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Record Keeping Systems for Quality Improvement in Urban Primary Health Care Clinics

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A card-based information system that incorporated screening checklists on essential health services was developed and tested at two urban NGO clinics in Dhaka city during 1996. Study findings indicate that the system assisted service providers in following assessment protocols according to the standards set by the organization.

Key words: Bangladesh; information system; primary level clinics; screening checklists; quality of services

Introduction

In Dhaka, the capital of Bangladesh, where about 30 percent of the population live in slums and about half of the population are reported to be living below the poverty line[1], primary level clinics play an important role in the provision of health services, particularly to the poor. Estimates based on the Urban Panel Survey conducted by the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR, B) in a representative area of Dhaka indicate that about 28.4 percent of the slum and poor segments of the community seek services from these urban primary level clinics[2]. Government and non-governmental organizations (NGOs) manage the clinics. The relative importance of the NGO sector in delivering services was highlighted by a recent inventory of facilities which found that around one-third of the clinics providing health and family planning services in Dhaka were managed by NGOs[3]. Government clinics are staffed by fully trained physicians, while at the NGO clinics, mostly paramedics deliver the services.

Central to the concept of availability of services is the technical competence of the service providers[4]. Technical competence relates to how well the providers follow service guidelines and standards with accuracy, reliability, and consistency [4]. Thus, protocols or practice guidelines are an important area in the context of quality improvement[5]. Such protocols are available for a number of essential services, such as family planning, and management of childhood illnesses and reproductive tract infections (RTI). Clinic staffs from both government and NGO facilities are trained on the use of these protocols as part of their basic training. However, studies have shown that compliance with the guidelines and service delivery protocols varies[1,6], and in some cases, there are serious deficiencies in the quality of care[7].

One important tool for regular monitoring of quality of care in clinics is the existence of reliable record keeping systems able to generate information beyond numerical clinic outputs. Many information systems in developing countries, including Bangladesh, cannot serve this function because they are primarily designed to report the number of contacts

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per service without immediate concern for issues regarding continuity of care or quality monitoring[4]. For instance, in Bangladesh, providers at primary care clinics maintain more than a dozen different registers to record interactions with clients according to the type of service provided. These registers do not assist the providers in assessing clients' unmet needs, nor do they provide information that can promote continuity of care[8]. In addition, the registers do not help the managers or supervisors to monitor the quality of services provided at the clinic.

The Intervention : To address these issues, a client-card based record keeping system for primary level NGO clinics was developed to help the clinic providers to comply with the service guidelines and to enable the supervisors to make an easy assessment of the technical procedures followed with each individual client.

The records contained checklists for a number of essential service components, namely, family planning method screening (Fig.1), antenatal and postnatal checkup, assessment of patients with RTI (Fig.2) and assessment of childhood illnesses like acute respiratory tract infections (ARI) and diarrhoea. These checklists included the minimum assessment or screening procedures recommended by national and international authorities and accepted as standards by the organization managing the clinics. For example, the screening checklist for family planning methods was developed based on the guidelines published in a series of manuals on contraceptive methods by the Directorate of Family Planning of the Government of Bangladesh (GOB). These guidelines are followed throughout Bangladesh, in both the government and NGO sectors. Similarly, the checklist for assessment of RTI cases was developed from a set of protocols adapted by the Operations Research Project of ICDDR, B from WHO's syndromic management flow charts and reviewed extensively by experts from both government and non-governmental organizations[9]. Thus, the design of the record-keeping format was meant to remind the staff to follow the steps included in the assessment and screening procedure.

Fig.1 *Family Planning Screening Checklist*

	Pill	Injectable	IUD
Ask about the following			
Last menstruation period*			
Breast feeding child <6 months			
Jaundice in the past one year			
Severe leg pain			
Chest pain/difficultly in breathing on mild work			
Bleeding between menses or after coitus			
Unexplained vaginal bleeding			
Severe low abdominal/back-pain			
Severe menstrual cramps			
Offensive/purulent vaginal discharge			
H/o ectopic pregnancy			
Uncontrolled diabetes			
Physical and Lab Examination			
Blood pressure*			
Weight*			
Lump in breast			
Uterus : bigger size or soft			
Cervix bleeds on touch			
Cervical motion tenderness			
Hb% <45%			

** Record the finding in the cell.*

Put Y for "Yes" and X for "No" in the corresponding box under the method for which the woman is screened. Blocked areas are not applicable for the method.

