



# IOCH

## Immunization and Other Child Health Project

### Vaccination Coverage Survey of the Jhenaidah Municipality

November 2001

Survey Report No. 52

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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 plus history. In the calculation process, first the rate of validity is calculated based on cards only, then this rate is applied to history cases too. 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 1<sup>st</sup> 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 1<sup>st</sup> 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 1<sup>st</sup> 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 routine EPI program in the municipalities is carried out by a variety of private and public providers at fixed (hospitals, clinics, dispensaries, etc.) and at outreach sites. NGOs and private practitioners also provide immunization services in many places. The municipal authorities are primarily responsible for providing and/or coordinating primary health care including routine EPI services in municipal areas. However, in the absence of an effective management information system and reliable service statistics at municipal level, it is often difficult to assess the level of immunization coverage of the municipalities. In view of this situation, the IOCH decided to conduct a series of coverage evaluation surveys in the selected municipal areas to assess the level of immunization coverage in these municipal areas. As a part of this effort, the IOCH conducted a coverage evaluation survey in the Jhenaidah Municipality in November 2001.

### Objectives

The overall objective of the survey was to assess the level of immunization coverage in the Jhenaidah Municipality. 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 9<sup>th</sup> 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 all, 30 clusters were randomly selected from the Jhenaidah Municipality following PPS sampling procedures. A list of the selected clusters 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 9<sup>th</sup> 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<sup>1</sup> and EpiInfo.

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<sup>1</sup> COSAS (Coverage Survey Analysis System) is a dedicated software for analyzing coverage evaluation survey data.

### **Coverage levels for the routine immunization of children**

*Access:* Based on crude data (card plus history), 99% children received at least one dose of antigen (DPT 1<sup>st</sup> dose in this case) from routine immunization sessions. Only one percent of the children did not receive a dose of any antigen.

*Crude coverage between 12-23 months:* 99% children received BCG, 94% children received three doses of OPV, 94% received three doses of DPT and 89% received measles vaccine. 88% children were fully immunized.

*Valid coverage between 12-23 months:* 99% children received BCG, 86% children received three doses of OPV, 86% received three doses of DPT and 88% received measles vaccine. 80% children were fully immunized.

*Valid coverage by 12 months:* 99% children received BCG, 85% children received three doses of OPV, 85% received three doses of DPT and 86% received measles vaccine. 78% children were fully immunized.

*Source of immunization and distance of immunization center:* Childhood immunization in this area was provided mostly by the hospitals and clinics (51%), followed by the GOB EPI outreach centers (45%). NGO clinics provided immunization to 4% cases only. All the EPI outreach centers were located within half an hour walking distance from the homes of the children.

*Reasons for non-immunization and partial immunization or dropout of children:* The primary reason for non-immunization of children cited by parents was lack of awareness of need and importance of immunization (100%). As regards reasons for partial immunization or dropout, about one-fourth of the parents reported that they did not know the importance of measles vaccine; while 29% of the parents cited sickness of their children as reason for dropout.

*Problems detected:* Although access to immunization was high (99%), there was 5% dropout from DPT1 to DPT3 and 10% from DPT1 to Measles vaccine. There were also a number of invalid doses due to early immunization (4% for DPT1, 1% for DPT2, 2% for DPT3 and 1% for Measles). Prevalence of uncorrected missed opportunity for different antigens was low (1%). Child immunization cards (EPI Cards) were ever given to 96% of the children; but they were available at the time of interview in 57% of the cases. EPI Card retention rate was 59%, which means that 41% of the EPI cards were lost. Less than half of the parents (42%) could mention correctly the number of times (i.e. 4 times) their children needed to visit the immunization centers to get fully immunized.

### **Coverage levels for the routine TT immunization of women**

The survey of coverage levels for immunization against tetanus toxoid showed that about 82% of women of reproductive age (15-49 years) received a first dose of TT; 77% received two doses; and 30% received 5 doses of the TT vaccine. About 18% women never received any TT vaccine.

*Dropout rate for TT immunization:* The dropout rate for TT immunization among the women of reproductive age was quite high. The dropout rate for TT1 to TT2 was 6%, TT2 to TT3 was 31%, and TT1 to TT5 was 64%. It implies that 64% of the women who received TT1 dose did not get fully immunized for life-long protection against tetanus.

