(30) WP-44

Urban Health Extension Project

Urban FP/MCH Working Paper No. 1

Reaching the Urban Poor- The Case of the Urban Volunteers in Dhaka, Bangladesh

Ngudup Paljor
Abdullah Hel Baqui
Charles Lerman
Diana R. Silimperi

ICDDR,B
CENTRE
FOR HEALTH AND
POPULATION RESEARCH

International Centre for Diarrhoeal
Disease Research, Bangladesh

September 1994

THE INTERNATIONAL CENTRE FOR DIARRHOEAL DISEASE DISEASE RESEARCH, BANGLADESH (ICDDR,B) is an autonomous; non-profit organization for research, education, training and clinical services. It was established in December 1978 as the successor to the Cholera Research Laboratory which began in 1960 in response to the cholera pandemic in southeast Asia.

The mandate of ICDDR,B is to undertake and promote research on diarrhoeal diseases and related subjects of acute respiratory infections, nutrition and fertility, with the aim of preventing and controlling diarrhoeal diseases and improving health care. ICDDR,B has also been given the mandate to disseminate knowledge in these fields of research, to provide training to people of all nationalities, and to collaborate with other institutions in its fields of research.

The Centre, as it is known, has its headquarter in Dhaka, the capital of Bangladesh, and operates a field station in and around Matlab thana of Chandpur District which has a large rural area under regular surveillance. A smaller rural and a large surveyed urban population also provide targets for research activities. The Centre is organized into four scientific divisions: Population & Family Planning; Clinical Sciences; Community Health; and Laboratory Sciences. At the head of each Division is a Divisional Director; the Divisional Directors are responsible to the Director who in turn answers to an international Board of Trustees consisting of eminent scientists and physicians and representatives of the Government of Bangladesh.

The Urban Health Extension Project (UHEP) is a follow-on activity of the Urban Volunteer Program (UVP). In 1981, the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) began training women volunteers in urban Dhaka in the use of oral rehydration therapy (ORT) for diarrhoeal disease on the assumption that community women could play an important role in teaching others about the home treatment of diarrhoea with ORT. The United States Agency for International Development (USAID) began funding the project in 1986 with a mandate to provide maternal and child health and family planning (MCH-FP) services to the urban slums and to conduct research on issues related to child survival. UHEP continues to focus on MCH and family planning issues of the urban slums with an overall goal to strengthen the ability of the government and non-governmental agencies to provide effective and affordable family planning and selected MCH services to the urban poor through research, technical assistance, and dissemination of its research findings.

Urban Health Extension Project

Urban FP/MCH Working Paper No. 1

Reaching the Urban Poor - The Case of the Urban Volunteers in Dhaka, Bangladesh

Ngudup Paljor
Abdullah Hel Baqui
Charles Lerman
Diana R. Silimperi

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

September 1994

ICDDR,B Working Paper No. 44

Editing: M. Shamsul Islam Khan

Layout Design and Desktop Publishing: Tanbir Morshed
SAKM Mansur
Jatindra N Sarker

Printing and Publication: M. A. Rahim
Hasan Shareef Ahmed

Cover Design: Asem Ansari

ISBN: 984-551-028-0

Urban FP/MCH Working Paper No. 1
ICDDR,B Working Paper No. 44

September, 1994

Published by:
International Centre for Diarrhoeal Disease Research, Bangladesh
GPO Box 128, Dhaka 1000, Bangladesh
Telephone: 600171 (8 lines): Cable: CHOLERA DHAKA, Telex: 675612 ICDD BJ;
Fax: 880-2-883116 and 880-2-886050

Printed by Sheba Printing Press in Dhaka, Bangladesh

Foreword

I am pleased to release these reports on urban health and family planning issues which are based on the activities of the Urban Health Extension Project (UHEP). UHEP is a follow-on activity of the former Urban Volunteer Program, a pilot project funded by the United States Agency for International Development (USAID).

The poor health status and the health needs of the urban poor continues to be an important emerging public health issue in the Developing World. Bangladesh is no exception. Despite the constraints of poverty and illiteracy, there are proven strategies to provide basic health and family planning services to the urban poor. In Dhaka alone, aside from the Government health care facilities, there are numerous NGOs and private sector providers giving needed services to the urban population. The Centre's own Urban Health Extension Project continues to focus on the urban poor, especially the slum populations, in providing basic family planning and health services through outreach activities (viz. health education, ORS distribution and referral services to service points).

However, enormous challenges remain in providing an optimum level of services to the urban poor. The UHEP, with the support of the USAID, will focus on health and family planning services delivery strategies in reaching the needed services to the urban poor. We certainly look forward to learning more about the health and family planning needs of the urban poor, testing sustainable strategies and applying these proven strategies in collaboration with other partners in government, NGOs and the private sector.

Demissie Habte, MD
Director

Acknowledgements

The Urban Health Extension Project (UHEP) is funded by the United States Agency for International Development (USAID) under the Cooperative Agreement No. 388-0073-A-00-1054-00 with the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B). ICDDR,B is supported by the aid agencies of the governments of Australia, Bangladesh, Belgium, Canada, Denmark, Japan, the Netherlands, Norway, Saudi Arabia, Sweden, Switzerland, the United Kingdom, and the United States; international organizations, including the United Nations Children's Fund (UNICEF), the United Nations Development Programme (UNDP), the United Nations Population Fund (UNFPA), and the World Health Organization (WHO); and private foundations, including the Ford Foundation (USA) and the Sasakawa Foundation (Japan).

The authors wish to acknowledge the valuable input of the following staff members of UHEP, ICDDR,B in this report.

