IOCH

Immunization and Other Child Health Project

Vaccination Coverage Survey of the Peri-urban Areas of DCC- Nov. 2000

Peri-urban Area Survey- 1

Survey Report No. 28

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Acronyms

BCC	Behavior Change Communication
BCG	Bacillus of Calmette and Guerin
CES	Coverage Evaluation Survey
COSAS	Coverage Survey Analysis System
DPT	Diphtheria, Pertussis and Tetanus
EPI	Expanded Program on Immunization
FWC	Family Welfare Center
IOCH	Immunization and Other Child Health
Mahallah	Smaller localities (smaller than a village)
MOHFW	Ministry of Health and Family Welfare
Mouza	Smallest administrative locality in an Upazila
MSH	Management Sciences for Health
NGO	Non Governmental Organization
NID	National Immunization Day
OPV	Oral Polio Vaccine
TT	Tetanus Toxoid
WHO	World Health Organization

Terminology

This provides the meaning of some of the more technical terms used in this report and a brief explanation of their use.

By card: An immunization given to a child is termed as by card if the date of the dose is entered on an immunization card. Only doses recorded by card are treated as valid data in this survey.

By history: Immunization history collected from a parent's recall is termed as by history. Often no date will be mentioned. This information is only included in crude data.

Crude coverage rate is calculated from the doses recorded by card and/or by history. It is not ascertained whether the doses were given at the correct age and/or following the correct interval (where applicable). Crude data however, helps us to understand how much additional coverage could be achieved if all vaccines were given at the optimum age for the child and following the optimum interval. It also provides useful information on access to the EPI program and on the operational aspects of the provision of health services.

Valid coverage rate is calculated from the vaccinations recorded by card. Valid data includes only the doses of vaccines that were given after the minimum date of eligibility and/or after the minimum interval necessary to be effective and to protect the child. There is no maximum interval for a dose and therefore a dose administered after 52 weeks is still regarded as valid. By comparing crude coverage with valid coverage data of any particular antigen, one can determine how much coverage was lost due to the inability to give vaccine at the appropriate time.

Invalid doses are those administered at the wrong age and/or at the wrong interval. Doses administered before the minimum age in the case of DPT/Polio 1st doses and Measles vaccine or with less than four weeks interval in the case of DPT or Polio vaccines are classified as "invalid" doses.

The **criteria for a valid dose** used in this survey is the criteria recognized by the Bangladesh EPI program: minimum age for DPT/Polio 1st dose - 6 weeks old; minimum DPT/Polio interval - 4 weeks; minimum age for Measles vaccine - 38 weeks old.

Program access is measured by the percentage of children surveyed who received DPT 1st dose (crude data – by card and history) in the routine immunization session.

Fully immunized means the child has received all the doses it requires (BCG, OPV 1-3, DPT 1-3 and measles).

Missed opportunity refers to a visit of a child to a vaccination center for a dose that he received. However at that time he was also eligible for another dose of antigen that he did not receive. If the missed dose was provided at a later date, it is a *corrected missed opportunity.* If not, it is an *uncorrected missed opportunity*.

SUMMARY RESULTS

Background

The Tejgaon Circle comprises 9 peri-urban unions around Dhaka City with an estimated population of 5,70,450. Since these peri-urban areas are not the part of the Dhaka City Corporation (DCC), the DCC is not responsible for providing primary health care in these areas. It is the responsibility of the Directorate General of Health Services(DGHS) to provide heath care in these areas; but unlike rural areas it does not have adequate organizational structure and resources to provide primary health care including immunization services in these areas. And, therefore, it is likely that the routine EPI program in these areas might be less organized resulting in low or inadequate immunization coverage. In this context, IOCH decided to conduct two coverage evaluation surveys (one survey for 7 unions and the other one for the rest two unions) in these areas. Accordingly, a coverage evaluation survey (a 30 cluster survey) was conducted in 2 peri-urban unions of DCC (Sultanganj and Harirampur Unions) under Tejgaon Circle in November 2000.

Objectives

The overall objective of the survey was to assess the level of immunization coverage in the selected 2 unions of the peri-urban areas of DCC. The specific objectives were to:

a) assess the level of routine immunization coverage of the children (12-23 months) and find out the reasons for non-immunization and partial immunization.
b) assess the level of TT immunization coverage among women of 15-49 years of age, irrespective of their marital status, and find out the reasons for non-immunization and partial immunization.
c) assess the coverage levels of OPV and vitamin A administered during the eighth NID campaign.

