



IOCH
Immunization and Other Child Health Project

**Vaccination Coverage Survey of the
Dinajpur Municipality**

May 2002

Survey Report No. 69

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Table of Contents

List of tables and charts	2
Acronyms	3
Terminology	4
Summary Results	5
Background	5
Objectives	5
Methodology	5
Routine immunization coverage levels of children	6
Routine TT immunization coverage levels of women	7
Coverage levels of the 10 th NID Campaign	7
Problems detected	8
Suggested solutions	9
Map showing the locations of the selected clusters	11
Tables and Charts	12
Annexures	
Annex A: List of selected clusters for the survey	21
Annex B: List of never vaccinated children by clusters	21
Acknowledgements	22
List of IOCH reports	23

List of Tables

- Table 1:** Routine immunization coverage levels of the children
Table 2: Routine immunization coverage levels of the children by gender
Table 3: Invalid doses of immunization provided to the children
Table 4: Missed opportunities by antigens
Table 5: EPI Card availability and retention
Table 6: Distance between child's home and the vaccination site
Table 7: Reasons for non-immunization and partial immunization of the children
Table 8: Children born protected against tetanus
Table 9: Knowledge about number of TT doses required for life-long protection against tetanus
Table 10: Age distribution of women who never received TT vaccine
Table 11: TT cards availability and retention
Table 12: Reasons for non-immunization and partial immunization for TT of the women
Table 13: Coverage of the 10th NID Campaign
Table 14: Sources of OPV during the 10th NIDs
Table 15: Reasons for non-immunization of OPV from the NID sites during the 10th NIDs
Table 16: Comparison of the results of the coverage evaluation surveys conducted in Dinajpur Municipality by year of surveys

List of Charts

- Chart 1:** Drop-out rate for childhood immunization
Chart 2: Sources of child immunization services
Chart 3: Knowledge about required visits to immunization centers
Chart 4: Routine immunization coverage levels for TT of the women (15-49 years)
Chart 5: TT immunization dropout rate among women 15 – 49 years
Chart 6: Providers of TT immunization
Chart 7: Sources of information about the 10th NID Campaign

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 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.

Dropout cases refer to the children/women who have initially received at least one dose of any antigen and then failed to receive the subsequent doses to get fully immunized. Dropout rate implies the inability of the EPI to follow-up and protect the cohort of children initially reached out.

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 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 Dinajpur Municipality in May 2002.

Objectives

The overall objective of the survey was to assess the level of immunization coverage in the Dinajpur 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; and
- c) assess the coverage levels of OPV and Vitamin A administered during the 10th 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. In all, 30 clusters were randomly selected from the Dinajpur Municipality following PPS sampling procedures. A list of the selected clusters is provided in Annex- A and their locations are shown on the maps in page 10. 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 10th 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 4.41¹ 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 to child immunization: Based on crude data (card plus history), 95% children received at least one dose of antigen (DPT 1st dose in this case) from routine immunization sessions. 5% children did not receive a dose of any antigen.

Crude coverage between 12-23 months: 95% children received BCG, 88% children received three doses of OPV, 87% received three doses of DPT and 81% received measles vaccine. 80% children were fully immunized.

Valid coverage between 12-23 months: 95% children received BCG, 75% children received three doses of OPV, 75% received three doses of DPT and 76% received measles vaccine. 67% children were fully immunized.

Valid coverage by 12 months: 95% children received BCG, 75% children received three doses of OPV, 75% received three doses of DPT and 74% received measles vaccine. 65% children were fully immunized.

Routine immunization coverage by sex: There was sex differential in terms of access to immunization services. Boys' access to immunization, as measured by the crude coverage of DPT1, was 4 percentage points higher than that of the girls (97% for boys vs. 93% for girls). The coverage of different antigens (both crude and valid coverage) for the girls were consistently lower than those for the boys, resulting in lower full immunization coverage for the girls than the boys (81% crude FIC for boys vs. 78% crude FIC for girls)

Dropout rates: Although access to child immunization was high (95% for DPT1), the dropout rates for different antigens were high too. There was 9% dropout from DPT1 to DPT2 and 16% from DPT1 to measles.