Dr. Shams El Arifeen, Senior Research Investigator
Ms. Nazma Begum, Data Management Coordinator
Ms. Nancy Fronczak, Research Fellow
Ms. Meghla Islam, Trainer
Mr. Rafiqul Islam, Programmer
Ms. Shamim Ara Jahan, Community Health Coordinator
Ms. Monowar Jahan, Trainer
Ms. Jahanara Khatun, Community Health Coordinator
Ms. Mahmuda Khatoon, Community Health Coordinator
Dr. Sandra Laston, Anthropologist
Ms. Hazera Nazrul, Senior Field Research Officer

Contents

List of Tables

Appendix

Summary

To test the feasibility and the impact of using the services of women volunteers from the slum communities to provide preventive health care and referral information to slum residents, Urban Volunteer Program (UVP), the predecessor of the Urban Health Extension Project (UHEP), was conceived at ICDDR,B in early 1980s. Special attention was paid to the health needs of women of child bearing age and children aged less than 5 years. The Program's original focus was the control of diarrhoea through health education and distribution of prepackaged ORS, but over time expanded to nutrition, immunization, and family planning.

The UHEP currently has about 350 volunteers in the slum areas of 5 *thanas*[1] of Dhaka city. The estimated slum population of these 5 *thanas* is about 376,000. The volunteer services reach an estimated 80,000 population. Other NGO outreach services are also available in some of these slum areas.

Volunteers are mostly illiterate or semi-literate women recruited from the catchment communities. After recruitment, volunteers receive a two-week basic health training. They also receive a four-day refresher training every 4 months. Each volunteer is responsible for about 30-50 households. Volunteers visit each catchment household once a month. During these visits, the volunteers provide information on diarrhoea prevention, immunization, nutrition, and family planning. They also provide referral services and distribute ORS to diarrhoea patients. To provide support and replenish ORS supplies, Field Supervisors (FSs) visit each volunteer once a fortnight (25 volunteers : 1 FS). Community Health Coordinators (CHCs) provide quality assurance and support in the field checking on both FSs and volunteers' (6 FSs : 1 CHC) outputs.

[1] *Thana* is a police jurisdiction area with an estimated population of 400,000. The rural *thanas* are smaller with an average population of 200,000.

To evaluate the effectiveness of the volunteer-based service delivery system, qualitative and quantitative studies were conducted. These studies demonstrated that it was feasible to recruit, train, and retain volunteers in the slum areas of Dhaka and that the urban volunteers effectively increased: a) mothers' knowledge of diarrhoea prevention and ORT use rate; b) immunization knowledge and coverage; and c) contraceptive use prevalence. These findings suggest that delegation of certain health service delivery responsibilities to the community-based volunteers is possible. Volunteers can serve as important links between professional health workers and slum dwellers and, thus, may help overcome the 'invisible barriers' that inhibit service use, especially by women. Therefore, inclusion of a volunteer component in a structured health service delivery system may improve the acceptance and usage of the services provided, extend some basic health and family planning services to the community, such as diarrhoea treatment and health education messages, and improve the overall effectiveness of the service delivery system.

Introduction

The paper discusses the urbanization situation in Bangladesh, highlights the magnitude of the health and population problems of the slum communities in Dhaka, the capital of Bangladesh, and describes one initiative -- the Urban Volunteer Program (UVP) -- to improve the health situation of the slum population. The paper also documents some of the lessons learned from the UVP experience, and concludes with a description of the implications of those lesssons.

Profile of Bangladesh

The typical indicators of an underdeveloped country under extreme stress abound with Bangladesh. Saddled with a population of 112 million (1) living in a land area of about 144,000 square kilometers, and with an annual per-capita income of about US$ 220, Bangladesh is one of the poorest and most densely populated countries of the world.

The all too familiar gloomy statistics highlights the precarious health and demographic profile of Bangladesh's poor population. The country's crude birth rate is 38/1,000 population, crude death rate is 14/1,000 population (1), and total fertility rate is 4.9 (2). The annual growth rate is 2.4% ; if the present trends continue, the population size will double within 30 years. The infant mortality rate is 96/1,000 live births, <5 mortality rate is 188/1,000 live births, and maternal mortality rate is 6-8/1,000 live births. Only about 45% of the population has access to health services. Life expectancy is about 52 years for men and 50 years for women (3).

Over the last two decades, the Government of Bangladesh (GoB) has developed a health and family planning services delivery system in the rural areas of the country. This system began to have considerable impact in terms of key health and demographic indicators. The contraceptive use prevalence and immunization coverage have increased. The total fertility rate, crude birth rate, and infant mortality rate have declined (4).

Nevertheless, these results are far from the levels required to match the population with the country's resources and keep it within the limits that the existing infrastructure can support.

Urbanization and Health in the Context of Bangladesh

Until recently, the country was largely rural. In 1961, slightly more than 5% of the population lived in the urban areas. During the last decade, Bangladesh has experienced severe problems related to urban growth. According to the 1991 census estimate, 20% of the country's population is urban. The urban population is growing at a rate of about 6% per annum (5). This rapid urbanization in Bangladesh, unlike in developed countries, has been occurring almost independently of any overall improvement in the socioeconomic conditions. Thus, rapid urbanization in Bangladesh, instead of being a sign of economic progress, has led to considerable urban poverty.

The World Bank projections indicate that the urban share of Bangladesh's population will rise from 20% of the total population in 1990 to 33% of the total in 2010 (5). This translates into an absolute urban population of over 55 million, roughly the current total population of the United Kingdom.

The largest urban metropolis in Bangladesh is Dhaka, the capital of Bangladesh, with an estimated current population of more than 6 million, of which about a third are slum-dwellers. By the year 2000, Dhaka is projected to have a total population of 10 million urban-dwellers. Environmental and health conditions for Dhaka slums are extremely poor. The average population density is about 900 people per acre. Only about 8% of the households has private latrine, 5% of the households does not have access to a latrine, and the remaining households share latrine with up to 40 households. Although 100% of the households use either tap or tube-well water, often the water source is outside the community, and the household

members spend hours to collect water for their daily use. Since many of these areas are located in low-lying terrain, they are often devastated by floods (6).