Methodology

The survey employed the WHO recommended 30-cluster survey methodology that has been widely used in many developing countries to assess immunization coverage (the survey methodology and its limitations are presented in Annex A). In this survey, 2 peri-urban unions of DCC (selected purposively) comprised the universe and 30 clusters were randomly selected from this universe following PPS sampling procedures. A list of the selected clusters and their unions is provided in Annex B and their locations are shown on the maps in page 8. From each cluster, 7 children 12 – 23 months and 7 women of reproductive age (15 – 49 years) irrespective of their marital status were selected following 30 cluster survey methodology to ascertain their routine immunization coverage. Also, 7 children < 5 years (0 – 59 months) were selected to assess the immunization coverage of the 8th National Immunization Campaign.

The WHO standard questionnaires were used for documenting the routine immunization status of the children and women. Also, separate questionnaires were used to collect data on NIDs and reasons for non-immunization and dropouts. The data were collected by the experienced Field Investigators of the Survey Team of the IOCH. Data processing and analysis were done by the Monitoring & Evaluation Unit of the IOCH using COSAS 4.41[1] and EpiInfo.

[1] COSAS (Coverage Survey Analysis System) is a dedicated software for analyzing coverage evaluation survey data.

Coverage levels for the routine immunization of children

Access: 90% of the children received at least one dose of antigen (DPT 1st does in this case) from routine immunization sessions based on crude data (card plus history). However, 11% of the children did not receive any immunization.

Crude coverage between 12-13 months: 90% children received BCG, 70% received three doses of OPV, 70% received three doses of DPT and 59 % received measles vaccine. 58% children were fully immunized.

Valid coverage between 12-13 months: 90% children received BCG, 63% received three doses of OPV, 63% received three doses of DPT and 55% received measles vaccine. About half of the children (51%) were fully immunized.

Valid coverage by 12 months: 88% children received BCG, 63% received three doses of OPV, 63% received three doses of DPT and 45% received measles vaccine. Only 48% children were fully immunized.

Source of immunization and distance of immunization centers: Childhood immunization was provided by EPI Outreach centers in 53% of the cases. NGO clinics provided immunization to 27% children; while 21% children receive immunization from GOB hospitals and clinics. Almost all the EPI centers (97%) were within half-an-hour walking distance from client's residence.

Reasons for non-immunization and partial immunization of children: The main reason for non-immunization of children was that the parents/ caretakers did not know about the importance of and need to vaccinate their children, which was cited by 77% of the parents. The other reasons for non-immunization as cited by the parents included fears of adverse reaction of vaccination (9%) and the lack of parents' knowledge about where and when to go for vaccination. The major reasons for partial immunization or dropouts were: a) parents did not know that their children needed to return for the subsequent doses (20%); b) sickness of the children; and c) parents' lack of knowledge about importance of measles vaccine.

Problems detected: Although access to immunization was very high, there was a high dropout rate (22% from DPT1 to DPT3 and 34% from DPT1 to measles vaccine) and fairly high percentage of invalid doses due to early immunization (3% for DPT1 and 6% for measles vaccine). EPI Cards were available at the time of interview in 38% of the cases only; while 87% percent of the children were ever provided EPI Cards. The retention rate of EPI Card was as low as 43% only.

Coverage levels for the Routine TT immunization of women

The survey of coverage levels for immunization against tetanus toxoid shows that 69% of the women of reproductive age (15-49 years) irrespective of their marital status received a first dose of TT; 65% received two doses and 49% received 3 doses of TT. Only 26% of the women had received five doses of TT vaccine. About one-third women (31%) did not received any TT immunization.

Reasons for non-immunization and partial immunization of women: The major reasons cited for non-immunizations were that the women were unaware of the need for TT immunization and fear of taking injections. Whereas the major reasons for partial immunizations or dropouts were that they were either unaware about the need for subsequent doses of TT vaccine or they were not informed by the vaccinator for the subsequent doses of TT vaccine.

Coverage levels for the 1st Round of the 8th NID campaign

During the 1st Round of the 8th NIDs, 95% of the children <5 years received OPV (94% from NID sites and 1% during child-to-child search). Vitamin A capsules were given to 83% of the eligible children on this first round of the eighth NID campaign.

