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Impact of National Immunization Days on Polio-related Knowledge and Practice of Urban Women in Bangladesh

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Foreword

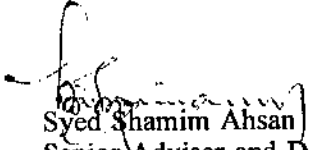
I am pleased to release these reports on urban Maternal and Child Health and Family Planning issues which are based on the operations research activities of the MCH-FP Extension Project (Urban) of the Centre. Over the years, the Centre has acquired a unique expertise on urban development matters that ranges from operations research on reproductive health, child survival and environmental issues to providing technical assistance for capacity building to service delivery organizations working in urban areas.

This work has produced important findings on the health conditions and needs of city dwellers, particularly the poor and those living in slums. The research has also identified service delivery areas in which improvements need to be made to enhance effectiveness. Together, these research findings have been translated into interventions currently being applied in government and non-government settings.

In order to carry out this innovative work, the Centre has established a partnership effort known as the Urban MCH-FP Initiative, with different ministries and agencies of the Government of Bangladesh and national non-government organizations, notably Concerned Women for Family Planning, a national NGO with wide experience in the delivery of MCH-FP services. The partnership receives financial and technical support from the United States Agency for International Development (USAID).

The overall goal of the partnership is to contribute to the reduction of mortality and fertility in urban areas. In practice, this joint work has already resulted in the development and design of interventions to improve access, coordination and sustainability of quality basic health services to urban dwellers with emphasis on the needs of the poor and those living in slum areas.

The Centre looks forward to continuing this collaboration and to assist in the wider dissemination and application of sustainable service delivery strategies in collaboration with providers in government, the NGOs and the private sector.


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Summary

Bangladesh began to hold National Immunization Days (NIDs) from 1995 as part of the country's goal to eradicate poliomyelitis by the turn of the century. The NIDs brought together government agencies, the media, voluntary organizations, and individual volunteers in social mobilization and service delivery activities. This report assesses the impact of the first two polio NIDs in terms of the immunization coverage and change in knowledge about the disease among women living in Dhaka city, the capital of the country. Data for this report were collected through pre- and post-NID cross-sectional surveys in a sample of Zone 3 population of Dhaka city which included slum and non-slum households. Knowledge data were collected from 525 women with at least one child aged less than five years. The oral polio vaccine (OPV) coverage during NIDs was obtained from 720 children.

Knowledge of polio as a vaccine preventable disease increased after NIDs both among slum and non-slum women. Yet the knowledge gap between the two groups remained statistically significant. Field workers - who regularly visit women at their homes to promote health and family planning services- were the main source of information for the slum women while TV was cited most frequently by non-slum women. The study revealed that 88% of children under five years of age received at least one dose of OPV during NIDs, and 67% got two stipulated doses with no significant differences between slum (65%) and non-slum (69%) groups. In addition, 68% of the children contacted during the NIDs were given vitamin A supplementation.

Introduction

Global eradication of poliomyelitis has been targeted by the turn of the century (WHA, 1988). The strategy for achieving this goal has 4 components: high routine 3rd dose oral polio vaccine (OPV3) coverage; sensitive and timely acute flaccid paralysis (AFP) surveillance; and mop-up campaigns. The fourth element of the polio eradication programme is the holding of National Immunization Days (NIDs). The current strategy is to hold two National Immunization days (NID1 and NID2) annually with an interval of 4-6 weeks for at least three consecutive years.

Over 58 countries had conducted NIDs by the end of 1994, and a further 15 countries had plans to hold such events in 1995 (WHO, 1995). Bangladesh began to hold NIDs from 1995.

NIDs can also help increase and maintain an overall immunization coverage through Expanded Programme on Immunization (EPI). In the Americas for instance, the use of all vaccines was encouraged as a standard practice on Immunization Days (de Quadros et al., 1991, Jamison et al., 1993). NIDs also provide a valuable opportunity for delivering other services, such as vitamin A supplementation to a large number of children in areas with clinical and severe subclinical vitamin A deficiency problems (WHO, 1994). This paper focuses on the experiences gained in Dhaka, Bangladesh and assesses the impact of the first two polio NIDs in terms of the immunization coverage and change in knowledge about the disease.

Progress of Child Immunization Activities

The achievements of the national EPI in Bangladesh and its contribution to the reduction of preventable childhood mortality have been widely documented and praised (Hill et al., 1993; McKee, 1992; Koenig et

al., 1990). From a coverage estimated to be below 10%, in 1985 (Huq, 1991), recent nationwide surveys indicate that 60% of all children aged less than one year had received at least three doses of OPV and that, among those aged 12-23 months, coverage rates for urban and rural areas were 79% and 65% respectively (Mitra et al., 1994). The latest National Coverage Evaluation Survey suggests even higher polio immunization coverage (EPI, 1995).