Although some of the basic health indicators may seem to be comparatively better for urban areas as a whole than for the national average, these same indicators show a very disturbing situation for urban poor, especially for those living in urban slums and squatters. The health conditions in urban slum settlements are extremely precarious. The major diseases affecting the urban poor are diarrhoea, respiratory tract infection, scabies, fever, typhoid, whooping cough, tetanus, and measles (UHEP unpublished data). According to the Population Crisis Committee, Dhaka ranks among the five lowest world metropolises for general living conditions and among the three lowest for public health services (7).

Although the Government of Bangladesh (GoB) has a structured health and family planning service delivery system for the rural population, the GoB does not have a comparable infrastructure for the urban population. International and local non-governmental organizations (NGOs) are the primary service providers for this population, but their resources are limited, services are often selective, less than optimum, and their coverage incomplete. Furthermore, there is a lack of coordination among NGOs and between NGOs and government agencies. Studies have shown, however, that well-designed interventions can reduce fertility, mortality, and morbidity rates in Bangladesh despite the constraints of poverty, illiteracy, and underemployment. The strategies, thus far devised, have largely focused on rural Bangladesh.

In response to a recognition that existing health facilities were not adequately reaching the poorer sections of Dhaka, ICDDR,B initiated an urban health project in the early 1980s. The project was known as Urban Volunteer Program (UVP), and renamed as Urban Health Extension Project (UHEP) in 1991 (8).

Urban Volunteer Program

Concepts and Strategies

The Urban Volunteer Program (UVP) of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) was a community-based health delivery project focusing on the urban slums of Dhaka. It was conceived as an operations research and service delivery pilot project to test the feasibility and impact of using women from slum communities to furnish preventive health care and referral information to slum residents. The basic assumption was that community health education and health product distribution can measurably improve the health status of slum residents even under conditions of chronic social, economic and environmental distress.

The UVP model was based on the following premises:

1. Sustainable interventions for urban poor communities should have low-capital costs as both government and community resources are limited.
2. Health-care interventions should be targeted to women and their children living in slums, because they are the most vulnerable and high-risk groups.
3. The urban poor can receive effective services through training and mobilization of people from their own communities.

The above premises are based on the recognition that community health in urban poor areas is unlikely to gain appreciable improvements through isolated, fixed-site programs which use highly trained and expensive professionals. Grassroots-based outreach activities generated from within slum communities offer the most promising strategy for such improvements. In line with such thinking, UVP stresses preventive over curative services.

It focuses on developing teaching materials and interventions which can be learned and applied within the constraints of urban slum environments.

History of UVP

The urban volunteer system has evolved through observations and experiences gained over a decade. In 1981, ICDDR,B began recruiting mostly illiterate and semi-literate women from urban and peri-urban slum areas of Dhaka and trained them in the preparation and use of oral rehydration solution for the home treatment of diarrhoea. Over the years, the training curricula was expanded to include immunization, nutrition, and family planning.

Between 1981 and 1986, recruitment and training of the volunteers was carried out in an informal manner, without clear selection criteria, and no effort was made to define service catchment areas. Furthermore, the training curricula were not standardized, and there was an inadequate organizational infrastructure for tracking the volunteers, maintaining their skills and documenting their service activities.

In 1986, ICDDR,B, with the support from USAID/Dhaka, decided to formalize this relatively informal urban volunteer system with the following objectives: a) to test the feasibility of recruiting and training volunteer women from urban slum areas to provide basic preventive health and family planning (FP) education and referral services to slum residents, and b) to evaluate the effectiveness of this volunteer-based service delivery system.

Between 1987 and 1989, the UVP attempted to develop the various components of the urban volunteer system by incorporating the experiences and inputs of the volunteers themselves. During this period, urban slum-specific training curricula and educational materials were developed. A supervisory system was developed, volunteer population ratio was defined,

and a simplified data collection system using a symbol calendar was developed.

Description of the Volunteer-based Service Delivery System

There are 14 *thanas* in Dhaka city (Appendix I - sketch map of Dhaka city). The project's service delivery is limited to selected slums of 5 *thanas*. The service structure comprises 350 volunteers, 16 field supervisors (FS), 3 trainers, 3 community health coordinators (CHCs), and one health services coordinator (HSC).

Personnel Ratios

Volunteer : Households = 1:30 to 1:50; FS : Volunteer = 1:25; CHC:FS = 1:6. The health services coordinator is responsible for overall supervision of the service component of the project.

Volunteer Selection Criteria

Volunteers are expected to be self-motivated women aged between 18 and 40 years, preferably a housewife from a respected family with no more than two children and have lived in the target slums for at least one year. They should be willing and able to learn basic health and family planning information and impart that information to others and should also be willing and able to collect basic service data. Volunteers are recruited by the Field Supervisors and Community Health Coordinators (CHCs) in consultation with the community leaders.

Training

Newly recruited volunteers receive a two-week basic health training in the project's four activity areas. These are: a) Diarrhoea prevention and treatment, b) Nutrition, c) Immunization, and d) Family planning. The basic

health training includes a two-day training on service data collection using a symbol calendar. The volunteers also receive a four-day refresher training every four months. The training methodology includes lectures, group discussions, role playing, demonstrations, videos and film shows, and service site visits.

Volunteers are required to take a pre-test and a post-test during the basic health training. If the post-test score is above 75%, the volunteer is considered graduated. If the score is between 60% and 75%, a trainer follows up the volunteer in the field. If the score is less than 60%, the volunteer is required to undergo the training again.

Target Populations

The target populations are mothers and children aged less than five years living in the slums of the five *thanas*. There are also sub-populations for specific strategies: children aged less than 2 years for immunization; children aged below 5 years for nutrition education and diarrhoea/hygiene strategies; and currently married women for family planning.

Volunteer Tasks and Focus Areas

Volunteers provide health education, make referrals, accompany clients to health and family planning Centres, and distribute ORS. Their specific tasks within each core area are as follows: **diarrhoeal disease** prevention and treatment - health education, ORS distribution, referrals to health facilities; **immunization** - education, referrals to government and NGO immunization Centres, accompany clients to immunization Centres; **nutrition** - education and referral to Nutrition Rehabilitation Centres; **family planning** - education, motivation, and referral to government and NGO Centres and accompany clients to these Centres.