*Sources of TT immunization:* Majority of the women received TT vaccine from the hospitals and clinics (48%), followed by the EPI outreach centers (46%). NGO clinics provided TT immunization to 6% cases only.

*Reasons for non-immunization and partial immunization of women:* The primary reason for non-immunization of TT cited by majority of the women (65%) was lack of awareness of need and importance of TT vaccine. About one-fourth of the non-immunized women reported that there was no provision of TT vaccine when had their pregnancies. The primary reasons for partial immunization or dropout were that the women were told by the health workers that 2 or 3 doses were enough for them for their pregnancies, and they were not advised (by health worker) for full immunization (56%) or the health workers did not specify the date of next/subsequent doses (16%) or they were not aware of the need for subsequent doses for full immunization (17%).

### **Coverage levels for the 9<sup>th</sup> NID campaign**

During the 9<sup>th</sup> NIDs, 97% of the children <5 years received OPV in both the rounds. The coverage for OPV in each of the Rounds was 98%. Vitamin A capsules were given to 95% of the eligible children during the 9<sup>th</sup> NID campaign

The primary reasons for not receiving OPV during the 9<sup>th</sup> NIDs included lack of awareness of NID campaign, absence of children from homes on the day of NIDs, and lack of awareness of importance of vaccine.

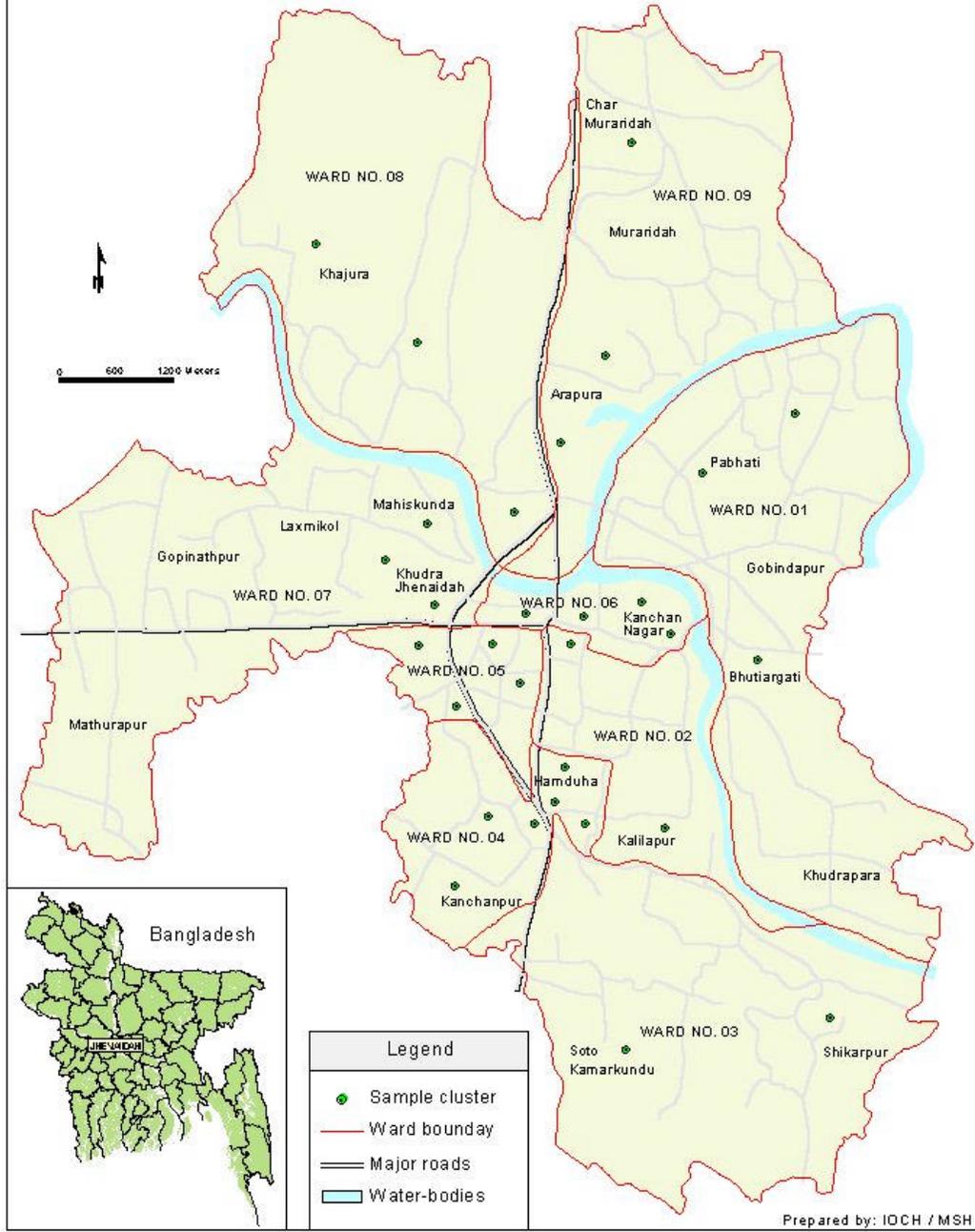
Majority of the parents learned about the 9<sup>th</sup> NID Campaign from the IPC during home visits by the GOB/municipal field workers (64%), followed by miking (46%). Television and radio as sources of information were cited by 25% of the parents; while 23% came to know about the NIDs from family members and neighbors.