Despite the national success of EPI in Bangladesh, the challenge of establishing high coverage rates among *all* social groups is still not achieved. Studies in Dhaka reveal that, in slum areas, immunization coverage is still significantly lower than in other urban areas and also lower than in rural parts of the country (UPS-EPI 1995). Reports on immunization activities in urban slums also consistently conclude that lack of knowledge is the main reason reported by women for failure to vaccinate their children (Laston et al., 1993; Claquin 1991; Khan et al., 1990). Other factors contributing to the lower immunization coverage level in the slums include the cities' "diverse population, lack of social cohesion, considerable movement of the poorest people, lack of coherent health delivery systems (and) poorly developed municipal health infrastructure" (Huq, 1991).

National Immunization Days

In Bangladesh, the first NIDs had one main objective: to administer two doses of OPV to all children aged less than five years irrespective of their previous immunization status. The target population consisted of approximately 19 million children. Other EPI vaccines were not included in the campaign, because additional trained personnel and resource would be required to deliver injections. Nevertheless, vitamin A was administered to children between one and four years of age during the second NID.

The first NID in Bangladesh (NID1) was held in March and the second (NID2) in April 1995. In Dhaka, the activities were coordinated by the Health Office of Dhaka City Corporation. As in all urban areas, in Dhaka, non-government voluntary organizations (NGOs) were assigned the task of registering all children aged less than five years and providing vaccinations. More than 1,000 additional vaccination centres were set up in Dhaka and over 2,000 volunteers were recruited to assist the vaccinators in the centres. A large motivation campaign was designed and launched to support the vaccination effort. This campaign involved radio, television, newspapers, posters, and leaflets together with announcements by prominent public figures, community meetings and mobile loudspeakers. The official estimates indicate that of the US\$7 million spent on NID, sixty-three percent was spent on vaccines, the remaining being spent on orientation of volunteers and social mobilization (EPI, 1995).

The organizational effort involved and the magnitude of the investment make it important to consider how effective were these first attempts to organize NIDs in the country. In other words, did NIDs in 1995 reach the children in the slum and non-slum areas alike? Did these events have any impact on knowledge about polio immunization among the urban women? Finally, what lessons can be derived from the experiences of NIDs in terms of programme communication and social mobilization for health promotion in urban areas?

Subjects and Methodology

This study used two different sources of data. The first involved interviews carried out with a sub-sample of 525 women living in the Urban Panel Survey (UPS) area of MCH-FP Extension Project (Urban) of the International Centre for Diarrhoeal Disease Research, Bangladesh

(ICDDR,B). The second data source was a survey of 51 managers from government and NGO agencies involved in the organization and provision of vaccine services in Dhaka City during the campaign.

UPS is designed to track demographic events and selected health and family planning indicators of a probability sample from a population of about 380,000 in Zone 3 of Dhaka City. Using a multi-stage areal sampling methodology 5,940 households having 30,840 population were sampled for UPS at the end of 1994. The sampling units are clusters with well defined boundaries. The average cluster size is about 40 households. The sample includes separate slum and non-slum samples. The system is designed to collect information at 3-month intervals and provides an opportunity to evaluate the effectiveness of various public health interventions. During January-June 1995, about 6,500 households, with a population of about 33,500, were under surveillance. As stated earlier a sub-sample of 525 women from the UPS was interviewed for this study. All respondents had at least one child aged less than five years at the time of the survey and were, thus, the prime target for the campaign. The trained female interviewers visited the homes of the respondents before NID1 and after NID2. In total, data from 720 children were collected. Pre- and post-NID knowledge among the mothers regarding the vaccine-preventable diseases, method of administration and source of information were compared. The OPV and vitamin A coverage among the slum and non-slum children was estimated.

The purpose of the survey of managers was to collect recommendations for future improvements on the basis of the experiences gained by these managers during NID1 and NID2.

Results

A total of 201 slum and 324 non-slum women were interviewed. Respondents from the slums were younger: around half of them were aged less than 24 years compared to the non-slum women, half of which were aged between 25 and 34 years. The slum women also had higher parity than those in non slum areas - 52% had 3 or more children compared to 41% among non-slum. Differentials in education attainment were considerable. The school attendance was far higher among women of the non-slum areas: only 22% had no schooling and nearly half had at least one year of secondary education. On the other hand, in the slums, 63% of the women had no education, and only around one in ten had obtained any secondary schooling. In the slums, not a single respondents declared a monthly income above Taka 2000 (about US\$50). Although access to media messages was severely limited in slums compared to the non-slum population, around 63% of the respondents - in both groups of women - declared a visit from a health and family planning promotor during the three months prior to the survey (Table 1).