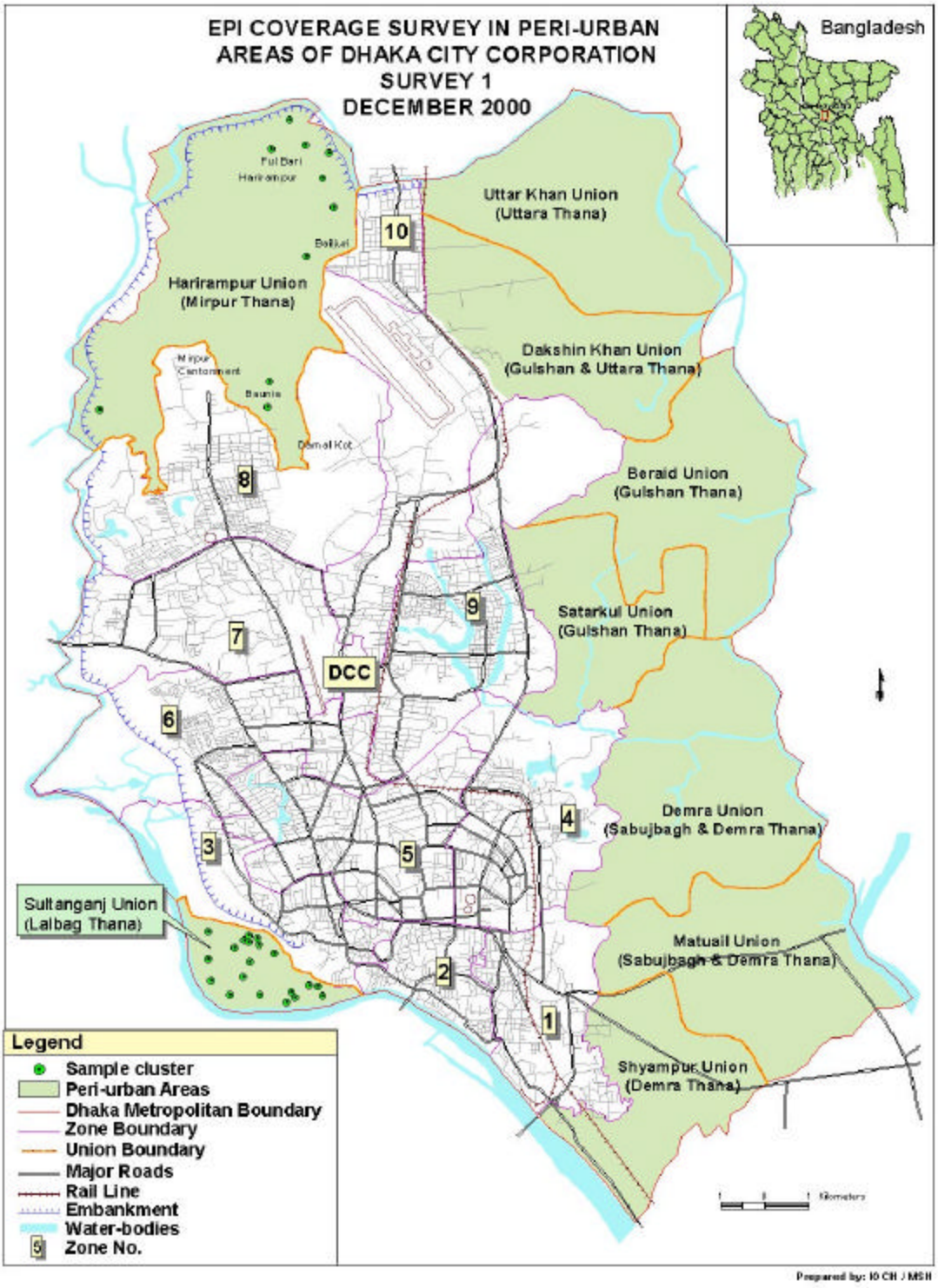
Various reasons were given for the non-receipt of OPV/Vitamin A during the 1st Round of the 8th NID. About two-third if the parents (64%) said that they were too busy to bring their children to the NID sites for vaccination. The other reasons cited by the parents included: a) parents did not know about NID day (9%); b) parents did not know the NID sites; and c) long waiting time at the NID sites.

Majority of the parents learned about the NID campaign from miking (48%), followed by relatives/friends/neighbors (33%). The other sources of information included television (31%) and IPC by GOB health workers (20%).

Suggested solutions

The survey indicates a need to better disseminate appropriate information on immunization and the importance of full immunization for each child among parents/caretakers. The information must stress that each child must be fully immunized before 12 months of age, and how to achieve full immunization (the time and place of the immunization sessions and the number of doses required). All women of childbearing age must be informed about how to prevent tetanus with 5 doses of TT vaccination to protect herself and her newborn child.

The poor quality of services, as reflected by the percentage of invalid doses (3% for DPT1, 2% for DPT3 and 6% for measles) and high dropout rates (22% for DPT1 to DPT3 and 34% for DPT1 to measles) could be improved by proper screening of eligibility of clients for each antigen at the time of vaccination, and by adequate counseling of mothers. There is also a need to further train the service providers to help them keep up with EPI policies and guidelines and increase their capacity for counseling parents and women of reproductive age about EPI.