### **Suggested solutions**

The survey indicates the need for appropriate BCC activities and counseling to make the parents/caretakers understand the importance of full immunization of their children. The information must stress that each child, irrespective of sex, 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 quality of services as reflected by the number of invalid doses (4% for DPT1, 1% for DPT2, 2% for DPT3 and 1% for Measles) and dropout rates (5% for DPT1 to DPT3 and 10% for DPT1 to measles), could be further 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.

VACCINATION COVERAGE SURVEY AREAS, NOVEMBER 2001  
 JHENAIDAH MUNICIPALITY

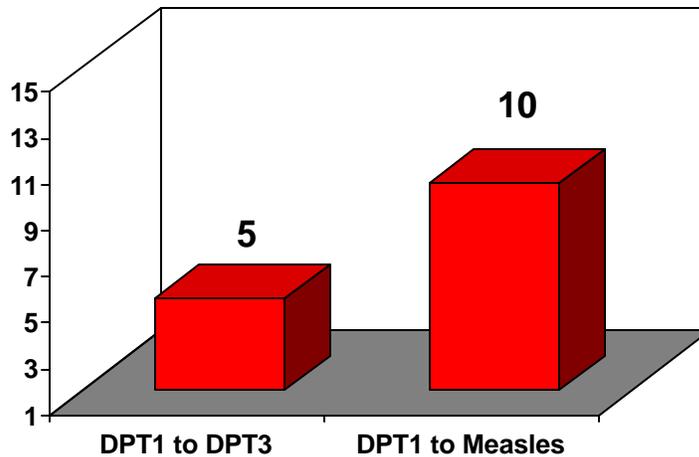


## TABLES AND CHARTS

**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	99	99	99
OPV1	99	95	95
OPV2	96	90	89
OPV3	94	86	85
DPT1	99	95	95
DPT2	96	90	89
DPT3	94	86	85
Measles	89	88	86
Fully immunized	88	80	78
Zero Dose	1	-	-

**Chart-1: Drop-out rate for childhood immunization**



**Table 2: Invalid doses of immunization provided to the children**

Antigens	Percentage
DPT1	4
DPT2	1
DPT3	2
Measles	1

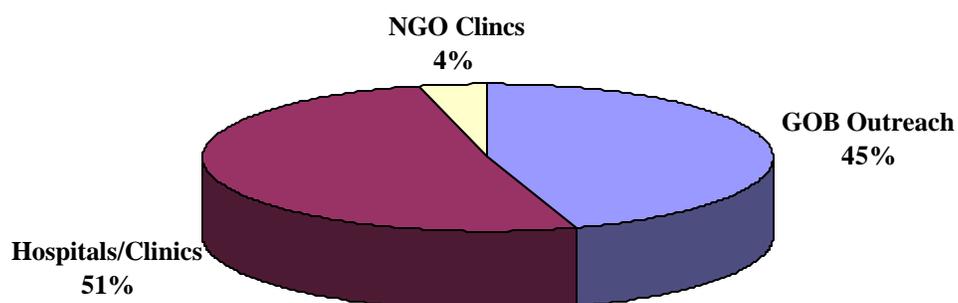
**Table 3: Missed opportunities by antigens**