Table 1: Percent distribution of respondents by selected characteristics and residence

Characteristic	Slum (n=201)	Non-slum (n=324)	All (n=525)
Age (Years)			
15-24	51	40	44
25-34	35	52	46
≥35	14	8	10
Education			
None	63	22	38
At least a year of Primary	26	32	30
Secondary	10	40	29
Higher	1	6	4
Parity			
1-2	48	59	54
≥3	52	41	46
Monthly income (Taka)			
≤1000	94	73	81
1001-2000	6	17	13
2001-3000	-	6	3
≥3000	-	4	3
Visited at home by a field worker in last 3 months	63	63	63
Possessions			
Radio	29	58	47
TV	21	61	46

After NID2, 81% of all women interviewed spontaneously mentioned that polio was a vaccine-preventable disease, increasing from 63% before NID1. The increase was more pronounced among the slum dwellers where the awareness rose to 74% (Figure 1). Before the first Immunization Day only half of the respondents living in slums were aware that polio could be prevented through vaccines.

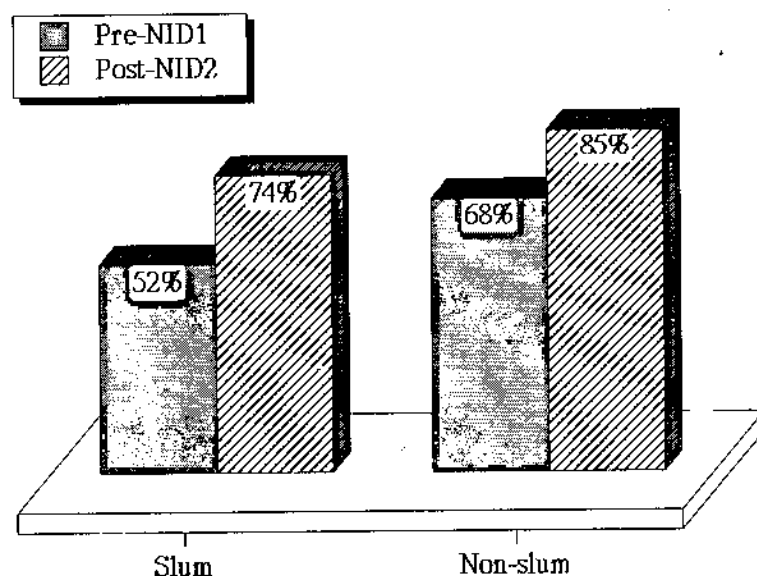


Figure 1: Percentage of women who mentioned polio among vaccine-preventable diseases before and after NID by residence

Table 2 shows that at the end of the campaign there was a significant and substantial increase in knowledge about the method of administration of OPV for both groups, with a greater increase among slum dwellers.

Table 2: Knowledge of women regarding polio before and after NID by residence

Area of knowledge*	Percentage of women reporting			
	Before NID1		After NID2	
	Slum (n=201)	Non-slum (n=324)	Slum (n=201)	Non-slum (n=324)
Vaccine-preventable disease	52 [†]	69 [†]	74 [†]	85 [†]
Method of administration	26 [†]	51 [†]	74	79

[†]Statistically significant slum non-slum differences ($p < 0.005$)

* The numbers indicate the percentage of women who reported knowing about the two areas of knowledge and therefore do not add to 100%

Table 3 shows that over half of the women mentioned TV as a source of information on polio immunization. Although the overall figures tend to highlight the importance of television as a source of information in cities, the disaggregation of responses from the slum and non-slum women showed that the quoted sources differed considerably. Overwhelmingly, the field workers represented the main source of information for the slum women while the media sources, including radio were less important for these same slum women. Reference to printed materials was made by less than 10% of all the women interviewed, but nevertheless the proportion was higher in the non-slum areas. The local leaders were not identified as the sources of information by any group of respondents.

