippines, Swiss Red Cross, the Johns Hopkins University, the University of Alabama at Birmingham, UCB Sidac, Wander A.G. and others.

The authors are grateful to: Mian Bazle Hossain, the then Sample Registration System Manager of the Project – surveys were conducted under his supervision; two anonymous reviewers whose comments were helpful in finalizing the paper; Ali Ashraf, Yousuf Hasan, Mehrab A. Khan, and Ann Levin provided suggestions and inputs at different stages of the work.

Acronyms and Abbreviations

AHI	Assistant Health Inspector
ARI	Acute Respiratory Illness
CAR	Contraceptive Acceptance Rate
CARE	Cooperative America Relief Everywhere
CPR	Contraceptive Prevalence Rate
CI	Confidence Interval
CS	Cluster Sampling
EPI	Expanded Programme on Immunization
FP	Family Planning
FWA	Family Welfare Assistant
FWV	Family Welfare Visitor
GR	Geographical Reconnaissance
HA	Health Assistant
H&FWC	Health and Family Welfare Centre
HIU	Health Information Unit
HI	Health Inspector
ICDDR,B	International Centre for Diarrhoeal Disease Research, Bangladesh
MA	Medical Assistant
MCH	Maternal and Child Health
MCH-FP	Maternal and Child Health and Family Planning
MIS	Management Information System
MOHFW	Ministry of Health and Family Welfare
MO-MCH	Medical Officer (Maternal and Child Health)
MWRA	Married Women of Reproductive Age
NGO	Non-Government Organization
PC	Personal Computer
RD	Rural Dispensary

SC	Satellite Clinic
SRS	Simple Random Sample
TFPO	Thana Family Planning Officer
THC	Thana Health Complex
THFPO	Thana Health and Family Planning Officer
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

ABSTRACT

A rapid assessment procedure was developed to estimate various objective and sensitive indicators of awareness of, accessibility to, and use of health and family planning services, at the sub-district level. In the procedure, information was collected from clusters of 30 married women of reproductive age (MWRA) in 20 randomly selected villages. The procedure allows a team of four female interviewers, a data management assistant, and a research officer, equipped with a notebook PC and a printer to complete assessment of a sub-district in two weeks. Results of the computer-generated surveys in a longitudinal database of over 17,000 MWRA of Matlab, Bangladesh and comparative results based on this procedure and large-scale indepth surveys showed that the procedure worked very well. The procedure is simple, effective, affordable, and quickly implementable, and can be used by the local-level managers for developing management strategies for the improvement of the health and family planning programme in Bangladesh and countries with similar settings.

INTRODUCTION

The efforts of the Bangladesh health and family planning programme are directed at reducing morbidity and mortality, especially of mothers and children, and fertility, through the increased use of health and family planning services offered by its outreach workers, service centres, and facilities. Although the programme's performance has improved substantially, resulting in a remarkable reduction in fertility and infant and child mortality, there still remains regions and pockets where programme performance is still believed to be poor. To improve management efficiency, programme assessment at the regional or local level is required. This paper describes a simple, effective, and affordable method of programme assessment which considers a battery of objective and sensitive indicators of awareness of, accessibility to, and use of, health and family planning services in rural Bangladesh. This assessment procedure can be used by the sub-district (thana¹) level managers to help them develop management strategies for programme improvement.

¹ There are 465 thanas or sub-districts in Bangladesh, each with an average population of 250,000 (50,000 households). Each thana is divided into several unions with an average population of 25,000 (5,000 households). There are about 4,500 unions in rural Bangladesh. On average, there is one married woman of reproductive age (MWRA) per household.

BACKGROUND

The Ministry of Health and Family Welfare's Directorates of Health Services and Family Planning have strategically placed their grassroots workers and facilities at different levels to provide maximum coverage of their health and maternal and child health (MCH) and family planning (FP) services to rural inhabitants. One Health Assistant (HA) serves about 1,000 households. He pays monthly home visits to each household, providing: health education; limited health-care services for some diseases, such as diarrhoea, malaria, acute respiratory illnesses (ARI) of children; and referral for treatment of tuberculosis, leprosy, and kalaazar patients to the thana-level health facility, known as the Thana Health Complex (THC). The HA also distributes Vitamin A to children aged less than five years twice a year. HAs also organize 24 Expanded Programme on Immunization (EPI) sessions per union per month to vaccinate, on average, 5,000 MWRA and their infants and children. The work of the HA is supervised by Assistant Health Inspector (AHI) and Health Inspector (HI) who are, in turn, supervised by the thana-level manager, called the Thana Health and Family Planning Officer (THFPO), located at THC. Curative health services are provided by paramedics, known as Medical Assistants (MA) from the Rural Dispensaries (RD) which are functional in almost half of the unions of the country. A provider at each level is supposed to disseminate information about the services available through the various service providers and facilities. THC provides both preventive and curative services. It has 6-8 medical officers, a 31-bed hospital, diagnostic facilities, and a medical officer who can perform tubectomy and vasectomy.