Invalid doses: There were a number of invalid doses due to early immunization and/or inadequate interval between the doses. 7% of the DPT1 doses were administered before 6 weeks, and 6% measles doses before 38 weeks of age of the children. In addition, 5% of the DPT2 doses and 1% of the DPT3 doses were invalid as they were given before the 4 weeks interval between the doses.

EPI card retention: 95% of the children interviewed were ever given EPI cards; however, EPI cards were available in 51% of the cases at the time of interview. EPI card retention rate was 54% only, which means that 46% of the EPI cards were lost.

Source of immunization services and distance of vaccination centers: Childhood immunization in this area was provided mostly by the GOB clinics (41%), followed by the municipal outreach centers (27%) and NGO clinics (23%). GOB outreach centers and private clinics provided immunization to 8% and 1% cases respectively. All the EPI outreach centers were located within half an hour walking distance from homes of the children.

Reasons for non-immunization and partial immunization or dropout of children: The primary reasons for non-immunization of children cited by the parents were lack of awareness of need and importance of immunization (40%), family problems, such as mother's sickness etc. (40%) and fear of adverse reaction (10%). The reasons for partial immunization or dropout included:

sickness of the child (29%), lack of awareness about the need and importance of measles vaccine (19%), did not know when to return for next dose (13%) and fear of adverse reactions (13%).

Coverage levels for the routine TT immunization of women

TT immunization coverage: Access to TT immunization for the women 15 – 49 years was fairly high. 91% of the women received TT1. The corresponding figures for TT2, TT3 and TT4 were 86%, 60% and 44% respectively. Only 26% of the mothers received TT5, which provide lifelong protection against tetanus. About 9% of the mothers never received any TT vaccine.

TT immunization dropout rates: TT immunization dropout rates were high. The dropout rate for TT2 to TT3 was 30%. The corresponding rates for TT3 to TT4 and TT4 to TT5 were 26% and 41% respectively. The dropout rate for TT1 to TT5 was as high as 71%, indicating that 71% of the mothers who received first dose of TT did not complete 5 doses TT immunization schedule.

Protection against tetanus at birth: 97% of the newborn babies were found protected against tetanus, indicating that 3% of the newborn babies were still not protected against tetanus at birth.

TT card retention: 91% of the women were ever given TT cards; however, TT cards were available in 21% of the cases at the time of interview. TT card retention rate was 23% only, which means that 77% of the TT cards were lost.

Sources of TT immunization: Majority of the women received TT vaccine from the GOB clinics (45%), followed by the GOB hospitals (36%) and GOB/municipal outreach centers (15%). NGO and private clinics provided TT immunization to 2% cases each.

Reasons for non-immunization and partial immunization of women: The primary reason for non-immunization of TT cited by majority of the women were lack of awareness of need and importance of TT immunization (53%); while 32% of the non-immunized women reported that the TT immunization was not introduced when they had their pregnancies. The primary reasons for partial immunization or dropout were that the women were not aware of the need for subsequent doses to get fully immunized against tetanus (41%) or the health workers did not specify the date of next/subsequent doses (10%); while 24% 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.

Coverage levels for the 10th NID Campaign

OPV and Vitamin A coverage: During the 10th NIDs, 99% of the children <5 years received OPV in both the rounds. The coverage for OPV in each of the rounds was also 99%; only one percent of children were left out. Vitamin A capsules were given to 95% of the eligible children (12 months – 59 months of age). Almost all the children received OPV from the NID sites (99% in each round).

Sources of information of the 10th NIDs: Majority of the parents learned about the 10th NID campaign from miking (78%), followed by television (40%). Relatives and neighbors as sources of information were cited by 31% of the parents; while 27% came to know about the NIDs from the IPC during home visits by the GOB/municipal field workers.

Reasons for not receiving vaccines from the NID sites: The primary reasons for not receiving OPV from the NID sites of the 10th NIDs were: lack of information about NID campaign (50% in 1st round), parents were too busy to take their children to NID sites (40% in 2nd round), and waited at home for worker's visit during child-to-child search (40% in 2nd round).