EPI COVERAGE SURVEY IN PERI-URBAN AREAS OF DHAKA CITY CORPORATION
SURVEY 1
DECEMBER 2000
Bangladesh
Uttar Khan Union (Uttara Thana)
Harirampur Union (Mirpur Thana)
Dakshin Khan Union (Gulshan & Uttara Thana)
Beraid Union (Gulshan Thana)
Satarkul Union (Gulshan Thana)
Demra Union (Sabujbagh & Demra Thana)
Matuail Union (Sabujbagh & Demra Thana)
Shyampur Union (Demra Thana)
Sultanganj Union (Lalbag Thana)
DCC
10
8
9
7
6
4
3
5
2
1
Legend
Sample cluster
Peri-urban Areas
Dhaka Metropolitan Boundary
Zone Boundary
Union Boundary
Major Roads
Rail Line
Embankment
Water-bodies
Zone No.

TABLES AND CHARTS

Table 1: Routine immunization coverage levels of the children

Name of the vaccine	Coverage (%) Immunization of 12-23 months age group		Coverage (%) Immunized by 12 months of age
	Crude data (Access)	Valid data	Valid data
BCG	90	90	88
Polio-1	90	87	84
Polio-2	80	74	74
Polio-3	70	63	63
DPT-1	90	87	84
DPT-2	80	74	74
DPT-3	70	63	63
Measles	59	55	45
Fully immunized	58	51	42
Zero Dose	11	-	-

Chart-1: Drop-out rate for childhood immunization

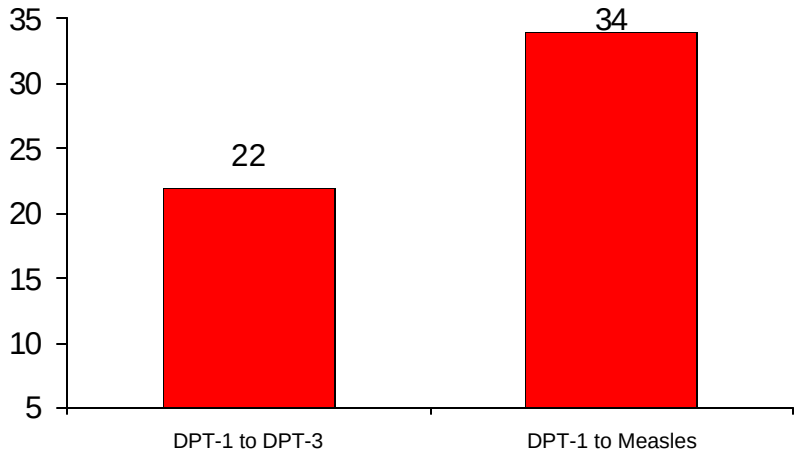


Table 2: Invalid doses of immunization provided to the children

Invalid doses	Percentage
DPT-1	3
DPT-2	0
DPT-3	2
Measles	6

Table 3: Missed opportunities by antigens

Name of the vaccine	Uncorrected		Corrected	
	Number	Percent	Number	Percent
BCG	6	3	1	1
DPT-1	5	2	4	2
DTP-2	0	-	1	1
DPT-3	0	-	1	1
OPV-1	5	2	4	2
OPV-2	0	-	1	1
OPV-3	0	-	1	1
Measles	4	2	5	2

Table 4: EPI card availability and retention

Card Status	Number	Percentage
EPI card available	79	38
EPI card ever given	182	87
EPI card retention	79	43

Chart 2: Sources of childhood immunization services

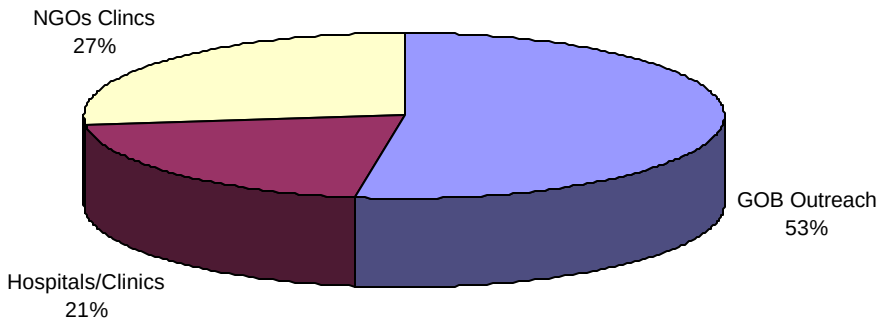


Table 5: Distance between the child's home and the vaccination site

Time (Minutes)	Number	Percentage
1-5 Min.	63	30
6-10 Min.	95	45
11-30 Min.	45	21
30+ more min.	7	3