The Directorate of Family Planning has its female grassroots workers, known as Family Welfare Assistants (FWAs). FWA make home visits to each MWRA, once every two months, to provide limited MCH, information and counselling on FP, distribute oral pills and condoms, disseminate information about the services available at the various service centres, and refer clients to services centres. There is a Health and Family Welfare Centre (H&FWC) in each union, from where a female Family Welfare Visitor (FWV) provides

MCH-FP services four days a week, and a male Medical Assistant (MA) provides curative services six days a week. FWV runs a Satellite Clinic (SC) to provide MCH-FP services two days a week; and eight SCs are conducted per month at eight spots evenly distributed throughout the union. SCs have been held jointly with the EPI centres throughout the country since 1996. FWA of the catchment area of the SC/EPI centre assists FWV/HA at the SC/EPI centre. HA and FWA inform the villagers of the dates of the SC/EPI centre, and encourage them to visit the centres for services.

The work of FWAs is supervised by a male Family Planning Inspector (FPI). The field activities of FWAs and FPIs are supervised by a Thana Family Planning Officer (TFPO), and those of FWV and MA are supervised by a Medical Officer (MO-MCH). These supervising officers are based at THC.

PROGRAMME ASSESSMENT THROUGH THE MANAGEMENT INFORMATION SYSTEM

A well-developed and efficient health and MCH-FP programme should have a built-in routine, or periodic assessment mechanism, which allows for the design of programme improvement strategies. The Directorate of Health Services has a Health Information Unit (HIU), which produces service statistics based on HA records, EPI performance, number of cases of illness detected, number of patients for whom services are provided, and some other statistics related to epidemics. Service statistics of RDs and THC's are also produced by thana, district, and division. The Directorate of Family Planning has a Management Information System (MIS) which produces, based on FWA records, the monthly contraceptive acceptance rate (CAR) of MWRA. MCH-FP service statistics, based on FWV records, are also produced for each union, thana, district, and division.

The programme managers can review the progress of their activities, using the monthly service statistics, like CAR and EPI performance. Such statistics, however, have limited use for four main reasons. First, since service statistics are produced by providers and are used for assessing workers'/supervisors' performance, such statistics are likely to suffer from upward bias. For example, the national contraceptive prevalence rate (CPR) during 1993-94 was 45 per cent (1) compared to a CAR of about 60 per cent for the same period (2). Second, the HIU/MIS service statistics do not cover any information on key programme inputs that directly affect the use of services. For example, HAs are supposed to contact every household once a month to provide the services mentioned above, whereas FWAs are supposed to contact every MWRA once every two months to provide information, counselling, and supplies for health and MCH-FP services. No service statistics show the extent to which the client-worker contacts have been made in the field. Third, the HIU/MIS information is not collected from clients, who can report the extent of their use of services from HAs, FWAs and NGO workers, SCs, H&FWCs, and THC's. Finally, there is no information on client demand for services; such information is necessary for proper design of service-delivery strategies.

PROGRAMME PERFORMANCE INDICATORS

The programme performance should be assessed considering three areas: awareness of, accessibility to, and use of services. Use depends on awareness of, and accessibility to, services. Survey results show that awareness of services varies, to a large extent, for each type of service or facility, and by region. For example, at various locations in rural Bangladesh, over 90 per cent of MWRA were aware of EPI centres, whereas 25 and 40 per cent of MWRA, respectively, in Chittagong and Jessore Districts were aware of SC (3). Results of various studies show that the use of EPI services was 75-95 per cent, while that of SC ranged from 4-40 per cent (3,4,5). Rahman *et al.* show that SC use was 40-50 per cent among MWRA who were aware of its services and location (6).

Accessibility to services should also be considered in assessing programme performance. While HAs and FWAs are supposed to contact clients through monthly and bi-monthly home-visits respectively, survey findings indicate that about 40 per cent of MWRA were visited by an FWA in the previous six months of the survey (1). Rahman *et al.* show that about 36 per cent of MWRA reported that they were contacted at their homes by an FWA in the previous two months in 12 rural thanas of Chittagong District (4,5). About 20 per cent of MWRA reported that they had not been visited by an FWA or that they could not recall when they were last visited. The pattern of HA home visitation was similar.

These workers are supposed to provide services at homes. Regular contact of these workers (FWAs and HAs) with clients, through home visitation, increases the use of services. Rahman *et al.* show that CPR in rural thanas of Chittagong District could be increased from 37 to 48 per cent by enhancing the regularity of client-FWA contact (4,5).

Appropriate indicators of awareness, accessibility, and use should be identified according to the needs of the programmes. The following indicators should be considered to assess the health and MCH-FP programmes: i) awareness among the rural inhabitants about services available with FWA and HA; ii) frequency of contacts between clients and FWAs and HAs; iii) awareness of timing and location of EPI centres and SCs; iv) awareness of locations of H&FWC and THC; v) awareness of services available at the EPI centres, SCs, H&FWCs, and THCs; vi) use of health and MCH-FP services; and vii) demand for such services.

