

Evaluation of Preventive Health Services for Hospitalised Children under a Child Health Programme

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ABSTRACT

In the hospital of the International Centre for Diarrhoeal Disease Research, Bangladesh, the Child Health Programme (CHP) has been offering preventive health care services to about 60,000 patients per year. The patient populations are mostly children who stay with their mothers or other relatives. In this programme, health education, immunisation and nutrition rehabilitation services are offered. Health education is offered as group discussion and face-to-face interaction between the educator and the mother. Immunisation is offered daily from 0700h to 1900h to all children and women attending the hospital. Nutrition rehabilitation services, both inpatient and outpatient, are offered to severely undernourished children. These preventive services are implemented by health workers and health assistants. All attendants and adult patients participate in health education sessions. More than 80% of unimmunised children and 50% of unimmunised women receive immunisation. The experience of the CHP shows that it is possible to offer different preventive health care services to all attendants and patients attending a busy hospital.

Key words: Preventive services; Health education; Immunisation; Nutrition rehabilitation; Diarrhoeal diseases; Primary Health Care.

INTRODUCTION

Since the declaration by the World Health Organization at Alma Ata in 1978 to attain adequate health care for all by the year 2000, emphasis has been given to promote primary health care in developing countries (1). Most primary health care programmes provide preventive and curative services in the community. However, the balance between the preventive and the curative services is important, but has rarely been assessed (2). In the developing countries, the burden of infectious diseases is great and the majority of childhood deaths are associated with diarrhoeal diseases and acute respiratory tract infections. Therefore, specific curative services are necessary to treat these infections and to prevent death (3,4). Based on the concept of "missed opportunities" (5), it is possible to offer preventive health care services to all patients and their attendants using the facilities of curative settings in a hospital. Since 1988, health education, immunisation and nutrition rehabilitation services for severely undernourished children have been integrated into a Child Health Programme (CHP) within the operative framework of a diarrhoeal hospital whose main

function is to treat patients with diarrhoeal diseases in Bangladesh. We have described earlier the evaluation of the immunisation programme in this hospital (6,7). In this paper we share our experience in implementing the preventive services within a busy curative setting.

PROJECT DESIGN

Since 1960, the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) has been offering treatment to patients with diarrhoea and associated illnesses at the Dhaka hospital. This hospital is the largest of its kind in the developing world, treating approximately 60 thousand to 90 thousand patients annually. More than 60% of the patients are children less than 5 years of age and the majority (>50%) are less than 2 years old. More than 10% of these children are severely undernourished, with a mean weight for height less than 70% of the United States National Center for Health Statistics (NCHS) standard (8). The overall strategy at the hospital is to offer immediate and simple treatment with oral rehydration solution (ORS) and to train the attendants, who are mostly mothers, how to prepare and use ORS at home.

Diarrhoea treatment setting. There is a quick turnover of patients at the hospital. The patient and the attendant first report to the outpatient department (OPD). Many patients (40%) do not stay more than 4–6 hours at the OPD. During this period they receive ORS under the supervision of a nurse and they observe a demonstration on how to prepare ORS at home. Patients (50%) having moderate to severe dehydration without associated illness are admitted into the "short stay unit" to ensure hydration. Here, they usually stay for 12–24 hours. Patients (6%) having associated illnesses, together with diarrhoea, are treated in the "inpatient unit" where they stay for about 3–5 days. A few patients (3%) require treatment in the 'intensive care unit' (ICU). Patients (0.8%) participating in research protocols are kept in the "study/metabolic ward." All patients coming to the hospital receive free treatment. During epidemics when wards are full, extra rooms need to be arranged to accommodate patients.

Preventive services setting. In late 1987, the Child Health Programme funded by the Danish International Development Agency (DANIDA) started functioning as part of the hospital activities of the ICDDR,B. The aim of the CHP is to initiate, strengthen and expand preventive health care services for the patients and attendants admitted to the Dhaka hospital. The preventive services include: health education, immunisation, and nutrition rehabilitation (both inpatient and outpatient) of severely undernourished children less than 5 years of age. These services were selected according to the health priorities in Bangladesh and the characteristics of patients attending the hospital. The integration of the preventive health care services with the curative services is schematically shown in Figure 1.