Volunteer Catchment Area

. Each volunteer is responsible for about 30-50 households. They are expected to visit their catchment households to provide health education and referral services at least once a month (active services). However, volunteer services are not limited to their catchment areas. Anyone can come to a volunteer any time for advice or ORS packets (passive services).

Service Data Collection Procedures

Volunteers collect service data using a symbol calendar (Appendix II). One calendar is used for a month. Completed calendars are submitted to Field Supervisors at the end of each month who, in turn, submit the calendar information to CHCs. The data are edited and processed by the project's data management section. Monthly reports are generated within one month from the time of submission of the service output data.

Supervision and Support

The Field Supervisors maintain a regular schedule of visits to their volunteers once every two weeks. During these visits the Field Supervisors check the quality of information given by the volunteers to their clients, provide support in providing health education, assist in the data collection, and replenish the supply of ORS packets to the volunteers. The CHCs visit a 10% sample of volunteers in each month to check and ensure the maintenance of the Field Supervisors' schedule, the correct distribution of ORS packets, and the quality of the interaction between the Field Supervisors and the volunteers. The CHCs and Field Supervisors use standardized quality assurance forms and check-lists. Finally, the Health Services Coordinator (HSC), who is in-charge of the service component of the project makes random spot checks.

Field Supervisors meet weekly with their respective CHCs in the field offices. In this meeting the Field Supervisors submit the calendar service data, discuss problems, identify solutions to the problems, receive supplies, and receive updates on training.

Profile of the Volunteers

The project maintains a database on volunteers' personal characteristics, their performances in training, and the services they provide. This information is updated periodically. The average age of the volunteers is 32 years. Sixty-six per cent of the current volunteers are married, 2% divorced, 12% widowed, 11% separated, and 9% never married. On the average, each volunteer has 2.4 children. The educational level of volunteers is slightly higher than their counterpart slum women. Thirty-three per cent of the volunteers have more than 5 years of schooling, 30% have 1-5 years of schooling and the remaining 37% have no formal education. While 60% of the volunteers are not employed outside their home, 13% work as housemaid or *ayah* (child care), 8% are employed in health services and 7% in garment factories. The retention rate of the volunteers in the project is impressive; the annual drop-out rate is only about 3%. Eighty-four per cent of the volunteers have worked as volunteers for three or more years. The average length of service is 5.7 years. Close to half of the volunteers reported a monthly household income of Taka[2] 2000-5000, 34% reported a monthly household income of Taka 1000-2000, and 8.5% reported a monthly household income of less than Taka 1000.

[2]Appximately, Taka 40 = US$1.

Urban Surveillance System

The Urban Volunteer Program has also developed a comprehensive health and demographic surveillance system, known as the Urban Surveillance System (USS), in a probability sample of the project's 5 *thana* slums. The USS is designed to collect baseline sociodemographic, health and family planning (FP) information, and to collect demographic and selected health and FP events information in a 3-month cycle. The socioeconomic information is updated annually. This system provides a mechanism through which the impact of various public health interventions can be evaluated (9).

Evaluation of the Volunteer System

Both formal and informal evaluation of the different aspects of the volunteer service delivery system has been carried out in the past several years. Field experience and anecdotal information suggested that it was possible to recruit, train, and retain women volunteers in the slum areas of Dhaka, and they did provide a considerable amount of services to their neighbours.

During 1984-1989, special studies were conducted to assess the effectiveness of specific educational interventions delivered by the volunteers. One intervention attempted to reduce the incidence of diarrhoea by improving mothers' hygienic behaviour and another intervention was aimed to design strategies to improve immunization coverage. These special interventions carried out in a limited population demonstrated substantial decrease in the incidence of diarrhoea and the increase in immunization coverage (10,11).

To gain some understanding of why many urban volunteers continue to serve their neighbours for a reasonably long time, focus group discussions were conducted with a sample of volunteers and mothers from volunteer-served areas. Findings from these group discussions indicated that an

important reason for continued volunteer services was that their services and association with ICDDR,B enhanced their respect in the community. The volunteer services also afforded them greater mobility in the community. The volunteers and the community mothers considered the volunteer services as important. Many volunteers also hoped that their work and experience would help them get a job in the future (12).

A cross-sectional survey was conducted in urban volunteer-served areas and in comparison areas to quantitatively evaluate the effectiveness of the volunteer-based service delivery system. The survey was designed to assess the impact of urban volunteers on mothers' knowledge and practices in the following areas: a) prevention and treatment of diarrhoea, b) childhood immunization, and c) family planning.

The USS population was used for the evaluation. Due to the presence of NGO services in many USS clusters, a simple UVP intervention and non-intervention comparison did not seem feasible. There are many different NGOs providing services in many slums, while the types of services provided and areas covered by them are also different. The comparison would not adequately address UVP's impact without taking into account the service input of NGOs.

Based on the UVP and NGO activity information, the USS clusters were divided into the following four service cells:

1. Urban Volunteer activity only
2. Other NGO outreach activity only
3. Joint UVP and other NGO outreach activity
4. No outreach activity area.

All the analyses have been done comparing the above four population areas. However, as the service areas covered by different NGOs varied considerably, the service cells were recreated separately for analyses of diarrhoea, immunization and family planning data.

Table 1 shows mothers' knowledge of causes of diarrhoea by service area. The specific knowledge of the causes of diarrhoea varied by service area. Compared to 'no outreach activity areas', knowledge level was higher in the UVP and the NGO service areas. The percentage of mothers who considered not washing hands as a cause of diarrhoea was highest in the joint UVP/NGO areas (29%). The percentage of mothers who considered dirty environment as a cause of diarrhoea was highest in areas with only NGO input (45%), and the percentage of mothers who considered poor food hygiene as a cause of diarrhoea was highest in areas with only UVP (75%) activities.