PROGRAMME ASSESSMENT THROUGH SURVEYS

Periodic and comprehensive surveys are conducted in Bangladesh as in other countries to estimate health and demographic parameters at the national level. Although the division-level estimates can be obtained from these surveys local level estimates cannot be obtained from them. The national surveys allow for the examination of many aspects of health and MCH-FP awareness, accessibility, and use; associations between various socioeconomic factors and health and MCH-FP indicators; and determinants of demographic events. National-level planners and managers can formulate their policies and strategies based on the findings of such surveys. They do, however, require a lot of effort, and are costly and time-consuming. Furthermore, local-level managers cannot use the findings of such surveys for the purpose of programme improvement at thana or district levels. The procedure, we propose, will basically serve the needs of the local-level managers (usually thana managers); and it is simple, inexpensive, and the assessment can be done quickly. Moreover, it takes care of all of the various indicators mentioned above.

DESCRIPTION OF THE PROPOSED PROCEDURE

A sample of 600 MWRA is surveyed in each thana, using a short questionnaire, which contained questions designed to capture the above-mentioned indicators. Twenty villages are selected, covering all the unions of thana. Selection of the number of villages from each union is proportional to the size of the union. For example, if there are exactly 10 unions in a thana, two villages per union is selected; if there are 15 unions in a thana, one village per union is selected and an additional five villages are selected from the relatively larger unions; if there are eight unions, at least two villages are selected from each union and additional four villages are selected from the relatively larger unions. This scheme of village selection have a fair chance of uniform coverage of the villages in a thana. In a few cases, the number of unions may be more than 20, and, thus, the number of sample villages will be more than 20. Once the number of villages per union is determined, villages are randomly selected from each union.

A cluster of 30 MWRA from each village is selected for interview. An index household for each cluster is selected in a random or quasi-random fashion. One of two procedures can be followed for this. The first would involve the random selection of a household through the use of the "Geographical Reconnaissance" (GR) numbers of the village households, used by HAs. Each household is assigned a GR number which is written in an easily accessible place. In the second procedure, the interviewer would be asked to select a mosque/temple/church/pagoda (a place of worship) or a primary school in the sample village. A household from one specific corner of the worship place or primary school could, then, be selected as an index household. The corner should be specified beforehand, and should be constant for all selected villages. The advantage of the second procedure over the first is that less time would be required to find a worship place or primary school than to obtain a GR number.

There are two issues surrounding the selection of the starting point of a cluster. First, whether to choose a worship place or a primary school. It is possible that neighbouring population of a place of worship is more

religiously conservative, and thus, the use of health and FP services may be lower than in other areas. Results from such clusters will have downward bias. In contrast, the neighbourhood of a primary school may be more enlightened, and, thus, the use of services may be higher which will provide results with upward bias. This problem can be handled by randomly selecting the starting point. A coin could be tossed at each village to choose a place of worship or a primary school. This random procedure of selection of cluster starting points will ensure that about half of the clusters will be from the neighbourhood of places of worship and the other half from that of primary schools and, thus, reduce the possibility of selection bias. The second issue relates to the presence of several of the worship places or primary schools in a village. Once the decision on the place of worship or primary school is made, interviewers would be instructed that the starting point will be the one which is found first. In practice, there may be some villages where there are no primary schools. In such cases, the places of worship are the only options. Besides, the places of worship are more abundant than primary schools.

Interviews of the neighbouring permanent resident MWRA, following the one(s) in the index household, continue until interviews of 30 such MWRA are completed. The direction in which the interviewer should move within the village is decided in advance, and the same direction is followed for all clusters in a thana. All MWRA living in the cluster households are interviewed, even if the total number of MWRA slightly exceeds 30. A list of MWRA in the cluster is made to double check the eligibility for interview, particularly to see if the women are truly permanent residents of a cluster household. If, for example, a MWRA is found in a household, and it is learned that she is just visiting, she is excluded from the survey. If a permanent resident MWRA is currently absent from a household, she is not listed and, thus, not interviewed.

The names of the sample villages in which MWRA are to be interviewed are given to the interviewers or their supervisors on the morning of the day of data collection, so that neither the service providers nor the interviewers know in advance, from where the data will be collected. FWAs, HAs, NGO field workers, or their supervisors will not accompany the interviewers at the time of interviews.

One thana can be completed in five to six days by four female interviewers under the direction of a male supervisor who organizes the field activities, since an interviewer will be able to complete at least 30 interviews a day. Each data collection form is edited, and forms with errors are verified in the field and corrected accordingly.

Data are entered and cleaned, and tabulations are made, using a PC software package which was specially developed for this purpose. A data-entry module, based on the EPINFO software, shows the questionnaire on the screen of a notebook PC. Data are entered through the module. Interactive logical checks are "built in" to the data-entry module, which allow the detection of common clerical errors that usually occur during data collection. The questionnaires with errors can be corrected with information from the field or through editing. Once the data entry is complete, the "data-cleaning" module is run to detect additional errors. Any errors found can be corrected by the data collectors and their supervisor. Then, a "tabulation" module is run to find the results in the tabular form.