Name of the vaccine	Uncorrected		Corrected	
	Number	Percent	Number	Percent
BCG	3	1	4	2
DPT1	2	1	9	4
DTP2	1	1	5	2
DPT3	2	1	5	2
OPV1	2	1	9	4
OPV2	1	1	5	2
OPV3	2	1	5	2
Measles	0	-	2	1

**Table 4: EPI card availability and retention**

Card Status	Number	Percentage
EPI card available	120	57
EPI card ever given	202	96
EPI card retention	120	59

**Chart 2: Sources of childhood immunization services**



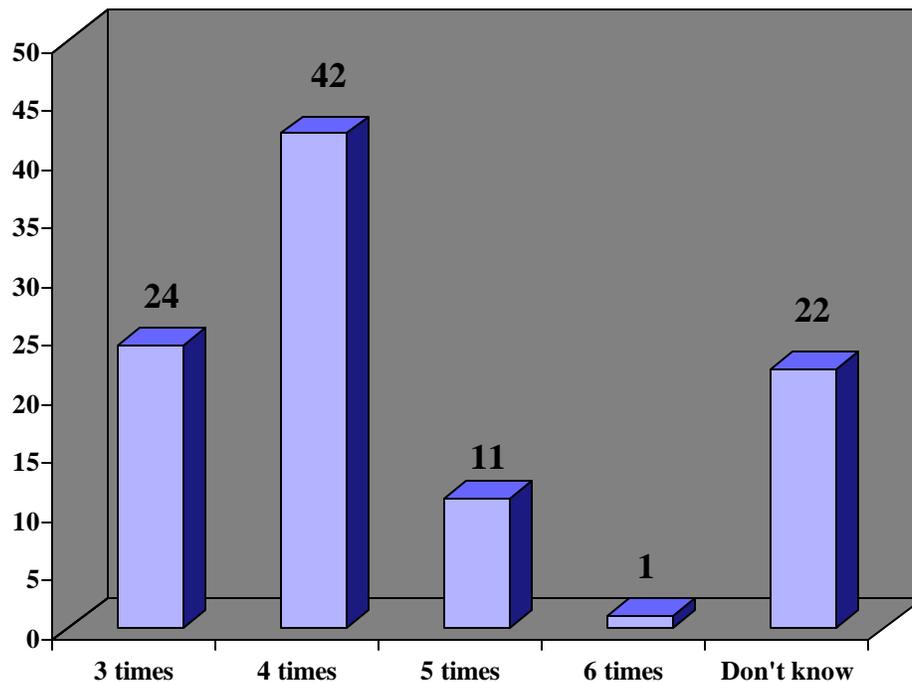
**Table 5: Distance between the child's home and the vaccination site**

Time (Minutes)	Number	Percentage
1-5 Min.	102	49
6-10 Min.	103	49
11-30 Min.	5	2

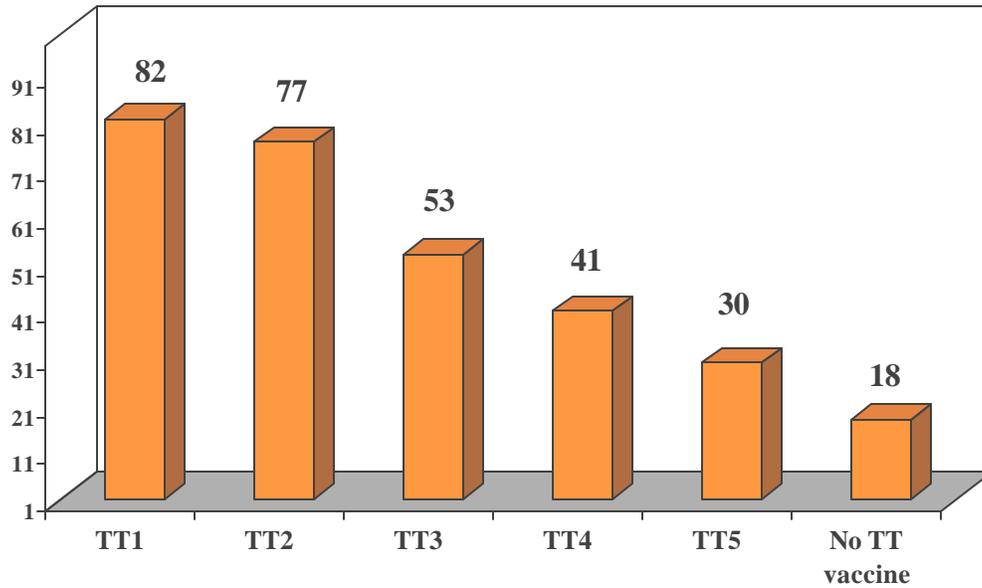
**Table 6: Reasons for non-immunization and partial immunization of the children**