Table 1. Mothers' Knowledge of Causes of Diarrhoea by Service Area

Mothers' Stated Causes of Diarrhoea	Service Area				
	UVP (n=1026)	UVP + NGOs (n=385)	NGOs (n=370)	Compa-rison (n=1062)	Total (n=2843)
Not washing hands*	21†	29†	22†	14	20
Dirty environment*	41†	30†	45†	32	36
Poor food hygiene*	75†	71†	71†	65	70
Flies*	30†	42†	32†	22	29
Contaminated water*	9†	12	5	4	7
Did not know*	8†	7	12	13	10

Data are percentages of mothers

* The overall distribution was significantly different, $p<0.05$
† Significantly different from Comparison Area, $p<0.05$

Table 2 shows the impact of UVP and other NGO outreach services on ORT use rate after controlling for possible confounding factors. This indicates that both UVP and NGO services were significantly positively correlated with ORT use.

Table 2. Logistic Regression Analysis to Assess the Impact of UVP and NGO Services on ORT Use in 670 Diarrhoeal Episodes in Dhaka City Slums

Service Input	Odds Ratios[2]	95% Confidence Interval
UVP[1]	1.93	1.29-2.87
NGO[1]	2.52	1.51-4.15
UVP/NGO[1]	2.75	1.45-5.22

[1] Reference category = comparison area.

[2] The odds ratios are adjusted for child's age, gender, household economic status, mother's age, mother's education, seasonality, and migration status.

Table 3 shows the contraceptive use and method-mix rate by service areas. Areas with only urban volunteers and with joint UVP/NGO field workers had six to eight percentage points higher contraceptive use than the comparison areas. Notably, this use was higher for pills and condoms, methods commonly distributed at the community level. No consistent pattern emerged with the use of other methods.

Table 3. Contraceptive Use Prevalence by Service Area

Type of Method	Only UVP (n=120)	UVP + NGO (n=2195)	Only NGO (n=1538)	Comparison (n=450)	Total (n=4303)
Contraceptive use*	40	42 †	33	34	38
Pills*	17	20 †	15	12	18
IUD*	2	2	1	1	2
Injectables*	7	4	4	6	4
Condoms*	3	2	2	<1	2
Tubectomy*	5	9	6	7	8
Vasectomy*	1	1	1	3	1

Data are percentages of eligible couples

* The overall distribution was significantly different, $p<0.05$

† Significantly different from comparison area, $p<0.05$

* Statistical analysis not done as small numbers

Table 4 shows the net effect of urban volunteer presence on contraceptive use. It indicates that a UVP presence was positively associated with contraceptive use, barely significant when the UVP presence was exclusive and barely insignificant when this presence was in conjunction with NGO field workers.

Table 4. Logistic Regression Analysis to Assess the Impact of UVP and NGO Services on Contraceptive Use Rate

Service Input	Odds Ratios[2]	95% Confidence Interval
UVP[1]	1.52	1.01-5.11
NGO[1]	0.83	0.64-1.07
UVP+NGO[1]	1.22	0.93-1.61

[1] Reference category = Comparison Area

[2] The odds ratios are adjusted for women's age, education, religion, economic status, and migration status

Table 5 shows the effect of a UVP presence on DPT-OPV, measles, and BCG immunization for children. Areas with the exclusive UVP presence had higher DPT and BCG coverage than that of the comparison areas. However, the NGO areas had a higher coverage than UVP areas and the joint areas had the highest immunization coverage.

Table 5. Immunization Coverage by Service Area

Type of Immunization	Only UVP (n=116)	UVP + NGO (n=833)	Only NGO (n=581)	Comparison (n=435)	Total (n=1965)
DPT-OPV (3 doses)*	33†	50†	42†	21	40
Measles*	24	38†	38†	22	34
BCG*	58†	70†	66†	42	62

Data are percentages of eligible children/mothers

* The overall distribution was significantly different, $p<0.05$
† Significantly different from comparison area, $p<0.05$

Table 6 shows the impact of urban volunteers and NGO field workers on 3-dose DPT-OPV coverage. Compared to comparison areas, children in the UVP areas were 73% more likely to receive DPT-OPV. Children in areas served by NGO only were about 2.6 times more likely and children in areas served by both UVP and NGOs were more than 3 times more likely to receive 3-dose DPT-OPV.

Table 6. Logistic Regression to Assess the Impact of UVP and NGO Services on 3-Dose DPT-OPV Immunization Status

Service Input	Odds Ratios[2]	95% Confidence Interval
UVP[1]	1.73	1.08-2.77
NGO[1]	2.64	1.97-3.54
UVP+NGO[1]	3.10	2.35-4.07

[1] Reference category = Comparison Areas

[2] Odds ratios are adjusted for mother's age, mother's education, child's gender, religion, and migration status

The 4-cell analyses indicate that urban volunteers effectively increased: a) mothers' knowledge of prevention of diarrhoea and ORT use rate; b) immunization coverage; and c) contraceptive use prevalence. The most successful areas were the ones jointly served by urban volunteers and NGO field workers.

Lessons Learned

Findings of the field observations and structured focus group discussions suggest that largely illiterate women from slum communities can indeed be recruited and trained as volunteers. These volunteers have been found to be effective in transmitting simple health messages to their neighbours, referring and accompanying them to clinics, and motivating them to improve their personal hygiene, use ORS, receive immunizations, and adopt contraception. They are also effective direct distributors of health and family planning commodities, such as ORS and medicated soap.

Volunteer activities at the outset were limited to one service, i.e. to assist mothers in the management of diarrhoea or to motivate them to immunize their children. Over the years, additional components have been added. UVP experiences suggest that volunteers are most effective when their activities are limited to a few priority intervention areas, and that they tend to lose effectiveness with multiple tasks and subjects.

Results from the four-cell analyses revealed that contraceptive prevalence rates, immunization rates, and ORS use rates were better in areas where the volunteers were working than those of the comparison areas. This finding supports the conclusion that it may be possible to delegate certain health service delivery responsibilities to volunteers. Volunteers may serve as important links between professional health workers and slum dwellers and thus, may help overcome some of the barriers that inhibit the use of services, especially by women.