Comparison with previous survey results

In January 2000, a coverage evaluation survey was conducted in the Dinajpur Municipality by the IOCH. A comparison of the results of that survey reveals that there has not been noticeable improvement in the coverage of routine child immunization over the past two years; but the proportion of invalid doses has significantly decreased, indicating some improvement in quality of immunization services over the period. (Invalid doses of DPT1 and measles have reduced from 22% and 10% in January 2000 to 7% and 6% in May 2002 respectively). However, routine TT immunization, as well as NID coverage has significantly improved over the past two years. The coverage of TT1 has improved from 70% in January 2000 to 85% in May 2002 and TT5 coverage from 15% to 33%. The coverage of NID (for OPV) has increased from 89% in both rounds of the 6th NIDs in 1999 to 99% in both rounds of the 10th NIDs in 2002.

Problems detected

Access to child immunization was good (95% for crude DPT1); but this high access dropped to 80% for fully immunized children because of high dropout rates of different antigens. (Dropout rate for DPT1 to DPT3 was 9% and DPT1 to measles was 16%). Similarly, access to TT immunization for the women 15 – 49 years was high. 91% of the women interviewed received the first dose of TT; but TT dropout rate was very high (71% for TT1 to TT5), resulting in very low coverage of TT5 (26%), which provides lifelong protection against tetanus. Such high dropout rates imply inability of the EPI program to follow-up and protect the cohort of children/women initially reached out.

There were also too many invalid doses in child immunization (7% for DPT1 and 6% for measles), which further reduced the crude full immunization coverage of 80% to 67% when validity of doses was taken into account. Total missed opportunities for different antigens were also high (6% for BCG, 4% for DPT1/OPV1, and 2% for measles). These high rates of invalid doses and missed opportunities reflect service providers' inability to screen the clients properly.

EPI card (child immunization card) and TT card play an important role in ensuring good quality of immunization services. It helps the mothers to adhere to immunization schedule, as well as assists the service providers to screen properly the children for specific doses of specific antigens. Unfortunately, the retention rates of both the EPI cards and TT cards were very low, 54% and 23% respectively.

Women/mothers have a poor understanding of full immunization. 53% of the mothers could not mention how many times their children were required to be taken to EPI center to get fully immunized. Similarly, 83% of the women interviewed did not know how many TT doses were required for a woman for lifelong protection against tetanus.

There was sex differential in terms of access to immunization services. Boys' access to immunization, as measured by the crude coverage of DPT1, was 4 percentage points higher than that of the girls (97% for boys vs. 93% for girls). The coverage of different antigens (both crude and valid coverage) for the girls were consistently lower than those for the boys, resulting in

lower full immunization coverage for the girls than the boys (81% crude FIC for boys vs. 78% crude FIC for girls)

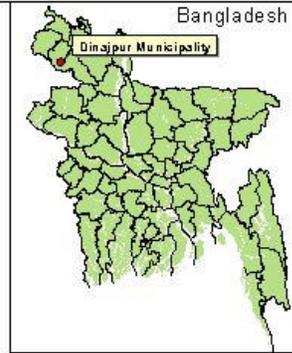
1% of the children <5 years did not receive OPV from the NID sites of the 10th NID campaign. Also, 5% of the children 12 – 59 months did not receive Vitamin A. In spite of intensive communication activities during NIDs, lack of information of NID campaign as a reason for not receiving OPV from NID site was still reported by 50% in the 1st round.

Suggested solutions

1. Programmatic strategies must be undertaken to reduce the existing high dropout rates in both child immunization and TT immunization. The program should focus on quality of counseling of mothers/women (on immunization) by the service providers. The service providers at the first contact must counsel the mothers/women properly to motivate her to return and to get herself and/or her child fully immunized.
2. Program managers and field supervisors should ensure that EPI sessions are held as per plan, and at a regular and adequate interval (more than 28 days).
3. The service providers should be given refresher training to improve their technical skills on counseling of mother/women on immunization.
4. In order to reduce existing high rate of invalid doses and missed opportunities, emphasis should be given on screening of clients for both child and TT immunization. The service providers should be given refresher training to improve their technical skills on screening of clients for immunization
5. The pregnant mothers should be motivated (by the service providers and/or by the BCC activities through mass media) to receive the required number of TT doses necessary to protect their newborn babies.
6. Mothers should be explained (by the service providers) the benefits and importance of EPI cards/ TT cards for immunization of themselves and their children.
7. Mothers should be asked to preserve the EPI card safely until their children are 5 years old, and to bring the cards with them whenever they comes to the clinic/ EPI center for immunization of their children. They should also be asked to carefully preserve their TT cards, and to bring the cards with them whenever they come to clinic/ EPI center for TT immunization.
8. In the case of loss of EPI card/TT card, it should be provided over and over, and the history of the earlier vaccinations accurately recorded again and again, if necessary.
9. During IPC between the mothers and the service providers and/or at the first contact, the mothers should be clearly explained the importance of full immunization of children and women, and of the immunization schedule for full immunization for both children and women.
10. The program should strengthen BCC activities to inform the community of importance of immunization in general, and to motivate the mothers to get themselves and their children fully immunized. Very selective and focused mass media campaign may also be conducted to achieve this end. Also, there is a need of BCC activities through mass media and IPC by the workers to remove sex preference in accessing child immunization.