Table 6: Reasons for non-immunization and partial immunization of the children

Reasons	Non- immunized %)	Partially immunized (%)
Did not know about need to vaccinate the child	77	-
Did not know that the child needs to receive the $2^{nd}/3^{rd}$ doses	-	20
Did not know when to return for $2^{nd}/3^{rd}$ dose	-	5
Did not know about importance of Measles vaccine	-	12
Did not know where and when go for vaccination	5	2
Fear of adverse reaction	9	2
Vaccination site was too far away	-	3
Vaccinator was not available at the site	-	2
Parents thinking to give vaccine in future	-	2
Family problem/mother sick	-	6
There was abscess after last vaccination	-	3
Child sick, was not taken to site	-	15
Child sick, was taken to site but not given vaccine	-	15
Injection was too painful for the child	5	6
Social/Religion barrier	5	-
Child not at home or away from home	-	9

Chart 3: Respondents' knowledge about required visits to immunization centers

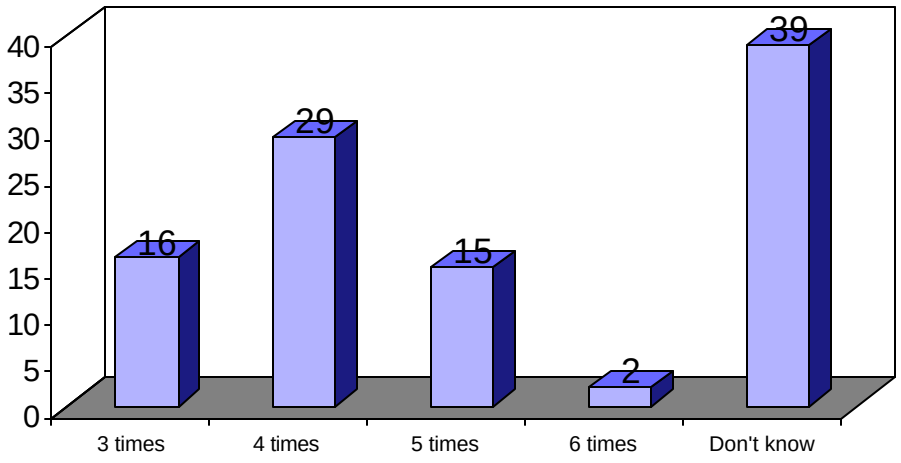


Chart 4: Routine immunization coverage levels for TT of women (15-49 years)

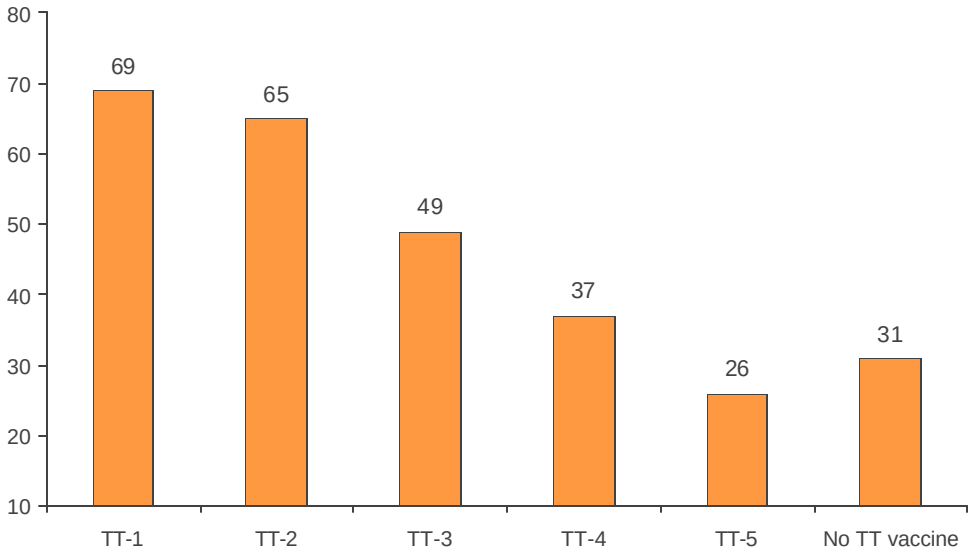


Chart 5: TT Immunization drop-out rate among women 15-49 years

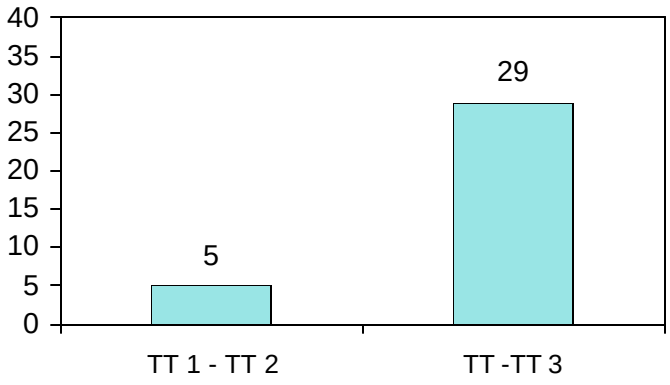


Chart 6: Providers of TT immunization

Table 7: Reasons for non-immunization and partial immunization for TT of the women