If any of the boxes is marked Y (Yes), then the corresponding method is not suitable for the woman.

Fig 2 *RTI Checklist: Put Y as appropriate.*

Presenting Symptoms	
Vaginal discharge	
Genital ulcer*	
Lower abdominal pain	
Inguinal swelling *	
Missed/delayed period*	
Recent abortion/delivery*	
Vaginal bleeding*	
Partner Symptoms	
Genital ulcer	
Urethral discharge	
Swollen scrotum*	
Enlarged inguinal nodes*	
None	
Physical Examination	
Severe abdominal tenderness*	
Abdominal mass*	
Pelvic tenderness	
Cervical motion tenderness	
Discharge	
Profuse/offensive/frothy	
Yellow/purulent (cervical)	
White curd like	
Syndromic diagnosis	
Cervicitis	
Vaginitis: (Trichomoniasis)	
Vaginitis: (Candidiasis)	
PID	
Treatment	Counseling done
1.	
2.	
3.	
Treatment of Partner	Partner attended
1.	
2.	
3.	

*Refer if * marked finding is present.*

Methodology

The record keeping system was tested for more than one year in two primary level NGO clinics in urban Dhaka. The service providers were paramedics with 18 months of formal training in maternal and child health (MCH), with particular emphasis on family planning (FP). The study was quasi-experimental with another two urban primary level clinics, where the service records were kept in registers, for comparison. Data was collected on indicators such as technical competence of service providers, identification of program needs and policy changes. Data on the use of checklists were obtained through independent observations of the practices of the service providers in the intervention clinics. Two researchers from the Urban MCH-FP Extension Project of ICDDR, B observed the staff using the record keeping formats from the pre-testing period, minimizing the possibility of the providers changing their behavior in the presence of the observers. The checklists for screening/checkups introduced as part of the system were used as the standard for comparison. Other records and documents were also examined for data collection.

Reproductive health services (family planning and pregnancy care) and immunization services were the primary focus of both the intervention and the comparison clinics. Though this emphasis shifted later on towards providing a range of essential health services including care of sick child and limited curative services, during the intervention period the clinics mostly attended on clients for family planning, RTIs, antenatal care and immunization. Data could be collected only in relation to these services.

Results

Table 1 shows that in 85 percent of clients seeking injectable contraceptives at the intervention clinics for the first time, the paramedics screened the clients as per the guidelines, compared to only 2 percent at the comparison clinics. In the comparison clinics, none of the potential injectable contraceptive clients received the entire minimum required screening procedures.

As far as laboratory examination is concerned, testing for presence of sugar in urine is necessary to exclude severe diabetes. Urine sugar test was done either alone or in combination with other optional tests in about 98 percent clients in the intervention clinics, and in about 97 percent clients in the comparison clinics.

Table 1 *Percent of Clients Receiving the Minimum Required Screening Procedures for Injectable Contraceptive, 1996-97*

Procedures of screening clients for injectable contraceptives	**Clients receiving the screening procedures**		
	Intervention clinics (n=78)	**Comparison clinics (n = 58)**	
1. Screening steps followed for history taking and physical examination*			
10 of 10 steps	84.6%(66)	1.7%	
8-9 of 10 steps	11.5%(9)	0	**p <0.001**
7 or less of 10 steps	3.8%(3)	98.3%	
2. Per vaginal examination	100%	96.6%	**p = 0.12**
3. Lab examination			
Hb%, sugar and albumin	11.5%	37.9%	
Sugar and albumin	47.4%	25.9%	**p <0.001**
Sugar	39.7%	32.8%	

**Refer to Fig.1. FP screening checklists*

Source: Observation of paramedics

In the intervention clinics, almost all pregnant women were screened according to the organizational guidelines and important physical examinations were done in 69 percent of the antenatal contacts (Table 2). In contrast, none of the pregnant clients attending the comparison clinics received the full range of standard checkup procedures.