The software package allows for the transfer of the data into a graphics software, namely Harvard Graphics. Graphs are produced based on the results which are also available in tables. A Data Management Assistant, familiar with EPINFO and Harvard Graphics, can do all the related computer work, including data entry, editing, and cleaning, as well as preparation of tables and graphs. The software is menu-driven, and can easily be handled by anyone with some basic PC knowledge.

THEORETICAL ASPECT OF THE PROCEDURE

A detailed description of the theoretical aspects for sampling procedures is beyond the scope of this paper, and may be found elsewhere (7,8). General properties of the assessment procedure are, however, briefly discussed here. Most of the variables of interest are dichotomous (for example, whether or not an MWRA is aware of services, whether or not an MWRA uses any type of contraceptive, MCH, or other health service centres, whether or not a worker visited MWRA during a specified time period). These can be treated as binomial variables. The size of a simple random sample (SRS) for a binomial variable can be determined from the following equation, for a specified level of accuracy and precision (9)²:

$$n = Z^2 p(1-p)/d^2.$$

In the equation, n represents the desired sample size - the number of MWRA, in this case. And, p is the population mean (parameter) of interest (for example, CPR, immunization rate, proportion of MWRA attending EPI centres, SC, H&FWC, or THC; proportion of MWRA or households contacted by HAs or FWAs during a specified period of time). The value of ' d ' represents the precision of the result desired. For estimating CPR, it may be decided that an estimate ' p ', which lies within five per cent of the parameter p , would be adequate and d can have a value which represents five percentage points on a scale ranging from zero per cent to 100 per cent and not a percentage of the survey estimate. For example, for an estimate of CPR of 40 per cent, the specification means that the parameter (true contraceptive use rate in the population) will lie between 35 and 45 per cent.

The value of Z corresponds to the confidence interval (CI) of the estimate. A 95 per cent CI is most frequently assumed, which means that the range $p \pm d$ should include p in 19 of every 20 surveys conducted. The corresponding Z value of 95 per cent CI is 1.96 or approximately 2.0.

² Equations for sample size determination for other types of variables are found in standard text books (9).

The survey planner is interested in finding p , the estimated value of $\hat{p}$. To solve the above equation, one must assume p . The above indicators of health and MCH-FP services in Bangladesh range between 10 and 90 per cent. For the above specification, n in the equation is maximized when the value of p is 0.5. Therefore, $n = (2)^2(0.5)(0.5)/(0.05)^2 = 400$.

It should be noted that sample size (n) is calculated in SRS procedure which is very demanding in terms of cost, time, and survey management. One has to make a sampling frame by listing, say, 50,000 MWRA in a thana and then selecting 400, giving each MWRA an equal chance of being selected. One alternative to SRS sampling is cluster sampling (CS), in which a series of MWRA can be selected from the vicinity of a randomly selected site. This saves cost and time, and eases survey management.

The CS estimates usually have larger variance, and, thus, have a larger CI than those based on SRS, mainly because individuals selected from a cluster are likely to be homogenous, or have similar characteristics. For example, in estimating CPR, there may be some locations where contraceptive use is high and others where contraceptive use is low, resulting in a large CI. The ratio of the variance of an estimate, based on a non-SRS procedure in this case, say CS procedure, and that based on SRS is known as "design effect" (deff), which is usually bigger than 1.0. To use a non-SRS procedure, one has to inflate the sample size ' n ' proportional to the design effect. In the present procedure, we assume a "deff" of 1.5, and thereby make the ' n ' to be 600, compared to the ' n ' of 400 for SRS. The assumption of 1.5 as "deff" is guided by our exercise of 20 computer-generated (CS) surveys mentioned in the subsequent section.

EMPIRICAL TEST OF THE PROCEDURE

Two empirical procedures were applied to test the proposed method. The first test was done in the treatment area of Matlab, a rural thana of Bangladesh, where a database of longitudinal information on contraceptive use and other reproductive status of over 17,000 MWRA has been available since 1978. We selected 20 samples of 400 and 600 MWRA, based on SRS and CS procedures respectively. These samples were drawn from 20 randomly selected villages of Matlab. In each village, 20 clusters of 30 MWRA were selected from the database of contraceptive information for the month of June 1994. CPRs of 20 samples are shown in Table 1. In Matlab, the overall CPR was 65 per cent in June 1994.