Reasons	**Non- immunized (%)**	**Partially immunized (%)**
Next dose is not yet due	-	7
Don't feel need for immunization	56	-
Health worker did not specify the next dose	-	18
According to health worker 3 doses of TT is enough	-	19
Unaware of need of next dose	-	54
Place and/or time of immunization unknown	2	-
In our times TT immunization was not in practice	17	-
Time of immunization inconvenient	-	1
Fear of injection	18	-
Place of immunization too far	3	-
Family problem	2	-
Too busy with households work	-	1

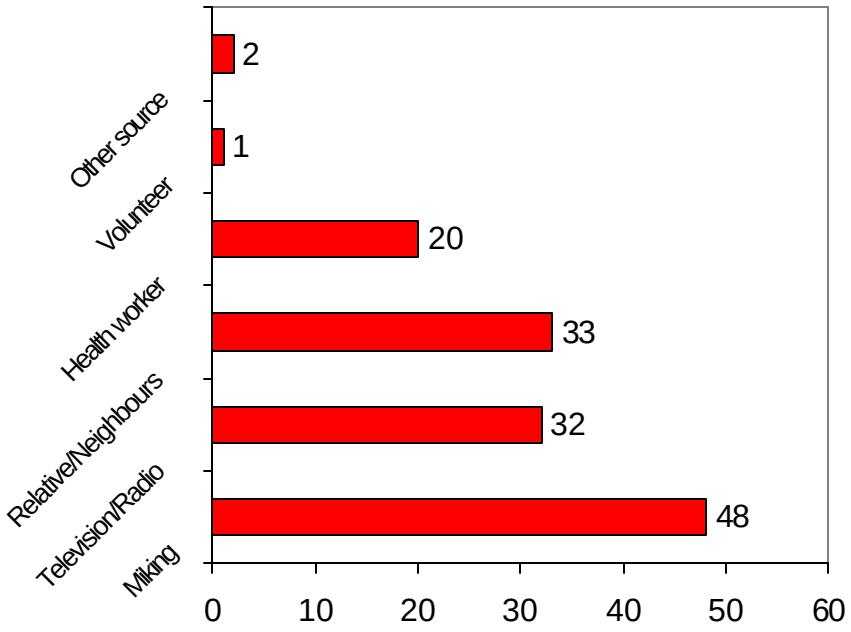
Table 8: Coverage of the 1st Round of the 8th NID Campaign

OPV Status	OPV %	Vit "A" %
NID Sites	94	83
Child-to-child search	1	-
Total	95	-

Table 9: Reasons for non-immunization of OPV during 8th NID campaign

Reasons	Percentage
Did not know about NID	9
Did not know NID place	9
Long waiting time	9
Vaccine not available/vaccinator did not give	9
Too busy with other work	64

Chart 7: Source of information about the 8th NID campaign



Annex-A

The following are extracts from **Anthony G Turner, Robert J Magnani and Muhammad Shuaib's** article entitled ***"A not quick as quick but much cleaner alternative to the Expanded Programme on Immunization (EPI) cluster survey design"*** *published in the International Journal of Epidemiology in 1996, volume 25, Issue No. 1, pages 198-203*.

The standard EPI Cluster Survey Design

"The sample design for the EPI Cluster Survey is a two-stage design involving the selection of 30 primary sampling units or 'clusters' (usually village or other area units), from which 210 children with a target age range (usually 12-23 months) are chosen, seven children per cluster. The sample size of 210 children (per domain or stratum) is mandated by the desire to estimate the level of immunization coverage to within +/- 10 percentage points of the true population proportion with 95% statistical confidence, assuming a design effect (i.e. *deff*) of 2.0. Based upon prior experience with immunization coverage surveys (primarily in the US), 30 clusters are generally thought to be necessary to yield sufficiently reliable estimate."