Health education. This is a major component of the preventive services offered by the CHP. Knowledge is given on the prevention of diarrhoeal dehydration, malnutrition and the importance of immunisation.

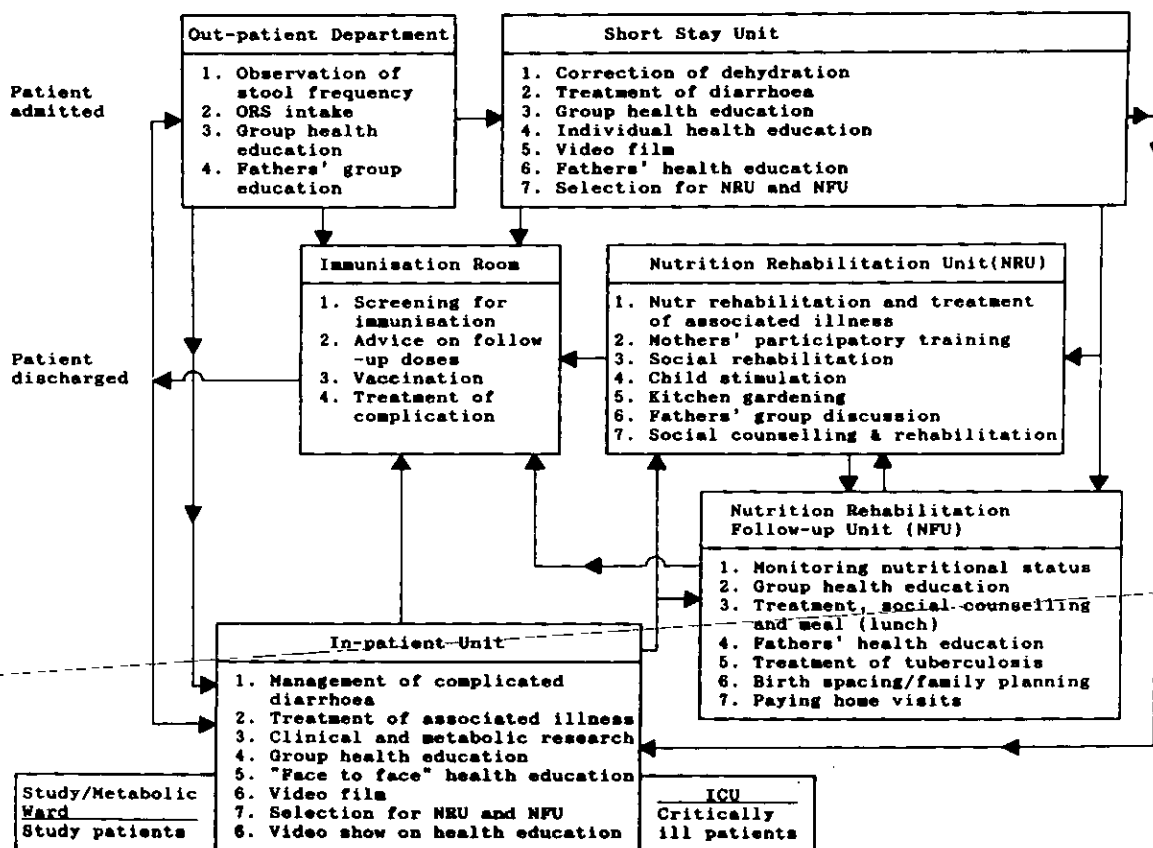


Fig. 1. Schematic flow chart of patients and attendants receiving preventive health care services in a diarrhoeal disease hospital (for details see the text).