11. Area specific innovative strategies suitable to local situation have to be undertaken during the next NIDs to reach to the left out children.
12. More attention should be given to high risk areas and traveling population during next NIDs.
13. Communication activities need to be strengthened through mass media, such as television, as well as through IPC by the health workers, to inform the communities of the next NID campaign.
14. Parents should be encouraged to attend the fixed NID sites/centers and discouraged to wait for home visits by the service providers during child-to-child search.
15. For distribution of Vitamin A capsules during NID, special attention should be given to the exact age group to limit shortage (through better screening for age) and no Vitamin A capsule should be given to the parents to administer them to their children either at NID site or in their homes.

VACCINATION COVERAGE SURVEY AREAS
 APRIL 29 - MAY 6, 2002
 DINAJPUR MUNICIPALITY



Legend

- Sample cluster
- Ward boundary
- Roads
- Rail line
- Water-bodies

Prepared by: IOCH/MSH.

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	95	95	95
OPV1	95	89	88
OPV2	92	79	79
OPV3	88	75	75
DPT1	95	89	88
DPT2	92	79	79
DPT3	87	75	75
Measles	81	76	74
Fully immunized	80	67	65
Zero Dose	5	-	-

Table 2: Routine immunization coverage levels by sex of the child

Name of the vaccine	Coverage % Immunization of 12-23 months age group				Coverage % Immunized by 12 months	
	Crude data (Access)		Valid data		Valid data	
	Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)
BCG	97	93	97	93	96	93
OPV1	97	93	93	84	91	84
OPV2	93	91	85	71	85	71
OPV3	91	84	82	67	82	67
DPT1	97	93	93	84	91	84
DPT2	93	91	85	71	85	71
DPT3	90	84	81	67	81	67
Measles	82	78	79	72	76	72
Fully immunized	81	78	69	65	66	65
Zero dose	3	7	-	-	-	-

Chart-1: Drop-out rate for child immunization

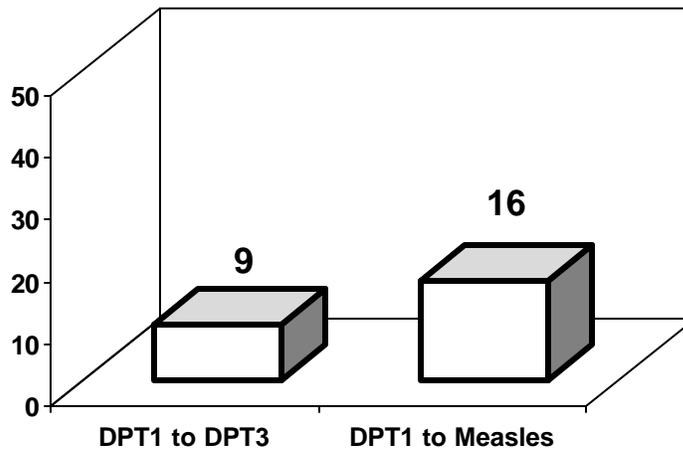


Table 3: Invalid doses of immunization provided to the children

Antigens	Percentage
DPT1	7
DPT2	5
DPT3	1
Measles	6

Table 4: Missed opportunities by antigens

Name of the vaccine	Uncorrected		Corrected		Total	
	Number	Percent	Number	Percent	Number	Percent
BCG	4	2	8	4	12	6
DPT1	4	2	5	2	9	4
DTP2	0	0	2	1	2	1
DPT3	0	0	1	1	1	1
OPV1	4	2	5	2	9	4
OPV2	0	0	2	1	2	1
OPV3	0	0	1	1	1	1
Measles	1	1	3	1	4	2
Index*	40					

* The idea is to propose one composite index reflecting the quality of screening during vaccination sessions.