"In the standard design, clusters are chosen from a list of primary sampling units (i.e. villages, urban communities, census enumeration areas etc.) through systematic random sampling with probability proportional to estimated size (*ppes*). The latest estimates of cluster population sizes, which are assumed to be proportional to the number of children in the target age group in each cluster, are typically used as measures of size. The 30 clusters so chosen are then visited by survey field staff who carry out the second stage of sample selection and conduct the household interviews. "

"The original EPI design called for sample children to be chosen randomly from a list of all eligible children in each sample cluster. However, because the creation of lists of households and children tends to be time-consuming, costly, and unfeasible in some settings, this procedure is only infrequently used in actual practice. Instead, one of several simplified second stage sampling procedures is commonly used. In one variant, children are selected by first choosing a random direction from a central location in a village or community (e.g. by spinning a bottle). The number of households in that direction to the edge of the community is then counted, and one household is randomly chosen to be the first sample household. Subsequent households are chosen by visiting the nearest neighboring households until information has been gathered on seven children. In a yet simpler variant, a direction from a central starting point is randomly chosen as described above and households are contacted as the interviewer moves in the chosen direction until the required information has been gathered for seven children."

"The second stage sampling methods described above are 'quota sampling procedures' and some of the problems resulting from the use of this approach have been noted over the years."

"First, quota sampling does not ensure that every eligible member of the target population has a known, non-zero chance of being selected. Hence, the standard EPI design, as it is usually applied, is not a true probability sample design. ……."

"A second problem concern sampling weights. …….. However, since measures of size in sampling frames are often inaccurate due to census errors and changes in population since the census was taken, application of the standard EPI Cluster Survey method does not automatically result in a self weighting sample. The survey data must be weighed in order to yield unbiased estimates. …… However, since selection probabilities are not known in most EPI Cluster Survey applications, sampling weights can not be calculated."

"Thirdly, a computer simulation study demonstrates that the EPI Cluster Survey based upon quota sampling at the second stage of sample selection is considerably more prone to sampling bias than conventional cluster sampling, particularly where immunized children are 'pocketed' within clusters. "

"Finally, there is the issue of how second stage sample selection should proceed in surveys with multiple measurement objectives."

Annex- B

List of Selected Clusters for the Survey

Peri-urban union	Ward no.	Village	Total Population	Cluster no.
Sultanganj	3	Bagchad Kha	5894	1
	3	Puran Kamrangir Char	8202	2,3
	3	Ashrafabad	8297	4,5,6
	2	Islam Nagar	4269	7
	2	Rasulpur	17769	8,9,10,11,12
	1	Jaolahati	1668	13
	1	Dukuria	1648	14
	1	Hashlai	7412	15,16
	3	Jangalbari	7571	17,18
	1	Nawab Char	5183	19
Harirampur	3	Bailjuri	4742	20,21
	3	Tapalia	365	22
	3	Baunia	4576	23
	1	Bhatulia	2360	24
	2	Diabari	1572	25
	1	Dhaur	2762	26
	1	Kamar Para	5220	27
	2	Naya Nagar	1720	28
	2	Rana Bhola	3462	29
	1	Rasadia	1068	30

Annex- C

List of never vaccinated children identified by clusters

Peri-urban union	Village	Total Population	Cluster no.	Number of never vaccinated children identified by clusters
Sultangan j	Bagchad Kha	5894	1	-
	Puran Kamrangir Char	8202	2*,3	1*
	Ashrafabad	8297	4,5*,6	3*
	Islam Nagar	4269	7	-
	Rasulpur	17769	8,9,10,11,12	1,2,1,1,1
	Jaolahati	1668	13	-
	Dukuria	1648	14	-
	Hashlai	7412	15,16	-
	Jangalbari	7571	17,18*	1*
	Nawab Char	5183	19	-
Harirampur	Bailjuri	4742	20,21	3,2
	Tapalia	365	22	-
	Baunia	4576	23	-
	Bhatulia	2360	24	2
	Diabari	1572	25	1
	Dhaur	2762	26	-
	Kamar Para	5220	27	1
	Naya Nagar	1720	28	1
	Rana Bhola	3462	29	1
	Rasadia	1068	30	-
Total number of never vaccinated children found ---->				22

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List of IOCH Survey/Research/Technical Reports