Because many children and their attendants stay at the hospital for at least half-a-day and because they have limited access to health services, it was considered important that this opportunity should be fully utilised to offer preventive health care services.

The programme also covers family planning activities including child-spacing and safe childbirth. Health education is provided in groups, face-to-face interaction between the mother and the health educator and also using audiovisual aids. Health

education activities take place in all units of the hospital except in the ICU and study/metabolic ward. In the inpatient unit, short-stay unit and OPD, all attendants (mostly mothers) participate in health education.

Group discussion sessions (Fig. 2) with 5-6 participants and one health worker are arranged in the units at different times of the day, so that the session does not interfere with the hospital activities. The topics for group sessions are: preparation and use of ORS; feeding the child low-cost, balanced food; and immunisation of children and women. Each session lasts about 20 minutes and focuses on a few key messages (9). In the OPD and short-stay unit about 30 and 25 group sessions per day are held respectively. During the group discussion, mothers prepare and evaluate ORS by tasting, or are shown a poster on the EPI's six communicable diseases (polio, DPT, etc) or are given a demonstration about how to make low cost balanced food, *khichuri* (a one pot meal of rice, pulse, oil, green leafy vegetables, potato, sweet pumpkin, onion, and condiment cooked together).



Fig. 2. Mothers with the admitted children participating in a group discussion.

Health workers also conduct direct conversations about health education with mothers/attendants at the bedside during the day. Normally, the health worker encourages the mother to give the child ORS; to make use of the nutrition rehabilitation and immunisation services; and talks about personal hygiene, breast-feeding, birth spacing and mother-child interaction.

Once daily, in the late afternoon, a video film is shown in the short stay and inpatient units. The films deal with topics such as diarrhoeal disease prevention and treatment, immunisation, recognition of symptoms and treatment of diarrhoeal

dehydration, vitamin A deficiency and birth spacing/family planning.

The health workers who provide health education, are women from the lower socioeconomic classes having primary education, and one year of in-service training at the hospital. Health workers are instructed to treat the mothers with respect while attending to the sick child. The health workers are supervised by health assistants.

One male health assistant gives group health education to male attendants (mostly fathers) and adult male patients. The topics discussed are: how to prepare inexpensive foods (e.g. *khichuri*) for the sick child and the family and how to use the methods of family planning effectively.

Immunisation services. Considering the large number of unimmunised children and mothers of reproductive age attending the diarrhoea treatment centre, the immunisation service was included in the preventive health package of the programme. Immunisation is offered in a room in the hospital building daily from 0700h to 1900h (Fig. 3). In the OPD, all children

are screened, and children with incomplete immunisation along with their attendants are escorted to the immunisation room by a health worker. In the short stay and inpatient units, all children in the target age group (<2 years of age) and their attendants are escorted to the immunisation room on discharge. Women patients or attendants in the reproductive age group and without immunisation or having incomplete immunisation against tetanus are motivated to receive complete immunisation.

In the immunisation room, a health worker at first briefs the attendants on the benefits of immunisation, importance of follow-up immunisation

and possible complications. A health assistant gives the immunisation and again explains about follow-up doses. The health assistant informs the mother that follow-up doses can be received from the CHP and/or gives the name and address of the EPI clinic nearest to the mother's home. The mother is told to come back if any complication arises. All EPI procedures, recording and reporting are maintained. All children and women immunised are registered and follow-up records are kept (6). These reports are sent to the national EPI Bangladesh every month.

The NRU diet for both child and mother is based on using low-cost locally available foods: cereals, pulses, oil, green leafy vegetables, sweet pumpkin, and potato. All meals are prepared by the mothers under the supervision of a health worker. Use of fresh food items, and vegetables from the demonstration kitchen garden (Fig. 5) and standardised recipes ensure that the foods are well prepared and palatable. The unique feature of the NRU is that the mother herself takes care of and feeds her child. Health workers encourage the



Fig. 3. Offering immunisation upon discharge from the hospital.