Reasons	Non-immunized (%) (N=2)	Partially immunized (%) (N=24)
Did not know about need of immunization	100	-
Did not know importance of second dose	-	9
Did not know importance of measles vaccine	-	25
Did not know about place/time of immunization	-	4
Mother was very busy	-	4
Health worker's behavior was not good	-	4
Family problem/mother sick	-	4
Child sick, was not taken to site	-	21
Child sick, was taken to site, not given	-	8
Pain full for the children	-	8
Child away from home	-	9
Others	-	4

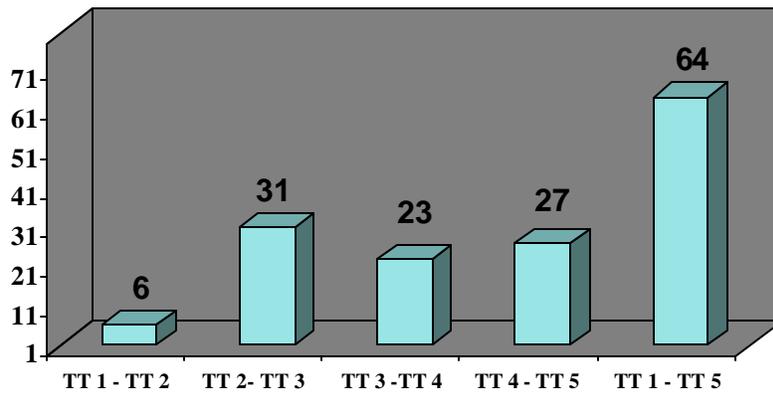
**Chart 3: Respondents' knowledge about required visits to immunization centers**



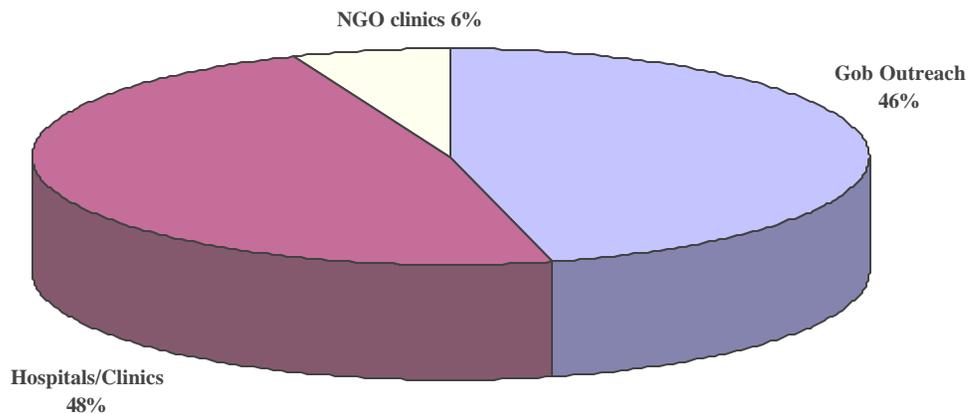
**Chart 4: Routine immunization coverage levels for TT of women (15-49 years)**



**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-immunization (%) (N=37)	Partially immunization (%) (N=110)
Next dose is not yet due	-	8
Don't feel need for immunization	65	-
Health worker did not specify the next dose	-	16
As per HW advice 2/3 TT is enough during the pregnancy	-	56
Unaware of need of next dose	-	17
In our times TT immunization was not in practice	27	-
Fear of injection	8	4