Table 5: EPI cards availability and retention

Card Status	Number	Percentage
EPI card available	108	51
EPI card ever given	199	95
EPI card retention	108	54

Chart-2: Sources of child immunization services

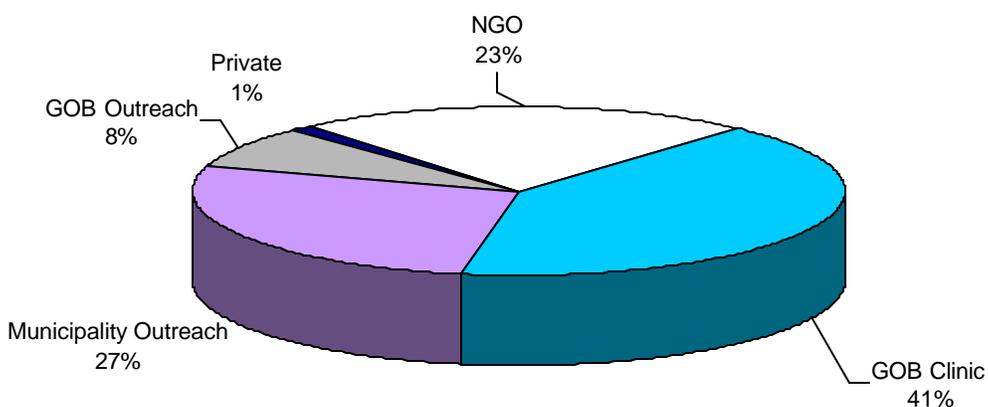


Table 6: Distance between the child’s home and the vaccination site

Time (Minutes)	Number	Percentage
1-5 Min.	118	56
6-10 Min.	75	36
11-30 Min.	17	8

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

Reasons for non-immunization or partial immunization	Non-immunized (%) (N=10)	Partially immunized (%) (N=31)
Did not know about need of immunization	40	-
Did not know about need of second dose	-	10
Did not know when to return for 2 nd /3 rd dose	-	13
Did not know about importance of measles vaccine	-	19
Family problem/mother was sick	40	-
Child was sick and not taken to immunization center	10	13
Child was sick and was taken to immunization center but not given by vaccinator	-	16
Fear of adverse reaction	10	13
Mother was busy with other work	-	7
Future plan to vaccinate the child	-	3
Painful for the child	-	3
Others	-	3

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

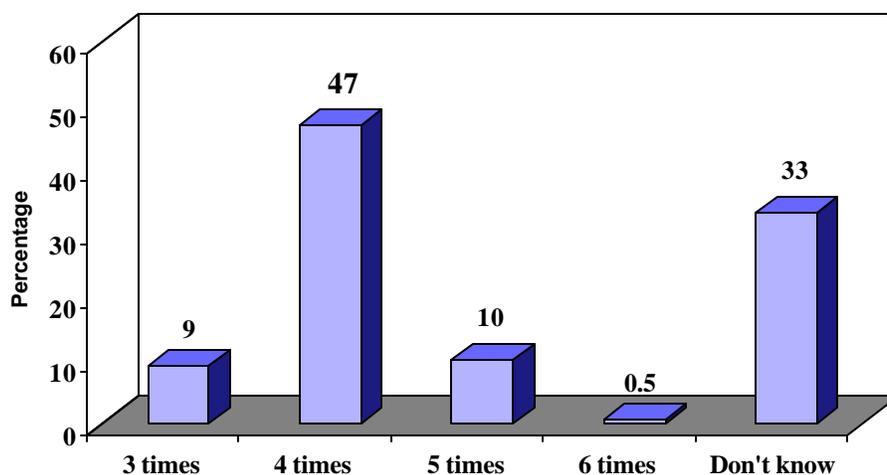


Chart 4: Routine immunization coverage levels for TT of women (15-49 years)