Nutrition rehabilitation services. Because of increased mortality of severely malnourished children after hospital treatment (10), nutritional rehabilitation programmes have been organised for the severely undernourished children during convalescence from diarrhoea. Nutrition rehabilitation is offered through a small inpatient nutrition rehabilitation unit (NRU) and/or through an outpatient nutrition rehabilitation follow-up unit (NFU). Children with weight-for-age less than 45% of the NCHS standard (8) and/or with oedema are selected for the NRU, provided the mother (or attendant) is willing to stay. Children with less than 60% weight-for-age are selected for the NFU. Selection of undernourished children takes place in the short stay and inpatient units by health assistants. They explain to the mother and other family members about the nutritional status of the child and associated risks, together with the benefits of the nutrition rehabilitation services.

The NRU which is situated in the hospital building can accommodate 15 children, their attendants and breastfeeding siblings (Fig. 4). Children are admitted to the NRU only after diarrhoea is controlled.

mothers for child care through playing and singing. Mothers also participate in sewing classes for income-generating activities. Children and mothers sleep together on low wooden platforms. The average stay in the NRU is 14 days. After discharge the children are followed for improvement through NFU services.

Nutritional follow-up services. Soon after starting the inpatient nutrition rehabilitation services a need was felt for a nutritional follow-up service to those undernourished children whose mothers have failed to stay in the inpatient rehabilitation unit and to those children discharged from the inpatient unit. This outpatient-based rehabilitation helps to reduce the burden on inpatient rehabilitation services. Outpatient nutritional follow-up services are offered from a tin-shed house in the hospital compound. The NFU is open 5 days a week from 0900h to 1500h. Here, the child is examined for nutritional status by anthropometry and physical examination. Mothers receive health education, and are given demonstration on the kitchen garden. A health assistant discusses the overall condition of the child, the change in weight and the child's diet with the

mother. Group discussion on nutrition is conducted by a health worker. The mothers together with a health worker cook *khichuri*, which is eaten by all children and parents together.

A follow-up visit normally lasts about 4 hours. The time interval between follow-up visits is about 3-4 weeks and a family normally attends the NFU 4-6 times. About 15 children and 30 accompanying parents and siblings attend the NFU daily. Home visits are made to a limited number of families by a health assistant and/or social medical worker.

supervision. A programme coordinator works closely with the preventive health officers and the staff in charge of the curative services to coordinate all activities. In the initial phase, external and national coordinators worked closely to establish the services. The present staffing is shown in Table I.

Monitoring of programme activities. Keeping statistics of the services offered by the CHP not only helps in giving feedback to the staff working with the activities, but also is used as an indicator of

Table I. Characteristics of Staff Members Engaged to Offer Preventive Health Care Services

Services	Designation	Nature of job	No.	Qualification
Health education	Health Worker (HW)	Basic implementers	20	Primary education + in-service training
	Health Assistant (HA)	Supervision of HWs	2	Diploma in health science
Immunisation	HW	Health education	2	Primary education + in-service training
	HA	Immunisation	4	Diploma in health science
	Preventive Health Officer (PHO)	Supervision of HWs and HAs working with health education and immunisation	1	Public Health Nurse
Nutrition Rehabilitation				
Inpatient service	HW	Assisting mothers and HAs + Health education	6	Primary education + in-service training
	HA	Management of NRU ^a + Supervision of HWs	2	Diploma in health science
Outpatient follow-up	HW	Health education + Assisting mothers & HAs	4	Primary education + in-service training
	HA	Management of NFU ^b + Supervision of HWs	2	Diploma in health science
	PHO	Supervision of HWs and HAs working with nutrition rehabilitation services	1	Diploma in nursing + Diploma in nutrition
All services	Male Health Assistant	Health education of fathers and male patients	1	Diploma in health science
	Social Medical Worker ^c	Social counselling and rehabilitation	1	Degree in social science
	Monitoring and Evaluation Asstt	Monitoring and assisting in evaluation of services	1	Diploma in health science + Training in data processing
	Programme Coordinator	Overall supervision	1	Degree in medicine

^aNRU = Nutrition rehabilitation unit (inpatient service)

^bNFU = Nutrition rehabilitation follow-up unit (outpatient service)

^c = 50% of job time is used for Preventive Health Care Services

In both the NRU and NFU, emphasis is given to the welfare of the family. A social medical worker offers counselling to families with social problems. Fathers participate actively in group and individual discussion with a male health assistant on nutrition and birth spacing/family planning.