While some of the indicators were better in the NGO-served areas than the volunteer-served areas, all the indicators were best in joint areas where both the NGOs and volunteers work. This finding suggests that volunteers may play an important and effective role in linking slum residents with service points. They may also serve as important social and cultural liaisons between health workers and slum residents. Therefore, including a

volunteer component in a structured health service delivery system may improve the acceptance and usage of the services provided, extend some basic services to the community level, such as treatment of diarrhoea and preventive health messages, and improve the overall effectiveness of the system. However, it would be inappropriate to expect them to work as the solo health providers in urban slum areas; they do not substitute for professional and paraprofessional health service providers.

Since volunteers and their clients come from the same environment, this urban volunteer demonstration project showed that illiteracy and poverty were not insurmountable obstacles to the improvement of the health status of mothers and children.

The UVP experiences also demonstrates that the implementation of a successful volunteer-based service delivery system requires consistent recruitment procedures, standardized training, well-delineated catchment areas, routine performance evaluation strategies, and adequate supervision and training.

Among the many immediate questions now facing UVP is whether a volunteer health delivery system is sustainable in the long run. Results of the 4-cell evaluation have clearly shown that the greatest impact was observed in the areas where there is combined input of volunteers and NGO field workers. This finding suggests that inclusion of a volunteer component in the structured service delivery system of NGO and/or government could improve service access and coverage. Such a system could simultaneously capitalize on the strengths of volunteers and NGO/government paid health and family planning workers. Thus, volunteers could serve as a front line of defense, providing health education and home remedies, while referring those in need of greater services to paid professional health workers, family planning clinics, and other health service points (13,14).

References

1. Bangladesh Bureau of Statistics. 1991 preliminary census estimate. Dhaka: Bangladesh Bureau of Statistics.
2. Mitra SN, Lerman C, Islam S. Bangladesh contraceptive prevalence survey 1991. Final report.
3. Investing in health. In: World Development Report 1993. Washington, D.C.: World Bank, 1993.
4. Bangladesh demographic and health survey, 1993-94. Preliminary report. Dhaka: NIPORT, Mitra and Associates, 1994.
5. Report of the Task Forces on Bangladesh Development Strategies for the 1990's. v. 3. Dhaka: University Press Ltd, 1991: 411-84.
6. Arifeen SE, Mahbub AQM, editors. A survey of slums in Dhaka metropolitan area-1991. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh, 1993. (ICDDR,B working paper no. 39) (Urban FP/MCH working paper no. 11).
7. Cities: life in the world's 100 largest metropolitan areas. Washington, D.C.: Population Crisis Committee, 1990.
8. Urban Volunteer Program Project proposal, 1986 (unpublished).
9. Baqui AH, Jamil K, Jahangir NM, Nahar QN. Urban Surveillance System - Dhaka: methods and procedure. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh, 1994. (Urban FP/MCH working paper no. 2) 1994.
10. Stanton BF, Clemens JD. An educational intervention for altering water sanitation behaviors to reduce childhood diarrhea in urban Bangladesh: A randomized trial to assess the impact of the intervention on hygienic behaviors and rates of diarrhea. *Am J Epidemiol* 1987;125:292-301.

11. Hughart N, Silimperi DR, Khatun J, Stanton B. A new EPI strategy to reach high risk urban children in Bangladesh: urban volunteers. *Trop Geogr Med* 1992;44:142-8.

12. Laston SL, Baqui AH, Paljor N. Urban volunteer service in the slums of Dhaka: community and volunteer perceptions. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh, 1993. (ICDDR,B working paper no. 41) (Urban FP/MCH working paper no. 13).

13. Urban Health Extension Project Proposal, 1991 (unpublished).

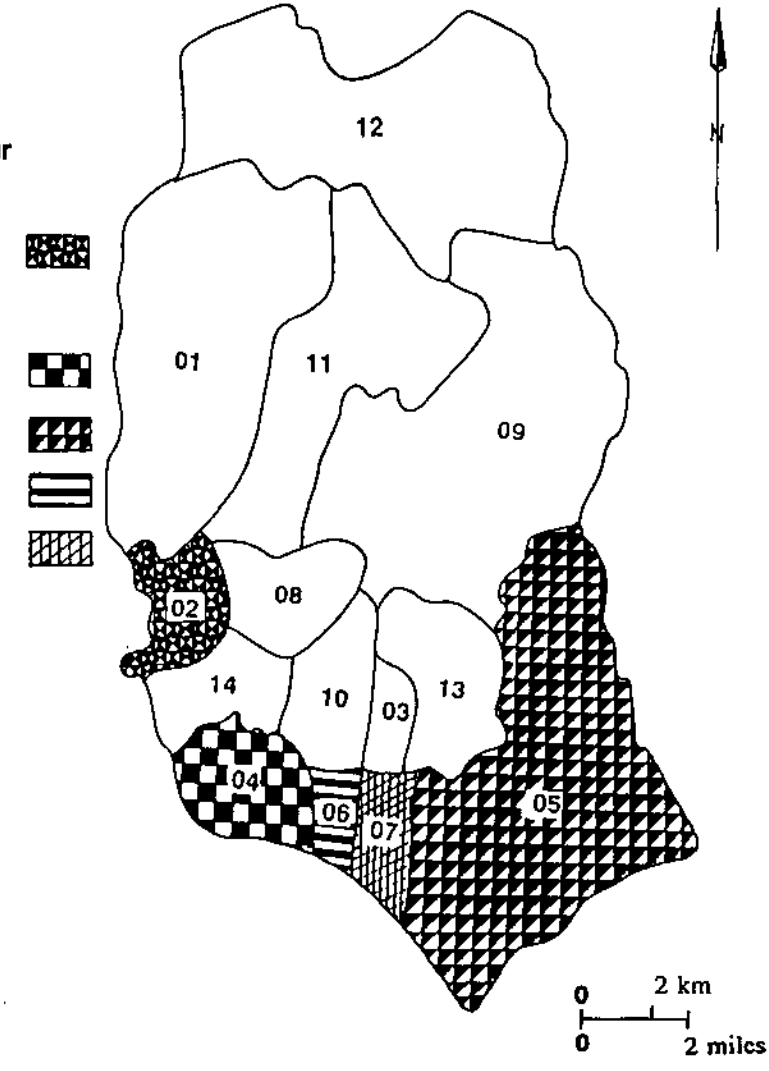
14. Urban MCH-FP Extension Project Proposal, 1994 (unpublished).