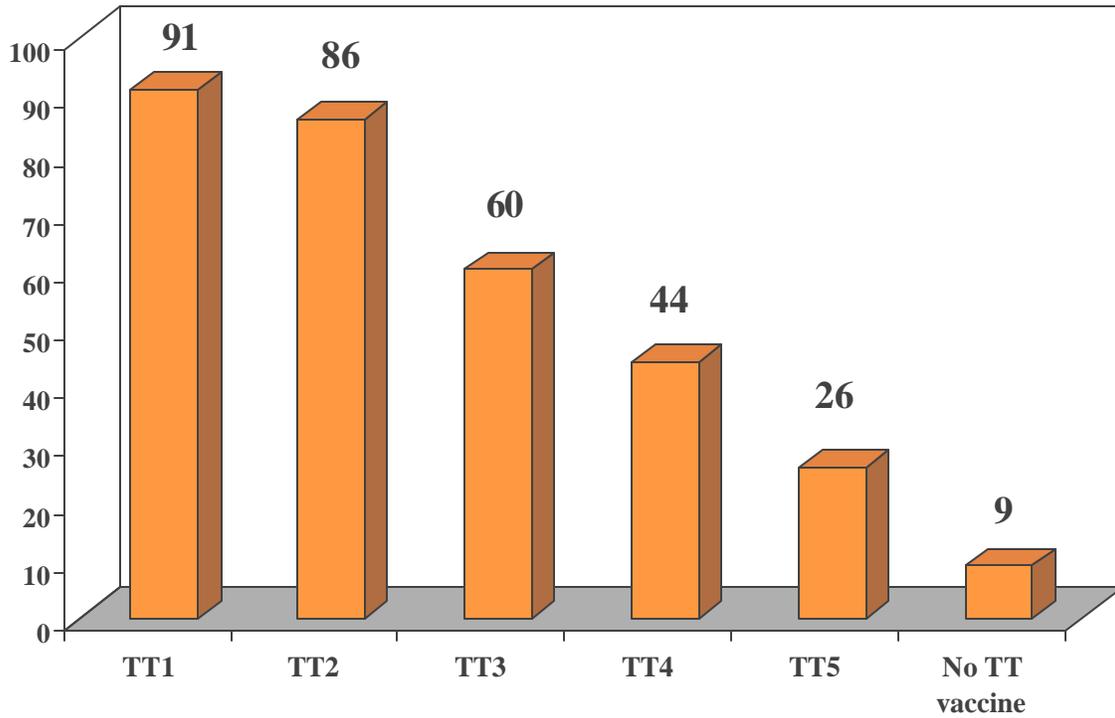


Chart 5: TT Immunization drop-out rate among women 15-49 years

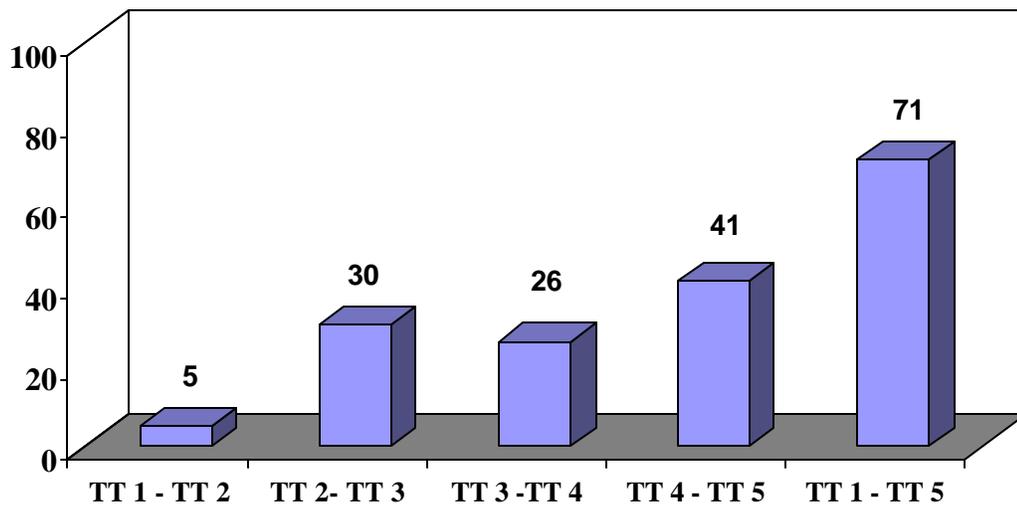


Table 8: Age distribution of women who never received TT vaccine

Age group	Received		No received		Total	
	#	%	#	%	#	%
15-19	20	91	2	9	22	100
20-25	65	93	5	7	70	100
26-30	66	97	2	3	68	100
31-35	30	97	1	3	31	100
36-45	10	53	9	47	19	100
Total	191	91	19	9	210	100