Staff. All preventive health care services are implemented by health workers and health assistants. Every 6-12 months, the health workers and health assistants rotate within the programme. Two preventive health officers are in charge of

achievements of the programme. A monthly meeting is organised with the health workers and health assistants to analyse the success or failures of these achievements and to find out ways to overcome any problem situation.

Training. Training is an integral part of the programme. Regular refresher training is organised for the staff working in the programme. From time to time an orientation programme is organised for the staff working in the curative services. These help to integrate the preventive activities with the

curative ones. Furthermore, it is a common practice to train health personnel from home and abroad on the activities of the CHP, and many root level workers of different non-government and government organisations receive in-hand training on the preventive services of the programme.

SERVICE PROFILES

One year (1988) was required to recruit and train the staff and to establish the preventive health care services.

In 1989 and 1990, 60,108 and 59,950 patients respectively reported to ICDDR,B for treatment of diarrhoea. Because of two epidemics, the unusually large number of patients in 1991 rose to 92,148. The proportion of patients less than 5 years of age was around 65%. Selected characteristics of these children and their families are shown in Table II.

Table II. Characteristics of Children and their Families Reporting to the ICDDR,B Hospital in 1990

Characteristics	Percentage
Total population surveyed (n=2,390) ^a	100
Children < 5 years of age	63
Children < 2 years of age	53
Children < 5 years of age surveyed (n=1,513)	100
< 70% weight for height (NCHS standard)	12
Mothers' education level (years of schooling):	
No education	55
1 - 5	17
6 - 10	17
> 10	11
Family income ^b (Taka per month)	
< 1,500	33
1,500 - 2,999	32
3,000 - 4,999	15
≥ 5000	20
Family members (no.)	
1 - 5	60
6 - 9	32
10 or more	08
Living in	
Periurban/rural areas	33
Other urban areas	47
urban slums	20

^a A 4% systematic sample of all patients reporting at the hospital.

^b Income is estimated in Taka enquiring about all sources of income (1 US \$ = Tk.38.04).

The preventive health care services given to patients and attendants in 1989, 1990, and 1991 are shown in Table III. This table indicates that a significant number of attendants and patients received health education. More than 80% of the target children and 50% of the target women were immunised in 1991. Mothers of undernourished children received some nutrition education while staying in the hospital.

However, only a small percentage of the severely undernourished children received nutrition rehabilitation.

Table III. Preventive Health Care Services Offered to Patients and Attendants in 1989 through 1991 at the ICDDR,B Hospital

Services offered	1989	1990	1991
Health education:			
No. of patients reporting to the hospital.	60,108	59,950	92,148*
No. of group classes	19,500	17,904	21,678
No. of viewers of video films	105,400	105,000	not recorded
Immunisation:			
No. (estimated) of target children with incomplete/without immunisation	11,413	9,297	10,241
No. of children immunised for measles	5,088	4,228	4,097
No. of children immunised (1 or more vaccines)	9,661	7,661	7,642
No. of children contraindicated (for any vaccine)	438	134	598
No. not accepting immunisation	112	102	195
No. (estimated) of target women with incomplete/without immunisation	24,144	17,346	16,300
No. of women immunised (for tetanus toxoid (TT) vaccine)	10,665	8,994	10,943
No. screened out for TT vaccine	156	63	100
No. not accepting immunisation	101	61	78
Nutrition rehabilitation:			
No. (estimated) of undernourished target children (< 70% weight for height)	4,100	4,575	6,975
No. admitted to the NRU (inpatient)	276	267	289
No. reporting to the NFU (outpatient)	494	747	745
No. of follow-up visits to the NFU	1,877	2,653	2,070
No. treated for tuberculosis	53	75	109
No. of home visits	88	178	328

*Patient number was higher because of two epidemics in 1991.