Table 1: Summary of contraceptive prevalence rates (CPR) based on computer-generated repeated sample surveys from database of Matlab, June 1994 (Population = 17,000 MWRA and CPR = 64.9 per cent)

No. of surveys	Scheme	n	CPR (%)			No. of out-of-range estimates
			Mean	Min.	Max.	
20	SRS	400	66.1	61.4	69.6	None
20	CS*	400	65.3	59.4	70.2	2
20	CS**	600	64.6	61.6	66.9	None

* Each survey had 20 clusters of 20 MWRA; and

** Each survey had 20 clusters of 30 MWRA

According to the above specifications for solving the equation for 'n', one expects that a reasonable sample scheme would provide 19 estimates of CPR within a range between 60 and 70 per cent. The CS procedures with clusters of 20 MWRA in each village (n=400) provide 18 estimates of CPR

within the expected range. The same procedure with 30 MWRA in each cluster (n=600) provides 20 estimates of CPR within the expected range.

The second test was done in five thanas by comparing results of CS surveys. In three thanas results of two CS surveys were compared, and in other two thanas results of CS surveys were compared with those of large-scale surveys (Table 2). There was a remarkable similarity of CPR between two surveys within each thana. CPR is a strong and objective indicator of FP performance, and, thus, is very frequently used by programme managers and policy-makers. The estimates of other indicators were also very similar. However, there were some dissimilarities which deserve a discussion. In Banshkhali, Fatikchhari, and Hathazari, the health and family planning managers started taking some measures to improve HA and FWA contacts after the first assessment, using the CS procedure. It is noticeable that percentages of "not contacted" by HA and FWA have slightly reduced and, thus, leading to the increase in other categories of contact. Use of fixed-site service centres was pretty comparable except for that of SC. It is possible that the differences of estimates of the SC use are attributable to low values of the estimates. In Sirajgonj, marked declines of visitation of SC and H&FWC are observed between 1993 and 1995. This is associated with the withdrawal of activities, in early 1994, of a special MCH-FP project. Based on these tests, it can be concluded that the procedure works very well, and provides reliable results which can be used by the local-level managers.

Table 2. Comparison of estimates of selected health and FP accessibility and use indicators in five rural thanas of Bangladesh*

	Banshkhali		Fatikchhari		Hathazari		Mirsarai		Sirajgonj	
	Jul '96 n=628	Dec '96 n=628	Jun '96 n=634	Dec '96 n=621	May '96 n=627	Dec '96 n=627	May '94 n=581	Dec '94 n=3497	End '93 n=3062	Jun '95 n=648
HA contact at homes										
Within last 2 months	66	61	65	74	54	56				
Before 2 months	26	36	23	19	34	36				
Not contacted	8	12	12	7	12	8				
FWA contact at home										
Within last 2 months	34	36	45	43	27	31	35	33	50	51
Before 2 months	45	59	39	46	52	60	40	41	43	39
Not contacted	21	15	16	11	21	9	25	26	7	10
Use of fixed site services by MWRA										
Ever visited EPI spot	81	80	77	82	81	76				
Ever visited SC	16	7	11	3	12	10	18	7	25	14
Ever visited H&FWC	38	33	42	45	54	56	44	53	43	34
Ever visited THC	52	44	48	47	53	52				
Use of services										
Contraceptive use	25	28	27	26	31	32	29	29	39	40

* A blank cell represents that no information was collected in either of the surveys within the thana.

USE OF THE PROCEDURE: AN EXAMPLE

The procedure was used, following the above steps to assess the health and family planning needs at 12 rural thanas of Chittagong District, one of the low-performing areas of Bangladesh. The major findings are discussed below: Figure 1 compares CPR with the contraceptive acceptance rate (CAR). CAR is based on service statistics produced by FWAs, whereas CPR is based on information collected from MWRA through the CS procedure. It is clear from the figure that service statistics are of very limited use as they do not reflect the real picture of the use of services. CAR is always over-reported with no uniformity. Between the 12 thanas, there was a large variation in the use of services, like contraceptive use (Fig. 2) and acceptance of immunization (Fig. 3). There was also a large variation in attendance at the EPI centres (Fig. 4), SC (Fig. 5) and H&FWC (Fig. 6). There was also a large variation in the client-worker contact (HA and FWA) between thanas (Fig. 7 and 8). Largely, the client-worker contact was poor in most thanas. The poor client-worker contact and low use of fixed-site service centres were largely due to management weakness. It is worth noting that there is a correlation between performance measured by contraceptive use and client-worker contact and use of fixed-site service centres. For example, Boalkhali, Chandnaish, Patiya, and Sitakunda had higher CPR than other thanas. On average, client-worker contact and use of fixed-site service centres was also higher in these thanas than others. In other words, the performance in these thanas was high, because the client-worker contact and use of the fixed-site service centres were higher than in other thanas.