Appendix I. Sketch Map of Dhaka Metropolitan Area

SHADED THANAS ARE UHEP'S TARGET THANAS

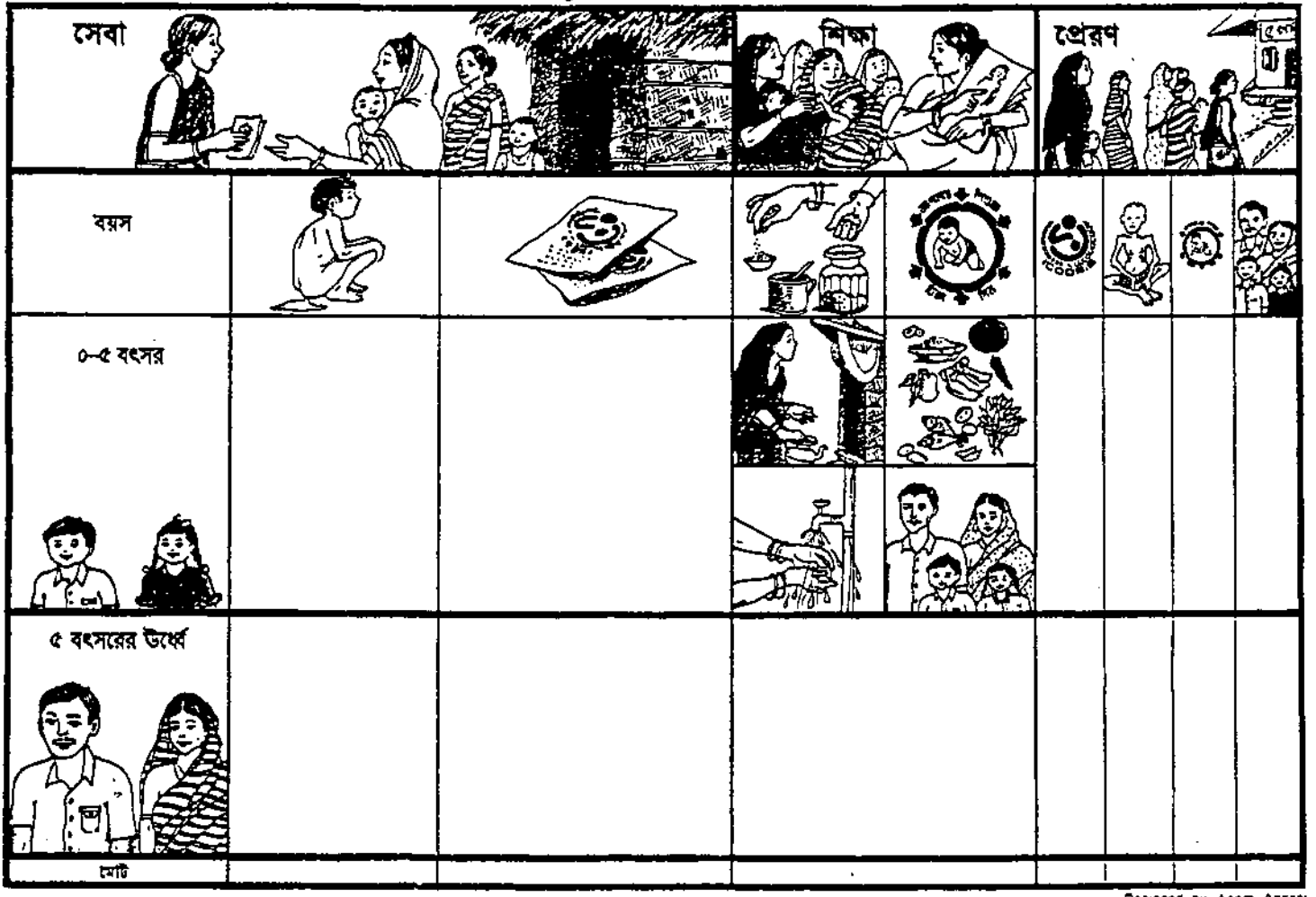
THANA

01. Mirpur
02. Mohammadpur
03. Motijheel
04. Lalbagh
05. Demra
06. Kotwali
07. Sutrapur
08. Tejgaon
09. Gulshan
10. Ramna
11. Cantonment
12. Uttara
13. Sabujbagh
14. Dhanmondi



Appendix II. Symbol Calendar

Urban Health Extension Project (UHEP) ICDDR,B Dhaka Bangladesh



Designed by Asam Ansari

Urban Health Extension Project (UHEP) Publications

Jamil K, Baqui AH, Paljor N. Knowledge and practice of contraception in Dhaka urban slums: a baseline survey. May 1993. (ICDDR,B working paper no. 31) (Urban FP/MCH working paper no. 3). *ISBN: 984-551-006-10.*

Baqui AH, Paljor N, Silimperi DR. The prevention and treatment of diarrhoea in Dhaka slums. May 1993. (ICDDR,B working paper no. 32) (Urban FP/MCH working paper no. 4). *ISBN: 984-551-007-8.*

Laston SL, Baqui AH, Paljor N, Silimperi DR. Immunization beliefs and coverage in Dhaka urban slums. May 1993. (ICDDR,B working paper no. 33) (Urban FP/MCH working paper no. 5). *ISBN: 984-551-008-6.*