Table 9: Knowledge about number of TT doses required for life time protection against tetanus

Answers	Number	Percentage
5 doses	35	17
Don't know/ no idea	175	83

Table 10: Children born protected against tetanus

Status of children born protected	Number	Percentage
Protected	204	97
Not Protected	6	3

Table 11: TT cards availability and retention

Card Status	Number	Percentage
TT card available	44	21
TT card ever given	191	91
TT card retention	44	23

Chart 6: Providers of TT immunization

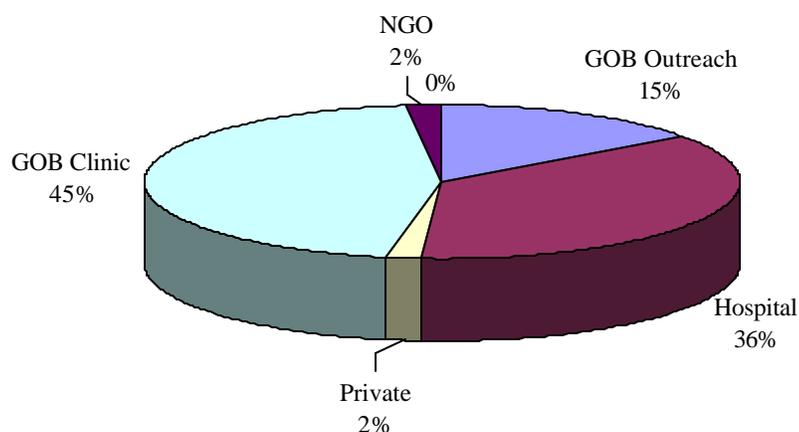


Table 12: Reasons for non-immunization and partial immunization for TT of the women

Reasons for non-immunization or partial immunization	Non-immunized (%) (N=19)	Partially immunized (%) (N=136)
Next dose is not yet due	-	18
Don't feel need for immunization	53	-
Health worker did not specify the next dose	-	10
As per HW advice 2/3 doses of TT are enough during the pregnancy	-	24
Unaware of need of next dose	-	41
In our time, TT immunization was not in practice	32	-
Fear of injection	-	2
Fear of adverse reactions	5	-
Busy with households works	-	3
Others	10	2

Table 13: Coverage of the 1st round of 10th NID Campaign

Round	OPV (%)	Vit. A (%)
1 st round	99	95
2 nd round	99	-
Both rounds	99	-
Any round	100	-

Table 14: Sources of OPV during the 10th NIDs

Sources of OPV	1 st Round		2 nd Round	
	#	%	#	%
NID site	208	99	205	99
Child to child search	1	0.5	3	1
Total	209	100	208	100

Table 15: Reasons for not receiving OPV from NID sites during 10th NID campaign

Reasons	1 st Round (%) (N=2)	2 nd Round (%) (N=5)
Did not know about NID	50	-
Too busy	-	40
Child already vaccinated	-	20
Waited for house visit	-	40
Others	50	-