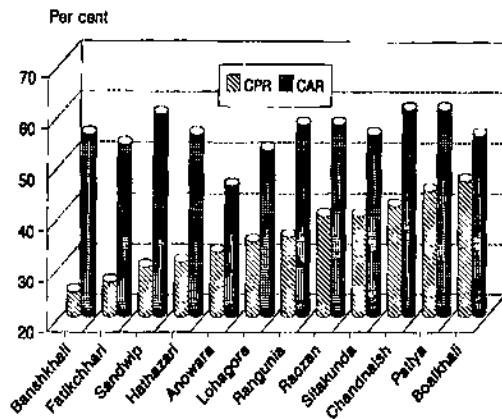


Fig.1. CAR-CPR gap by thana, July 1995-June 1996

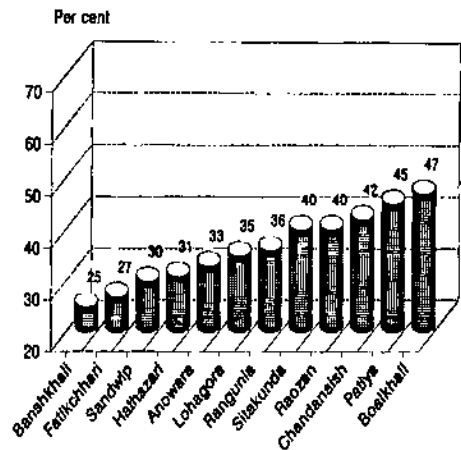


Fig.2. Contraceptive prevalence rate (CPR) by thana

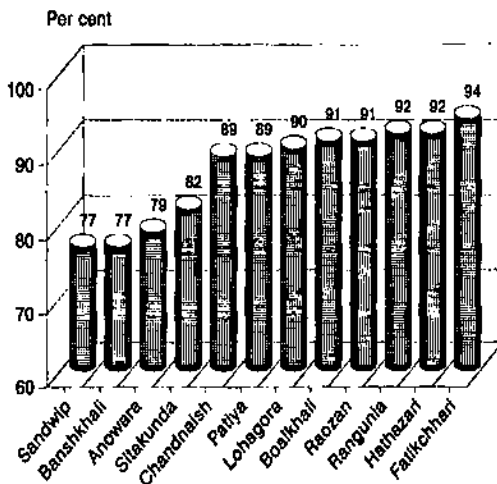


Fig.3. Per cent of MWRAs who received TT by thana

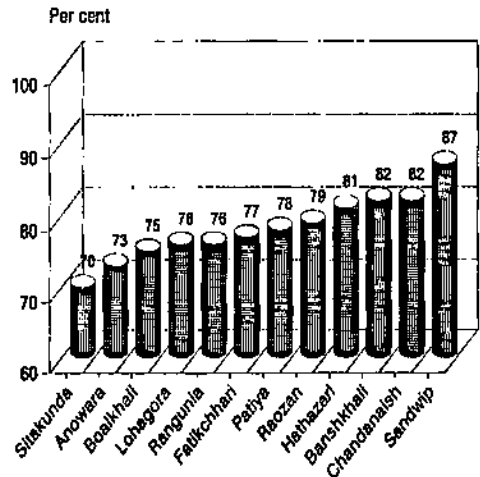


Fig.4. Per cent of MWRAs who ever attended an EPI spot by thana

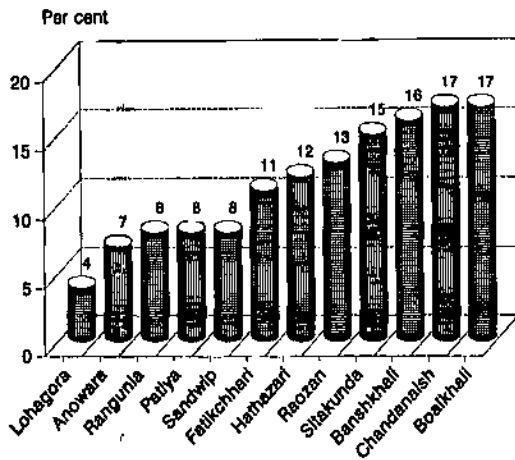


Fig.5. Per cent of MWRA who have ever attended SC by thana

■ <2 months ▨ 2+ months ▩ Not contacted

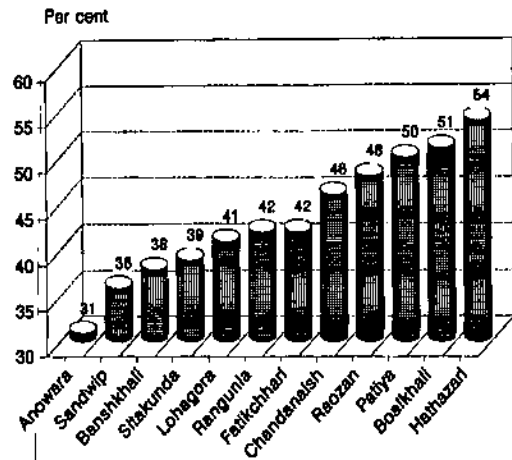


Fig.6. Per cent of MWRA who ever attended at H&FWC by thana

■ <2 months ▨ 2+ months ▩ Not contacted

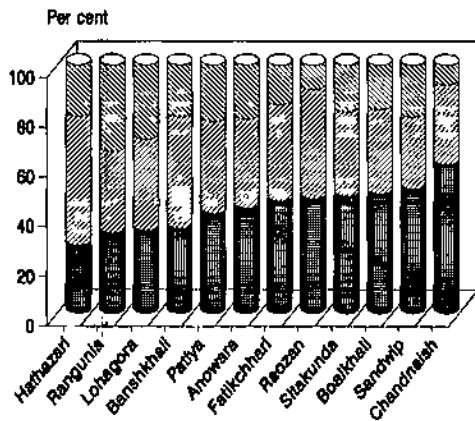


Fig.7. Per cent of MWRA by FWA's last home contact by thana

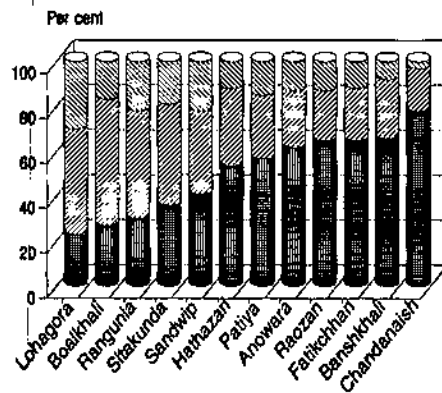


Fig.8. Per cent of MWRA by HA's last home contact by thana

The managers critically reviewed the findings of these surveys and identified two major management issues in two workshops of thana, district, and division managers held in Chittagong. Further improvement in the use of health and MCH-FP services can be made by strengthening field activities, which would not require any additional recruitment, training, or supplies. After thoroughly reviewing the findings presented at the workshops, the participants recommended improvements in client-worker contact and use of fixed-site service centres. Improved client-worker contact, be it at the homes of clients, SCs, or H&FWCs, would increase contraceptive use and attendance at the fixed-site service centres.

A plan of action was developed which specified activities, persons responsible for initiating activities, and a timeframe for the completion of the activities. A number of management improvement interventions have already been implemented, the impact of which are currently being evaluated. Preliminary observations indicate that there has been a substantial improvement in the awareness of, accessibility to, and use of, health and MCH-FP services.

Review of the Study Design and Findings with Thana Managers

Two review meetings were held with the health and MCH-FP programme managers at each thana. The first one reviewed the information needs of the managers to be collected. The questionnaire which contained information on the indicators of awareness of, accessibility to, and use of health and family planning services was finalized in the review meeting. The data collection procedure was reviewed, and a schedule was made for data collection, processing, and review of the findings. The second meeting reviewed the findings of the survey. The thana managers and the representative of the programme assessment agency interpreted the findings with respect to their strengths and weaknesses, their implications for programme activities, and potential strategies that could lead to programme improvement.

The assessment was completed in two weeks, following the steps mentioned above.

DISCUSSION