Table 2 *Percent of Pregnant Clients Receiving the Minimum Required Antenatal Checkup Procedures *, 1996-97*

Procedures of antenatal checkup	Pregnant women receiving the clinics procedures		
	Intervention clinics (n=52)	Comparison clinics (n = 30)	
1. LMP and EDD assessed	100%	100%	
2. Essential obstetric history taken**			
7 of 7 questions	100%	-	
Less than 7 questions	-	96.7%	p <0.001
None	-	3.3%	
3. Important risk factors assessed***			
9 of 9 factors	98.1%	-	
8 or less of 9 factors	1.9%	86.7%	p <0.001
None	-	13.3%	
4. Post-obstetric complication history taken⊥			
5 of 5 questions	59.6%	-	
4 or less of 5 questions	3.8%	10%	p <0.001
None	36.5%⊥⊥	90%	
5. Essential physical examination steps followed⊥⊥⊥			
8 of 8 steps	69.2%	3.3%	
7 or less of 8 steps	30.8%	96.7%	p <0.001

* *Minimum required at both national and international levels and conforming to the organizational policy for standards*

** *Obstetric history: Last pregnancy outcome, parity, gravida, number of dead children, stillbirths, abortions, and multiple pregnancy*

*** *Risk factors: Hypertension, diabetes, heart disease, bleeding disorder, height less than 4'-10", age less than 18 years or above 35 years, age of the youngest child less than 2 years, more than 4 previous pregnancies, first birth.*

⊥ *Post-obstetric complications: Pre-eclampsia or eclampsia, prolonged labor, premature labor, caesarian section, retained placenta*

⊥⊥ *All of these were primae with no past obstetric history*

⊥⊥⊥ *Physical examination: Assessing duration of pregnancy; weight, blood pressure, hemoglobin and urine albumin measurement; jaundice assessment; and abdominal examination.*

Source: Observation of paramedics

At the beginning of the intervention, the staff in the intervention clinics were trained on the protocol for syndromic management of RTIs.[9] The training emphasized making syndromic diagnosis, based on characteristics of the vaginal discharge and presence of the partner's symptoms. Six months after the training, a checklist for assessment of RTI cases was added to the system to assist the implementation of the protocols.

Table 3 shows that the treatment of clients complaining of vaginal discharge in the intervention clinics changed after the checklist on RTI was introduced. Before the introduction of the protocol, the diagnosis made by the paramedics was based mostly on the amount of vaginal discharge and the condition of the cervix. When the paramedics began to use the checklist, complaints regarding vaginal discharge were treated according to the protocol, based primarily on the characteristics of the discharge and the partner's symptoms.

Table 3 *Procedures Followed by Paramedics to Make Diagnosis in Cases with Vaginal Discharge Attending the Intervention Clinics*

	Before training RTI protocol Jan-Jun '96 n = 53	After training on RTI protocol Jul-Dec '96 n = 50	After checklist on RTI was introduced Jan-Jul '97 n = 54
I. Examinations essential for syndromic diagnosis of RTI cases			
a. Characteristics of vaginal discharge (white/purulent/offensive)	10 (18.9%)	3 (6.0%)	50 (92.6%)
b. Partner's symptoms	0	1 (2%)	29 (53.7%)
II. Other examinations			
a. Amount of vaginal discharge	40 (75.5%)	33 (66.0%)	0
b. Condition of cervix	46 (86.8%)	43 (86.0%)	1* (1.9%)

**This case was examined by the visiting physician who did not use the checklist.*

p = 0.001

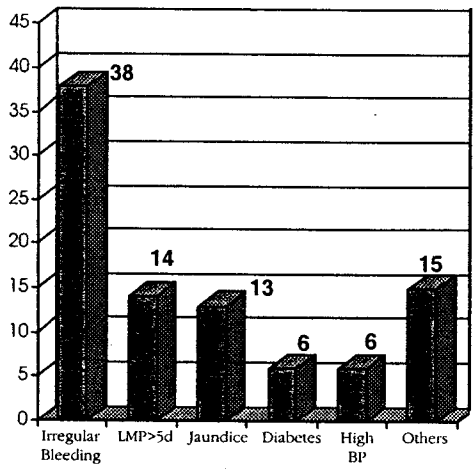
Source: Intervention clinic cards.