Chart 7: Sources of information about the 10th NID campaign

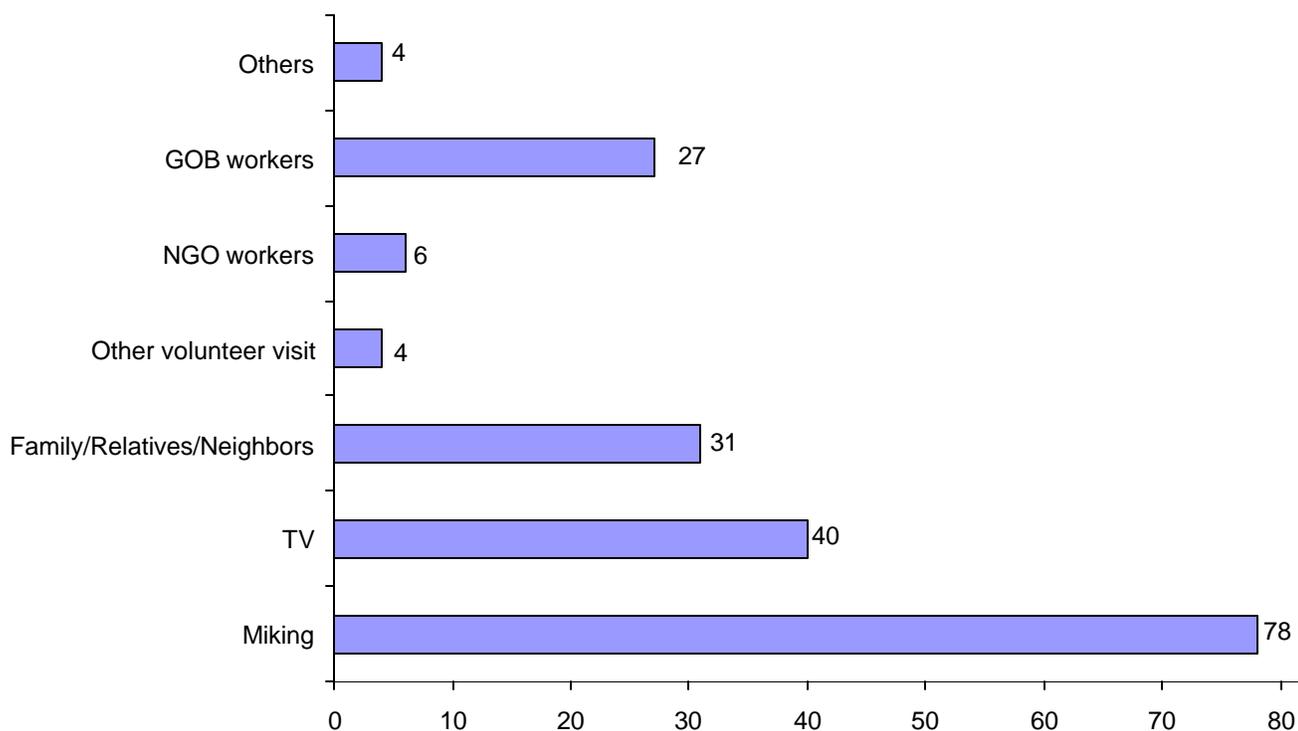


Table 16: Comparison of the results of the coverage evaluation surveys conducted in Dinajpur Municipality by year of surveys

Variable	Results of the Surveys	
	Survey in 2000* (%)	Survey in 2002 (%)
Child immunization:		
DPT1 (crude)	96	98
Measles (crude)	83	79
Dropout rate:		
DPT1 to DPT3	6	12
DPT1 to Measles	14	19
Invalid doses:		
DPT1	22	7
Measles	10	6
TT immunization:		
TT1	70	85
TT5	15	33
NID coverage:		
OPV in both rounds	89	99

** Source: Vaccination Coverage Survey of the Dinajpur Municipality - January 2000 conducted by IOCH/MSH*

Annex-A**List of Selected Clusters for the Survey**

Ward no.	Mohalla Name	Total Population	Cluster No.
1	Dakshin Munshipara	1965	1
	Dakshin Ghashi Para	2569	2
	Jailkhana & Ganeshtola	1733	3
	Kanchan Colony	2519	4
	Lalbag	2923	5
	Patua Para	3872	6
	Ramnagar	5392	7
	Ramnagar Golapbagh	1565	8
2	Bara bandar	2292	9
	Goshaipur	1171	10
	Gurgola	3712	11
	Khetri Para	1165	12
	Nayanpur	532	13
	Sarder Para	1230	14
	Suihari	4402	15
3	Dakshin Balubari	7707	16, 17
	Block-4	1188	18
	Block-6A	1778	19
	Kumar Para	2374	20
	Mohajon Para	2374	21
	Nimnagar	4567	22
	Uttar Balubari	5569	23
4	Uttar Faridpur	1042	24
	Baluadanga	3828	25
	Daptari para	1962	26
	Eidgah Basti	2089	27
	Kasba	3072	28
	Paharpur	2077	29
	Railway Colony	1872	30

Annex- B**List of Never Vaccinated Children Identified by Clusters**

Ward no.	Mohalla Name	Total Population	Cluster No.	Never vaccinated children
1	Dakshin Munshipara	1965	1	2
1	Ramnagar Golapbagh	1565	8	1
2	Khetri Para	1165	12	1
3	Nimnagar	4567	22	1
	Uttar Faridpur	1042	24	1
4	Daptari para	1962	26	1

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