We propose the rapid assessment procedure, which is effective, affordable, and easily implementable; and using the procedure, the thana-level health and MCH-FP managers can monitor the programme progress, and thus, develop programme improvement strategies. There are several important features of the procedure. Information is obtained through a survey from the clientele population on awareness of, accessibility to, and use of, as well as demand for, services. Survey results are highly likely to give a realistic picture of the programme performance as opposed to highly biased service statistics. The survey data collection instrument can accommodate a battery of indicators, which is necessary to get a truer picture of the levels at which the programme is currently functioning, so that appropriate programme improvement strategies can be developed. The indicators can vary from region to region, depending on the level of programme performance and clients' demand for services. The procedure allows an independent assessment of the health and MCH-FP programmes within two weeks. The thana-level managers themselves are involved in the design and organization of the survey, and the subsequent development of improvement strategies based on the survey findings. This ensures a local-level planning strategy, which provides the managers with a much better understanding and appreciation of the strategies which are developed, while also serving as an objective mechanism of accountability of their work to higher level managers.

Two statistical properties of the procedure - cluster size and precision level - merit discussion. The procedure considers 20 clusters. WHO recommended the use of EPI-CS for assessing the immunization coverage with 30 clusters (10). This is mainly because cluster means with at least 30 clusters follow normal distribution, a property necessary for performing statistical tests. In the EPI-CS scheme, the cluster size is only seven, i.e. only seven children or mothers are selected from one cluster. One limitation of such small clusters is the problem of homogeneity which provides an estimate with large variance, and thus, a large confidence interval (CI). Homogeneity is typically high in small clusters, which yields a large variance of the estimate (8).

In the proposed procedure, the cluster size is large (30 MWRA), which ensures that homogeneity is low. Thus, the estimate will tend to have relatively smaller variance. In rural Bangladesh, on average, five to six patrilineal households are clustered in a *bari* which is highly likely to be socioeconomically and behaviourally homogeneous. A *bari* is likely to have five to six MWRA and seven or more children aged less than five years. All children may be immunized in one *bari*, while none of the children may be immunized in a neighbouring *bari*. Most MWRA may be contraceptive users in one *bari*, while a neighbouring *bari* may have no contraceptive users. A cluster of 30 MWRA is likely to cover five to six heterogeneous *baris*. Thus, heterogeneity in the proposed procedure with 20 clusters of 30 MWRA is likely to be high, which will yield a relatively smaller variance of the estimate.