Table 3: Sources of information about polio vaccine by residence

Source	Percentage of women naming information source*		
	All women (n=525)	Slum (n=201)	Non-slum (n=324)
TV	58	32 [†]	75 [†]
Field workers	45	58 [†]	39 [†]
Neighbours/relatives	32	30	33
Radio	30	22 [†]	34 [†]
Mobile loudspeakers	7	4	10
Newspapers	5	1	7
Posters	3	2	4
Local leaders	0	0	0

[†]Statistically significant slum non-slum differences ($p<0.005$)

* Multiple responses possible

The NIDs reached 67% of the target population included in the sample, i.e. two thirds of all children aged less than five years were given two doses of OPV on each of two NIDs and 88% of the children received at least one dose. Individually NID1 and NID2 had different effects: the first had a coverage of 73% while the percentage of target achievement on the second NID was 83%. Figure 2 shows that the slum children were just as likely to be vaccinated as the non-slum children.

Most children received OPVs at the nearest special (temporary) outreach site rather than in permanent clinics that provide immunizations on

an ongoing basis (Table 4). Nevertheless, more non-slum women took their children to government clinics during NIDs.

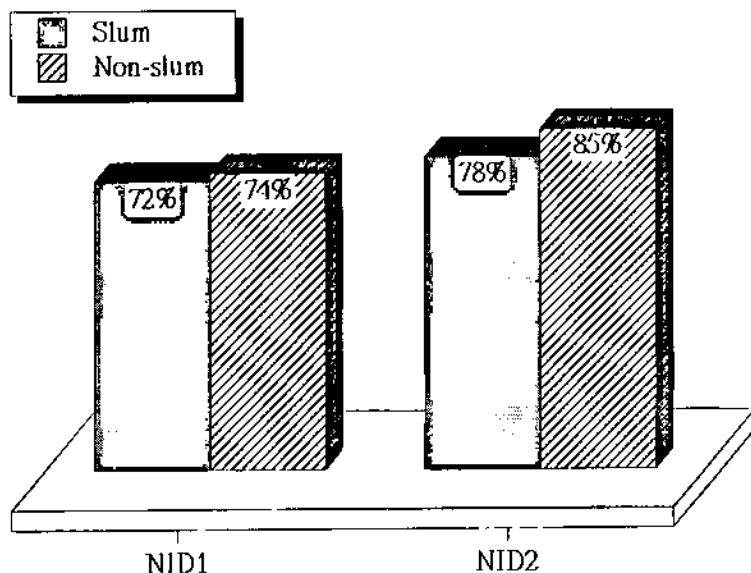


Figure 2: OPV coverage (%) of children during NIDs by residence

Table 4: Percent distribution of children immunized during NID2 by source of vaccination

Source	Slum (n=269)	Non-slum (n=451)	All (n=720)
Temporary outreach site	77	70	72
NGO clinics	19	16	17
Government clinics	4	13	10
Other	-	1	1

Among the reasons more commonly given by women for non-involvement in NID activities were issues connected with the communications aspects of the campaign. Around 60% of all women reported that they either did not know about the campaign or were unaware of the fact that all children were supposed to be vaccinated regardless of immunization status. Although lack of awareness about the need to immunize all children during NIDs is the main reason for non-attendance of the non-slum women, the slum women reported other constraints. Reasons related to the organization, timing and location of the outreach sites appear to have been of relatively lesser importance for the non-slum women but twice as critical for the slum population.

Table 5: Main reason for non-involvement of women in NID2

Reason	Percentage of women reporting		
	All women (n=119)	Slum (n=56)	Non-slum (n=63)
Not aware of need	42	18 [†]	64 [†]
Time constraints/access to centres and availability of vaccines	18	26	12
Did not know about NID schedule	18	27	10
Child was away	10	13	8
Other	11	16	6

[†]Statistically significant slum non-slum differences (p<0.005)

Figure 3 shows that the coverage of vitamin A administration during NID2 did not differ between the slum and non-slum children. The coverage achieved was about 66% and 70% respectively, among slum and non-slum children.