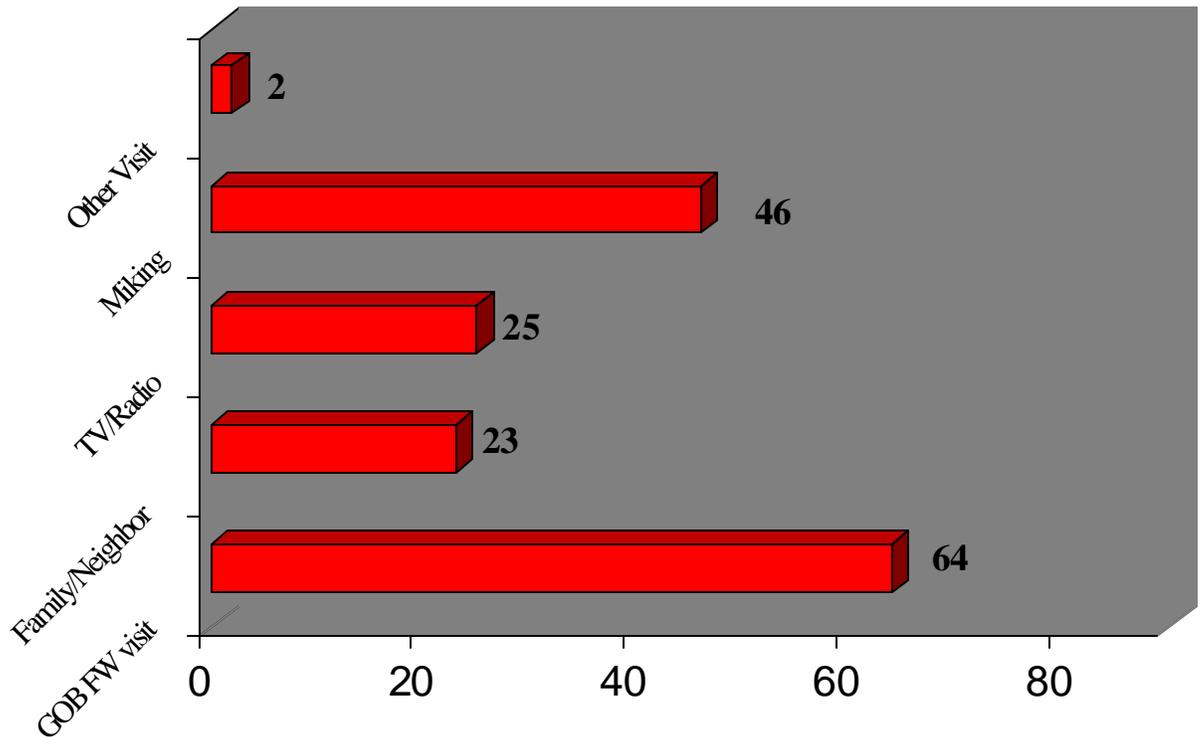
**Table 8: Coverage of the 9<sup>th</sup> NID Campaign**

Round	OPV %	Vit "A" %
1 <sup>st</sup> round	98	-
2 <sup>nd</sup> round	98	95
Both rounds	97	-
Any round	99	-

**Table 9: Reasons for non-immunization of OPV during 9<sup>th</sup> NID campaign**

Reasons	1 <sup>st</sup> Round %	2 <sup>nd</sup> Round %
Did not know about NID	40	67
Does not believe in vaccine	20	17
Religious/social barrier	20	-
Child away from home	20	16

**Chart 7: Source of information about the 9<sup>th</sup> NID campaign**



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."