One economic reason of selecting 30 MWRA is that an interviewer can complete 30 interviews a day (20 person-days are required to complete a survey of 600 MWRA). Interviews of less than 30 MWRA would not fully use the time of an interviewer. In contrast, it would not be possible to complete two clusters of 15 MWRA a day because of travel time, for moving from one cluster to another, of the interviewer. If one has 30 clusters, rather than 20 clusters, each with 30 MWRA, this would yield a sample size of 900, and will substantially increase survey cost, because 30 person-days are required instead of 20 person-days. If one has 30 clusters with 20 MWRA, the sample size would be 600, which will not, however, reduce the cost, because this scheme will also need 30 person-days to complete the survey. The increased cost will not be necessary for the assumed level of precision.

The superiority of the proposed method over the EPI-CS scheme is the level of assumed accuracy or the value of ' d '. The EPI-CS scheme assumes a value of 10 per cent for d , whereas we assume five per cent for it. To give an example, for a 40 per cent coverage of immunization, the EPI-CS scheme assumes that the true immunization rate lies between 30 and 50 per cent, while we assume that the true rate lies between 35 and 45 per cent. Of course, this gives a higher precision level at the cost of large sample size. Our procedure minimizes cost and time by taking larger clusters.

We recommend an annual survey of awareness of, accessibility to, and use of health and MCH-FP services in each thana of rural Bangladesh.

This will help managers understand the real status of programme performance, so that they can design improvement strategies every year. The MCH-FP Extension Project's experience shows that managers were able to develop programme strategies after having obtained a realistic picture of the programme, based on the CS procedure indicators (4,5,11). At Sirajgonj thana, managers were told that their programme will be reviewed by the district, divisional, and national-level managers next year to monitor the progress. Activities of the field staff and SCs and H&FWCs were systematically and rigorously supervised by the thana-level managers and front-line supervisors. This resulted in a 10-percentage point rise in CPR over a period of one-and-a-half years. At Sirajgonj, CPR plateaued at around 40 per cent during 1990-1995, while it rose to about 50 per cent, according to a survey in December 1996.

To complete assessment of health and FP needs in each thana of two greater districts of Bangladesh every year, three teams - each comprising one research officer, four interviewers, and one data management assistant, equipped with a notebook PC and a printer, would be needed. These teams can be headed by an operations researcher, who would organize the activities, including review of methods and results of needs assessment with thana managers. An amount of only about 0.7 million dollars per year would be necessary to cover the entire country, or one dollar per 30 households or Tk. 1.5 per household is necessary annually. This annual assessment can help programme managers to monitor programme performance on a more objective basis, and also enable them to take appropriate action to effect necessary improvement in the programme. Additionally, annual programme assessment will increase equity in distribution of services through enhanced accessibility to, and use of, services. The procedure is recommended for similar use in other countries, especially in South Asia. The questionnaire and PC software may be modified to accommodate the specific country's programme needs.

REFERENCES

1. Mitra SN, Ali MN, Islam S, Cross AR, Saha T. Bangladesh demographic and health survey 1993-94. Dhaka: National Institute of Population Research and Training, 1994
2. Government of the Peoples Republic of Bangladesh. Report on contraceptive performance and MCH service. Dhaka: Management Information System Unit, Directorate of Family Planning, 1994.
3. Hasan Y, Khuda B, Ashraf A, Ahmed MU, Reza MM. Basic service delivery package: key findings from baseline survey. Dhaka: MCH-FP Extension Project (Rural), International Centre for Diarrhoeal Disease Research, Bangladesh, 1996. (Mimeo).
4. Rahman M, Khuda B, Hossain MB. An assessment of health and family planning needs in rural Chittagong. Vol 1. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh, 1996a. (Special publication, 49).
5. Rahman M, Khuda B, Hossain, MB. An assessment of health and family planning needs in rural Chittagong. Vol 2. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh, 1996b. (Special publication, 56).
6. Rahman M, Khuda B, Islam M. Networking of family welfare service-providing agencies: key findings from baseline survey. Dhaka: MCH-FP Extension Project (Rural), International Centre for Diarrhoeal Disease Research, Bangladesh, 1996c. (Mimeo).
7. Cochran WC. Sampling techniques. New York: Wiley, 1963.
8. Kish L. Survey sampling. New York: Wiley, 1965.

9. Snedecor GW, Cochran WC. Statistical methods. Iowa: Iowa State University Press, 1973.
10. Henderson RH, Sundaresan T. Cluster sampling to assess immunization coverage: a review of experience with a simplified sampling method. *Bull WHO* 1982;60:253-60.
11. International Centre for Diarrhoeal Disease Research, Bangladesh. Limited technical assistance to monitor health and MCH-FP programme performance in Sirajgonj. Dhaka: MCH-FP Extension Project (Rural), *Intervention Update* 1996;2:1-2.

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 4.1%
1995	Maternal immunization with pneumococcal polysaccharide vaccine shown to protect infants up to 22 weeks