Identification of Programmatic Issues

Case Study 1

Monthly reporting and review of contraceptive method mix was a routine exercise done at the intervention clinics. When in one of the clinics the staff reviewed the monthly reports from January to May 1996, they found that the proportion of clinic users had remained static at 27-28 percent among the family planning method users in the clinic's catchment area. The clinic manager decided to go into the issue in depth. She reviewed the client-cards of all those women who had come to the clinic for clinical methods for the first time.

Graph 1 *Causes of Rajection of Potential Injectabl Contraceptive Acceptors in Clinic-I (Jan-May 1996) n = 100*



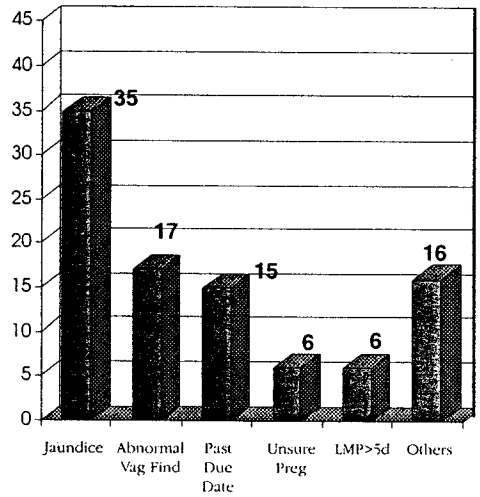
She found that during the previous five months, 100 of the 252 potential injectable acceptors had been rejected at the clinic, while 11 of the 39 potential IUD acceptors had been rejected the method. The reasons for the rejection, as recorded on the cards of the rejected clients, were tallied and plotted in a graph (Graph 1). It was seen that 38 clients had been rejected due to reasons recorded as irregular bleeding; 14 were 5 days past their last menstrual period (LMP); and13 had a history of jaundice. Discussions by the clinic manager with the clinic staff revealed that most of the rejected clients with irregular bleeding were using pills and had come to the clinic for injectables after stopping taking pills in the middle of their cycle. This caused break-through bleeding which was recorded as irregular bleeding, and they were refused the clinical method for the time being. The manager then decided to update the staff's knowledge on the issue and also advised the field staff to provide proper counseling to the potential clients before referring them to the clinic.

Case Study 2

In the other intervention clinic, a general complaint was raised by the field workers that many clients referred by them to the clinic for clinical method had been rejected at the clinic. The clinic manager reviewed the cards of the new FP clients coming to the clinic for clinical methods.

Of the 134 potential injectable clients coming to the clinic during the previous five months, almost two-thirds (92) had been rejected, and of 18 potential IUD clients, 50 percent had been rejected. With further analysis of the records on the cards of the rejected injectable clients, the manager was able to identify that of the 92 rejected clients, the cause was recorded as jaundice in 35 cases and as abnormal findings on vaginal examination in 17 clients (Graph 2).

Graph 2 *Causes of Rajection of Potential Injectable Contraceptive Acceptors in Clinic-II (Jan-May 1996) n = 92*



The large number of rejections due to jaundice in the absence of any outbreak of jaundice in the vicinity got the attention of the clinic staff. The clinic manager decided to seek technical assistance from the Medical Director of the organization to upgrade the technical competence of the paramedic, particularly with regard to identifying jaundice patients without having any laboratory facility. She also decided to monitor the paramedic giving appropriate counseling to clients rejected the method of their choice.

Discussion

Up to now, health and family planning programs in Bangladesh have managed to achieve significant improvements in coverage through strategies based on doorstep delivery of services. Given this widespread availability of services, the role of primary level clinics has been relatively less prominent. The recently promulgated Health and Population Sector Strategy has begun to revise the equation of program effectiveness with coverage. In line with the recommendations of the United Nations International Conference on Population and Development (ICPD) held in Cairo in 1994, quality concerns are being brought to the forefront and clinic-based services are emphasized far more as part of a drive to increase the

availability of a set of essential services for child survival and reproductive health[10].

The shift from doorstep to clinic-based services will require the development of appropriate management systems to support the clinic staff. Up to now, information systems have stressed the need to collect demographic data and have emphasized services to "eligible couples". This narrow focus was useful to monitor outputs and utilization, but had a limited value in ensuring quality and more comprehensive service coverage.