Survey Reports

1. Vaccination Coverage Survey of the Slums of Rajshahi City Corporation- January 2000. Survey Report No. 1. May 2000
2. Vaccination Coverage Survey of the Selected Unions along the North-western Border of Bangladesh- February 2000. Survey Report No. 2. June 2000
3. Vaccination Coverage Survey of the Selected Unions along the South-west Border of Bangladesh- February 2000. Survey Report No. 3. July 2000
4. Vaccination Coverage Survey of the Slums of Khulna City Corporation- January 2000. Survey Report No. 4. July 2000
5. Vaccination Coverage Survey of the Slums of Chittagong City Corporation- January 2000. Ward Number 1 to 18. Survey Report No. 5. July 2000
6. Vaccination Coverage Survey of the Slums of Chittagong City Corporation- January 2000. Ward Number 19 to 41. Survey Report No. 6. July 2000
7. Vaccination Coverage Survey of the Dinajpur Municipality- January 2000. Survey Report No. 7. July 2000
8. Vaccination Coverage Survey of the Noakhali Municipality- January 2000. Survey Report No. 8. July 2000
9. Vaccination Coverage Survey of the Slums of Dhaka City Corporation- January 2000. Dhaka Slums of Zones 1, 2 & 4. Survey Report No. 9. July 2000
10. Vaccination Coverage Survey of the Slums of Dhaka City Corporation- January 2000. Dhaka Slums of Zones 5, 6 & 7. Survey Report No. 10. July 2000
11. Vaccination Coverage Survey of the Slums of Dhaka City Corporation- January 2000. Dhaka Slums of Zones 3, 8, 9 & 10. Survey Report No. 11. July 2000
12. Vaccination Coverage Survey of the Tribal and Non-tribal Populations in the North-east Border Areas of Bangladesh. Survey Report No. 12. August 2000
13. Vaccination Coverage Survey of the Sylhet Municipality – January 2000. Survey Report No. 13. August 2000.
14. Vaccination Coverage Survey of the Kishoreganj Municipality – April 2000. Survey Report No. 14. September 2000.
15. Vaccination Coverage Survey of the Rangpur Municipality – May 2000. Survey Report No. 15. September 2000.
16. Vaccination Coverage Survey of the Greater Faridpur Municipalities – June 2000. Survey Report No. 16 September 2000.
17. Results of Coverage Evaluation Survey of Routine EPI and August 2000 OPV + TT (NNT) Campaign, Chittagong, Khulna and Rajshahi City Corporation Slums – September 2000. Survey Report No. 17. November 2000.
18. Results of Coverage Evaluation Survey of Routine EPI and August 2000 OPV + TT (NNT) Campaign, Dhaka City Corporation Slums – September 2000. Survey Report No. 18. November 2000
19. Results of Coverage Evaluation Survey of Routine EPI and August 2000 OPV + TT (NNT) Campaign, Slums of selected 27 Municipalities– September 2000. Survey Report No. 19. November 2000
20. Results of Coverage Evaluation Survey of Routine EPI and August 2000 OPV + TT (NNT) Campaign, Hard-to-reach and High-risk rural areas – September 2000. Survey Report No. 20. November 2000
21. Vaccination Coverage and Other Health Care Practices Survey in the Pabna Char Areas—August 2000. Survey Report No. 21. January 2001.
22. Vaccination Coverage Survey of the Mymensingh Municipality – April 2000. Survey Report No. 22. February 2001.
23. Vaccination Coverage Survey of the Jessore Municipality – October 20-30, 2000.Survey Report No. 23. February 2001.
24. Vaccination Coverage Survey of the Comilla Municipality - October 1-9, 2000.Survey Report No. 24. February 2001
25. Vaccination Coverage Survey of the Pabna Municipality - July 2000. Survey Report No. 25. February 2001
26. Vaccination Coverage Survey of the Sirajganj Municipality - July 2000. Survey Report No. 26. February 2001
27. Vaccination Coverage Survey of the Bogra Municipality - February 2001. Survey Report No. 27. April 2001

Unicef & IOCH Survey Reports

1. Vaccination Coverage Survey of the Teknaf and Ukhia Upazilas- February 2000. Survey Report No. 01, August2000
2. Vaccination Coverage Survey of the Brahmanbaria Sadar Upazila- February 2000. Survey Report No. 02, August 2000
3. Vaccination Coverage Survey of the Debidwar Upazila- February 2000. Survey Report No. 03, August 2000
4. Vaccination Coverage Survey of the Madaripur Upazila- February 2000. Survey Report No. 04, August 2000
5. Vaccination Coverage Survey of the Maulvi Bazar District- February 2000. Survey Report No. 05, August 2000
6. Vaccination Coverage Survey of the Raumari Upazila - February 2000. Survey Report No. 06, August 2000
7. Vaccination Coverage Survey of the Gangachara Upazila - February 2000. Survey Report No. 07, August 2000
8. Vaccination Coverage Survey of Chittagong Hill Tracts - February 2000. Survey Report No. 08, October 2000

Technical Report

1. Joint National/International Review of EPI Program in Urban Areas of Bangladesh—23 January – 3 February 2000. Technical Report No. 01, July 2000

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