**List of Selected Clusters for the Survey**

<b>Ward No.</b>	<b>Mahalla Name</b>	<b>Total HH</b>	<b>Total Population</b>	<b>Cluster No.</b>
1	Arappur	1043	6000	1, 2, 3
	Char Muraridah	193	927	4
	Khudra Jhenaidah	583	3306	5, 6
	Kastodagra	123	626	
	Khajura	618	3068	7, 8
	Mahiskunda	244	624	9
2	Bepari Para	1376	7652	10, 11, 12, 13
	Hamduha	1746	9986	14, 15, 16, 17, 18
	Jhenaidah	1028	6143	19, 20, 21
	Kanchannagar	631	3489	22, 23
	Kanchanpur	407	2305	24
3	Bhutiargati	432	2354	25
	Chhota Kuamarkunda	220	1236	26
	Kalikapur	375	1879	27
	Pabhati	490	2554	28, 29
	Shikarpur	230	1295	30

### List of Never Vaccinated Children Identified by Clusters

Ward No.	Mahalla Name	Total HH	Total Population	Cluster No.	Never vaccinated Children
1	Arappur	1043	6000	1, 2, 3	-
	Char Muraridah	193	927	4	-
	Khudra Jhenaidah	583	3306	5, 6	-
	Kastodagra	123	626		-
	Khajura	618	3068	7, 8	-
	Mahiskunda	244	624	9	-
2	Bepari Para	1376	7652	10, 11, 12, 13	-
	Hamduha	1746	9986	14, 15, 16*, 17, 18	1*
	Jhenaidah	1028	6143	19, 20, 21	-
	Kanchannagar	631	3489	22, 23	-
	Kanchanpur	407	2305	24	-
3	Bhutiargati	432	2354	25	-
	Chhota Kuamarkunda	220	1236	26	-
	Kalikapur	375	1879	27	-
	Pabhati	490	2554	28, 29	-
	Shikarpur	230	1295	30	-

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**Survey coordination:**

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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
28. Vaccination Coverage Survey of the Peri-urban Areas of DCC- Nov. 2000 (Peri-urban Area Survey-1). Survey Report No. 28. July 2001
29. Vaccination Coverage Survey of the Peri-urban Areas of DCC- Nov. 2000 (Peri-urban Area Survey-2). Survey Report No. 29. July 2001
30. Vaccination Coverage Survey of the Patuakhali, Jhalokathi and Pirojpur Municipalities- Aug. 2000. Survey Report No. 30. July 2001
31. Vaccination Coverage Survey of the Bandarban, Rangamati and Khagrachari Municipalities- January 2001. Survey Report No. 31. July 2001
32. Vaccination Coverage Survey of the Naogaon Municipality- February 2001. Survey Report No. 32. July 2001

33. Vaccination Coverage Survey of the Tongi Municipality- March 2001. Survey Report No. 33. July 2001
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35. Vaccination Coverage Survey of the Savar Municipality- May 2001. Survey Report No. 35. July 2001
36. Vaccination Coverage Survey of the Rangpur District- June 2001. Survey Report No. 36. July 2001
37. Vaccination Coverage Survey of the Nawabganj Municipality- June 2001. Survey Report No. 37. July 2001
38. Vaccination Coverage Survey of the Expanded Areas of the Proposed Barisal City Corporation- June 2001. Survey Report No. 38. July 2001
39. Vaccination Coverage Survey of the Barisal Municipality- June 2001. Survey Report No. 39. July 2001
40. Vaccination Coverage Survey of the Kadam Rasul Municipality- July 2001. Survey Report No. 40. August 2001
41. Vaccination Coverage Survey of the Jamalpur Municipality- July 2001. Survey Report No. 41. August 2001
42. Vaccination Coverage Survey of the Brahmanbaria Municipality- June 2001. Survey Report No. 42. September 2001
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45. Vaccination Coverage Survey of the Hard-to-Reach Unions of Dewanganj, Raumari and Rajibpur Upalizas- July 2001. Survey Report No. 45. September 2001
46. Coverage Survey of the Satkhira Municipality- September 2001. Survey Report No. 46. September 2001
47. Coverage Survey of the Barguna Municipality- October 2001. Survey Report No. 47. November 2001
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49. Coverage Survey of the Kushtia Municipality- October 2001. Survey Report No. 49. November 2001
50. Coverage Survey of the Chandpur Municipality- October 2001. Survey Report No. 50. December 2001
51. Coverage Survey of the Bhairab Municipality- November 2001. Survey Report No. 51. December 2001

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1. Vaccination Coverage Survey of the Teknaf and Ukhia Upazilas- February 2000. Survey Report No. 01, August 2000
2. Vaccination Coverage Survey of the Brahmanbaria Sadar Upazila- February 2000. Survey Report No. 02, August 2000
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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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