DISCUSSION

The preventive health care services offered by this programme are based on the concept of "missed opportunities" (5). The ICDDR,B attracts many patients with mothers or attendants for diarrhoeal treatment. A major programme limitation was taken into account by introducing a few focussed and important preventive care services in the curative setting of acute disease treatment. It was important to utilise this opportunity to offer preventive health care to these patients and attendants because most of them did not receive these services before coming to the hospital. Also, it is not certain whether they will have access to these preventive services, if they miss these opportunities while attending the hospital. Furthermore, it is a good opportunity to mobilise limited resources for a large number of patients gathered in one place. The approaches adopted by the programme were of practical importance. In a busy hospital, patients/attendants should be reached through maximum group discussion. The individual talk is required to develop good relationships with the patient and to motivate them to avail the

services offered. Immunisation programmes can cover a large paediatric population. And nutritional rehabilitation is important to break the diarrhoea-malnutrition cycle (11) and have some impact on child survival (12).

In this busy curative setting the ingenuity of the health professionals and support staff was extended to its maximum. It was, therefore, essential that the mode of integration of the preventive health care services be discussed and agreed upon by the



Fig. 4. Undernourished children and their mothers in the nutrition rehabilitation unit of the hospital.



Fig. 5. Kitchen garden in the hospital courtyard.

physicians and nurses in charge of the curative services. Orientation sessions with the physicians and nurses on CHP's activities helped to convince the curative staff and to get their support. Also, periodical performance evaluation of the support staff working for the CHP and discussing the service coverage, helped to maintain their continued interest in the programme.

The continuous monitoring system of the CHP helped to reach the largest proportion of patients and attendants. However, this has led to many adjustments in the policies, guidelines and approaches in use. For example, a sticker is placed on the file of the child selected for the NRU. This reminds the attending physician when discharging the child from the inpatient unit to refer the child to the NRU. Encouraging fathers to visit the NRU and NFU informs them of the benefits of nutrition rehabilitation where they can see and taste the food which the child eats and should be given at home. In an effort to increase the number of women immunised, results of focus group discussions on immunisation, conducted with staff and patients, were used. All women, in the target age group are now questioned by health workers and those without children who have not been immunised or have received incomplete immunisation for tetanus are escorted to the immunisation room in groups throughout the day. This modification of the previous practice, when they were only told to report to the immunisation room after discharge, substantially increased the rate of tetanus immunisation.

Operational research has been found to be an important instrument for continual expansion, strengthening and modifying the CHP approaches. Therefore, the research component has been incorporated into the programme. The behavioural changes of the mothers and the cost-benefit of different approaches of the CHP are the objectives of research. The research findings are shared with others through workshops, seminars and through publications.

The easiest to implement with objectively verifiable achievements was the immunisation programme. The high coverage of vaccines for the children was ensured by keeping the immunisation centre open every day and shifting the time *vis-a-vis* the different discharge times (0700h to 1900h). Ways to properly motivate mothers for different preventive services was improved by using the results of operational research (e.g. focus group studies). We feel that the sustainability of a programme for preventive services depends on instituting a monitoring and feedback system from the staff involved. Replicability of such programmes in other clinical settings would depend on the will of their senior management and mobilisation of both financial and human resources. Convincing busy health professionals responsible for curative work needs regular dialogue, continuing interaction, and

assistance of senior personnel. Yet, implementation of a preventive child health programme of its kind in other clinical settings needs further evaluation. This approach may prove to be important in making maximum use of the limited health services in developing countries, and a step towards attaining comprehensive health care for all by the year 2000.

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