The introduction of clinic record keeping systems incorporating guidelines for service delivery addressed the important issue of improving the technical competence of the providers. Different assessment guidelines do exist. However, these are not always followed. In the family planning sector, when a client desires or is motivated to accept a contraceptive method, the potential client is screened to assess the appropriateness of that method for her. For example, the question "severe leg pain" (Fig. 1) is asked to assess whether the client is likely to have any deep vein thrombosis or varicose veins, the presence of which is a contraindication for applying hormonal contraceptive. If the response is 'yes', advice from a more specialized person is recommended. The paramedics and field workers in both the government and non-governmental sectors are trained to ask these questions. They, in fact, carry the written guidelines containing the questions to be asked for screening. However, what they do not have is a written checklist to check each question that they should ask for screening. The intervention tested the usefulness of introducing such a system.

Incorporating the checklists in the client cards helped the clinic staff to follow the essential steps of a proper client interview, diagnosis, treatment and follow-up. This system also enabled the supervisors and managers to review the procedures followed by the service providers in their interaction with clients. In sum, the checklists played an important complementary role in ensuring the skills acquired through training being applied consistently. HMIS interventions in Nepal and Ghana recognize that the client card provides a reminder to the service providers about the proper procedures including medical history, diagnosis, treatment, health education and follow-up. These procedures help ensure the highest quality of care being offered to each client.[11]

Introducing instruments to increase compliance with service delivery guidelines is likely to increase the time spent by the providers with individual clients. It could be argued that the checklist would also increase record keeping activities. Findings from the intervention indicate that the service providers in the intervention clinics were spending more time interacting with clients. The increase in time assigned to clients did not appear to have any negative effect on the average number of clients in the intervention clinics. Nevertheless, it is important to study further the effect of probable increased waiting time on clients' perceptions of the services. The evaluation of the intervention indicated that, in particular, more time was spent on history taking but, on the whole, the providers using the checklists spent less time on record keeping and reporting activities compared to those in the comparison clinics[8]. Although record-keeping systems can be developed to improve the technical quality of the services, it is important to examine how these improvements in quality affect the overall utilization of the services.

In our study, the impact made by the introduction of the client cards containing assessment checklists could not be examined due to many other related factors present at that time. However, the study shows that the intervention has helped to improve the diagnostic pattern and thereby the management of the clients. For example, in RTI cases, before the introduction of the system, most patients were diagnosed as having cervicitis, based on the amount of vaginal discharge and the condition of the cervix. After appropriate training and use of the checklists, the diagnosis was based on syndromic assessment guidelines and appropriate syndromic management was followed.

The tools also assisted the clinic managers to identify problem areas, e.g., rejecting potential injectable clients due to wrong diagnosis of jaundice by the paramedic. This led to identification of the training needs of the staff.

The standard practice, in most government and NGO clinics in Bangladesh, is to maintain separate registers in which the staff record individual services provided to clients. This method is relatively inexpensive, easy to install and - despite

the double recording of information, - is very useful for reporting daily clinic outputs. On the other hand, the registers tend to inhibit the ability of the clinic staff to provide continuity of care, and do not encourage identification of individual clients' needs nor enable the staff to track down the clients' past attendance at the clinic. From the overall perspective of the clinic managers, the service registers have a very limited usefulness in promoting and monitoring the quality issues. Finally, the current system of registers has the added limitation of relying on separate entries per register and, thus, creating duplication of information and paper work for the staff.

The separate clinic registers reflect a stage in the development of the health and family planning programme in which the primary organizational concern is the reporting of outputs and coverage rather than the use of the information by the staff or their immediate supervisors. Also, at this stage, the use of information by the client or the staff tends to be considered only to remind clients about the next vaccine or injectable contraceptive dose. Thus, in most cases, in addition to the clinic registers, service providers have also been using single-service client-held cards for users of IUD, injectable clients, pregnant women and children receiving vaccines under the Expanded Programme on Immunization. Nevertheless, the focus has changed to delivering integrated services to the clients. And, for those organizations that adhere to the principles formulated in Cairo by ICPD, program requirements have changed, and more information is needed to monitor the quality of services. In practice, this means developing user-friendly systems with information that enables the identification of unmet needs, reduction of missed opportunities, application of clinical protocols, and provision of continuity of care. The card-based clinic information system represents an evolution from the service statistics-based clinic record keeping system to a client-centered information system.

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