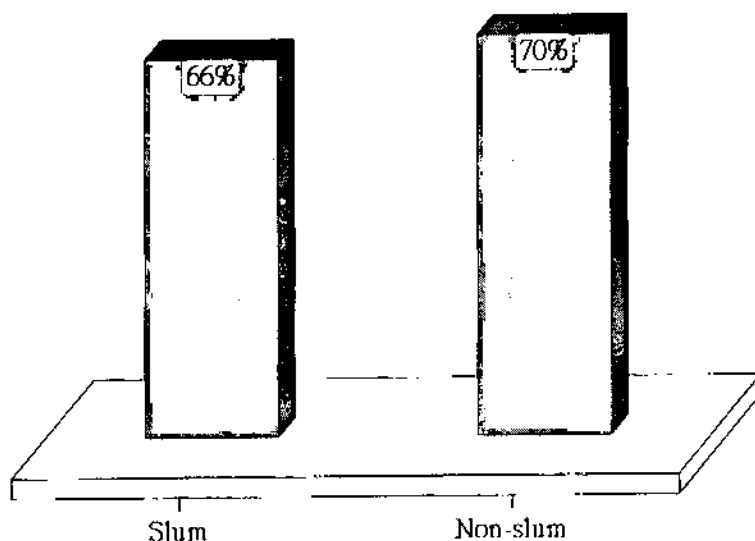


Figure 3: Vitamin A coverage (%) of children during NID2 by residence

The programme managers involved in the provision of services during NIDs suggested that the effectiveness of future NIDs could be improved further by better planning (Table 6). For them, earlier and more structured combined plan linked to more publicity could improve the NID coverage.

Table 6: Percent distribution of suggestions made by managers for improving NIDs in future years

Suggestion	% of managers reporting* (n=51)
Stronger multisectoral planning	76
Improved publicity campaign	75
Begin organization earlier	69
More technical support to service providers	53
More political support at all levels	31
More involvement of city authorities	25
Involve private practitioners	6
Other	12

Source: Survey of NID Providers, 1995

* Multiple responses possible

Discussion

The polio-eradication strategy in Bangladesh includes the following elements: (a) the maintenance of at least 80% coverage with three doses of OPV among infants; (b) the establishment of reliable disease surveillance systems to detect and report all new cases of acute flaccid paralysis (AFP) occurring in children aged less than five years; (c) the development of a surveillance system capable of prompt investigation of all AFP cases and control for all suspected cases of polio; and (d) the sponsoring of two NIDs for at least three consecutive years (EPI, 1995).

Until the first NID, the focus of immunization activities in Bangladesh had been unequivocally and exclusively on the achievement of a high level of coverage through routine sessions for the provision of six antigens included in EPI. The holding of NID signals a new phase in the immunization programme of the country toward the eradication of vaccine preventable diseases. NIDs in 1995 can be considered a success since a large number of children were vaccinated on the selected days. Two-thirds of the target population received the intended two doses. NIDs also contributed to the reduction of slum/non-slum disparities in some aspects of women's knowledge about immunization. In other words, gap in awareness among the slum and non-slum women of polio as a vaccine-preventable disease is now less pronounced, though still significant.

The findings concerning communication aspects of NID on knowledge deserve attention. Slum women have relatively more limited access to TV, radio, or printed materials. For them interpersonal communication either through field workers or neighbourhood networks, including mobile loudspeakers, appears to be more important. Accordingly, field workers from NGOs played an important role in registering the children aged less than five years and informing women about NID.

Constraints related to the location of vaccination centres, the timing of vaccination sessions, and the waiting time seem to have affected the involvement of some slum women in NIDs. Work outside the home and other conflicting demands on their time may be responsible for this situation. The special constraints faced by slum women need to be better understood by managers and vaccinators, so that future NIDs can try to reduce these barriers.

The benefits of combining NID activities with other services were strikingly evident in case of vitamin A supplementation. The nutritional surveillance reports indicate a dramatic improvement in vitamin A coverage

from 42% to 87% of the children living in the rural areas serving as sentinel sites (HKI, 1995). Many countries have adopted the strategy of administering other services during NIDs. This strategy may be particularly appropriate for the low-performing areas.

The managers interviewed after both NIDs reported that the improved coverage of NID2 was due to better media coverage and was also due to better coordination between the government agencies and NGOs. Better planning and coordination should make it possible for health programmers to more effectively promote NIDs in the future and also to improve access as well as decrease waiting time on NID itself. Service providers felt that more planning time was needed to better orient their field workers and volunteers on the activities of NID and to better organize the motivation campaign. Since the field workers are reported to be an important source of information for the slum women, this recommendation seems particularly pertinent. In this respect, the findings of the study underline the importance of defining special communication strategies adapted to the different client groups in the urban environment.

Finally, the success of NIDs is also important beyond the issue of OPV coverage on the day. A major challenge facing the eradication effort is the incipient state of development of routine disease surveillance systems to detect polio cases. A recent EPI review concluded that the importance of disease surveillance was still not widely recognized, and that the current systems only reported a small fraction of the poliomyelitis cases estimated to be actually occurring (EPI, 1993). Hence **NIDs can also be used for generating political commitment** to give a higher priority to the establishment of appropriate disease surveillance systems and to strengthen the institutional capacity to investigate and deal with the suspected cases of polio in the country. Nevertheless, the success of the NIDs in 1995 indicate that Bangladesh has made a significant first move toward eradication of polio.

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