Baqui AH, Paljor N, Nahar Q, Silimperi DR. Infant and child feeding practices in Dhaka slums. May 1993. (ICDDR,B working paper no. 34) (Urban FP/MCH working paper no. 6). *ISBN: 984-551-009-4.*

Chaudhury N, Mohiuddin QN, Momtaz S, Ghosh KR, Lili FB, Leena MM. Violence in the slums of Dhaka city. May 1993. (ICDDR,B working paper no. 35) (Urban FP/MCH working paper no. 7). *ISBN: 984-551-010-8.*

Baqui AH, Paljor N, Lerman C, Silimperi DR. Mothers' management of diarrhoea: Do urban volunteers of Dhaka have an impact? May 1993. (ICDDR,B working paper no. 36) (Urban FP/MCH working paper no. 8). *ISBN: 984-551-011-6.*

Salway S, Jamil K, Nahar Q, (editors). Issues for family planning in the urban slums of Dhaka, Bangladesh: opinions and perceptions of field-level workers. May 1993. (ICDDR,B working paper no. 37) (Urban FP/MCH working paper no. 9). *ISBN: 984-551-012-4.*

Urban Health Extension Project (UHEP) Publications (contd...)

Fronczak N, Amin S, Laston SL, Baqui AH. An evaluation of community-based nutrition rehabilitation centers. May 1993. (ICDDR,B working paper no. 38) (Urban FP/MCH working paper no. 10). *ISBN: 984-551-013-2.*

Arifeen SE, Mahbub AQM (Editors), Baqui AH, Islam N, Jahangir NM, Mahbub AQM, Paljor N, Siddiqi SM (Contributors). A Survey of Slums in Dhaka Metropolitan Area 1991. October 1993. (ICDDR,B working paper no. 39) (Urban FP/MCH working paper no. 11). *ISBN:984-551-014-25.*

Fronczak N, Amin S, Nahar Q. Health Facility Survey in Selected Dhaka Slums. October 1993. (ICDDR,B working paper no. 40) (Urban FP/MCH working paper no. 12). *ISBN: 984-551-015-7.*

Laston SL, Baqui AH, Paljor N. Urban Volunteer Service in the Slums of Dhaka: Community and Volunteer Perceptions. October 1993. (ICDDR,B working paper no. 41) (Urban FP/MCH working paper no. 13). *ISBN: 984-551-016-25.*

Baqui AH, Arifeen SE, Amin S, Black RE. Levels and Correlates of Maternal Nutritional Status and Consequences for Child Survival in Urban Bangladesh. October 1993. (ICDDR,B working paper no. 42) (Urban FP/MCH working paper no. 14). *ISBN: 984-551-017-43.*

Salway S, Jamil K, Nahar Q, Nurani S. Perceptions of Pregnancy Risk and Contraceptive Use in the Postpartum Period among Women in Dhaka Slums. November 1993. (ICDDR,B working paper no. 43) (Urban FP/MCH working paper no. 15). *ISBN: 984-551-020-5.*

CENTRE FOR HEALTH AND POPULATION RESEARCH

JOURNAL OF
Diarrhoeal Diseases Research

Subscription information
Subscriptions to the JDDR run for a full calendar year and include air mail postage.

1. Countries of South Asian Association for Regional Cooperation (except Bangladesh) and Myanmar	US$	70.00
2. Bangladesh	Tk	500.00
3. All other countries	US$	100.00

Subscription orders may be placed through an agent or directly; 10% commission is allowed for subscription agents. All payments must be made in favour of **International Centre for Diarrhoeal Disease Research, Bangladesh.** All correspondence regarding subscription should be addressed to: **Managing Editor, Journal of Diarrhoeal Diseases Research, International Centre for Diarrhoeal Disease Research, Bangladesh, GPO Box 128, Dhaka 1000,** Bangladesh.

Published by: International Centre for Diarrhoeal Disease Research, Bangladesh
GPO Box 128, Dhaka 1000, Bangladesh; Cable: Cholera Dhaka; Telex: 675612 ICDD BJ;
Fax: 880-2-883116 / 880-2-886050

An Appeal

Hospital Endowment Fund

Each year, ICDDR,B treats over 70,000 patients attending its two hospitals, one in urban Dhaka, the other in rural Matlab. Though they are planted in Bangladeshi soil, they grow because of the dedication of thousands of concerned people throughout the world. The patients are mostly children with diarrhoea and associated illnesses and the services are offered free to the poorer section of the community

Since these services are entirely dependent on financial support from a number of donors, now we at the ICDDR,B are establishing an entirely new endeavour: an ENDOWMENT FUND. We feel that, given securely implanted roots, the future of the hospitals can confidently depend upon the harvest of fruit from perpetually bearing vines.

ICDDR,B CENTRE FOR HEALTH AND POPULATION RESEARCH

To generate enough income to cover most of the patient costs of the hospitals, the fund will need about five million dollars. That's a lot of money, but look at it this way:

JUST $160 IN THE FUND WILL COVER THE COST OF TREATMENT FOR ONE CHILD EVERY YEAR FOREVER!

We hope you will come forward with your contribution so that we can keep this effort growing forever or until the world is free of life-threatening diarrhoea. IT IS NOT AN IMPOSSIBLE GOAL.

Cheques may be made out to: ICDDR,B Hospital Endowment Fund.

For more information please call or write to:
Chairman, Hospital Endowment Fund Committee
GPO Box 128 · Dhaka, 1000, Bangladesh
Telephone: 600-171 through 600-178
Fax: (880-2)-883116

Designed and Produced by Asem Ansari/Audio-Visual Unit, ICDDR,B

CENTRE
FOR HEALTH AND
POPULATION RESEARCH

Urban Health Extension Project (UHEP)
International Centre for Diarrhoeal Disease Research, Bangladesh
GPO Box 128, Dhaka 1000, Bangladesh
Telephone: 600171 (8 lines), Cable: CHOLERA DHAKA, Telex: 675612 ICDD BJ;
Fax: 880-2-883116 and 880-2-886050