



IOCH
Immunization and Other Child Health Project

**Vaccination Coverage Survey of the
Narayanganj Municipality**

June 2002

Survey Report No. 70

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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 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 Narayanganj Municipality in June 2002.

Objectives

The overall objective of the survey was to assess the level of immunization coverage in the Narayanganj 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 Narayanganj 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), 97% children received at least one dose of antigen (DPT 1st dose in this case) from routine immunization sessions. 2% children did not receive a dose of any antigen.

Crude coverage between 12-23 months: 98% children received BCG, 87% children received three doses of OPV, 86% received three doses of DPT and 83% received measles vaccine. 80% children were fully immunized.

Valid coverage between 12-23 months: 98% children received BCG, 78% children received three doses of OPV, 78% received three doses of DPT and 80% received measles vaccine. 70% children were fully immunized.

Valid coverage by 12 months: 98% children received BCG, 77% children received three doses of OPV, 77% received three doses of DPT and 75% received measles vaccine. 68% 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 (99% for boys vs. 95% for girls). However relatively higher dropout rates and lower measles coverage for the boys than the girls resulted in a lower FIC (fully immunized children) for the boys than that for the girls (78% vs. 81%).

Dropout rates: Although access to child immunization was high (97% for DPT1), the dropout rates for different antigens were high too. There was 12% dropout from DPT1 to DPT2 and 15% from DPT1 to measles.

Invalid doses: There were a number of invalid doses due to early immunization and/or inadequate interval between the doses. 3% of the DPT1 doses were administered before 6 weeks, and 4% measles doses before 38 weeks of age of the children. In addition, 4% of the DPT2 doses and 3% of the DPT3 doses were invalid as they were given before the 4 weeks interval between the doses.

Missed opportunities: Total missed opportunities (uncorrected plus corrected) for different antigens ranged from 0 to 6%. However, the prevalence of uncorrected missed opportunities for different antigens was low, ranging from 0 to 2%. The composite index for total missed opportunities was as high as 29, reflecting poor quality of screening during vaccination sessions.

EPI card retention: 97% of the children interviewed were ever given EPI cards; however, EPI cards were available in 56% of the cases at the time of interview. EPI card retention rate was 57% only, which means that 43% of the EPI cards were lost.

Knowledge about required visit to immunization center for full immunization: One-third of women did not have any idea about how many times a child is required to be taken to an immunization center to get fully immunized; while 18% had wrong idea about it. Only one half

of the women could mention correctly the number of times (i.e. 4 times) a child is required to visit immunization center to get fully immunized.

Source of immunization services and distance of vaccination centers: Childhood immunization in this area was provided mostly by the municipal outreach centers (32%), followed by the NGO clinics (25%) and GOB clinics (15%). Hospitals and GOB outreach centers provided EPI services to 15% and 8% cases respectively. Only 5% children received immunization services from private clinics. All the EPI outreach centers were located within 10 minutes 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 (80%) and sickness of the children (20%). The reasons for partial immunization or dropout included: fear of pain of vaccination (22%), lack of knowledge about the need of subsequent doses to get fully immunized (14%), sickness of the child (16%), and child was away from home (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 good. 84% of the women received TT1. The corresponding figures for TT2, TT3 and TT4 were 81%, 66% and 44% respectively. Only 27% of the mothers received TT5, which provide lifelong protection against tetanus. About 16% 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 18%. The corresponding rates for TT3 to TT4 and TT4 to TT5 were 33% and 38% respectively. The dropout rate for TT1 to TT5 was as high as 68%, indicating that 68% of the mothers who received first dose of TT did not complete 5 doses TT immunization schedule.

Invalid TT doses: A very high proportion of TT doses were invalid as they were administered before the minimum required interval between the doses. 36% of the TT3 doses were given before 6 months interval between TT2 and TT3, and as such were invalid. Half of the TT4 doses (50%) were invalid, since they were given before one year interval between TT3 and TT4; similarly 59% of the TT5 doses were invalid for the same reason.

Protection against tetanus at birth: 90% of the newborn babies were found protected against tetanus, indicating that 10% newborn babies were still not protected against tetanus at birth.

TT card retention: 82% of the women were ever given TT cards; however, TT cards were available with 12% of the women only at the time of interview. TT card retention rate was 14% only, which means that 86% of the TT cards were lost.

Knowledge about full TT immunization: With regard to knowledge about full TT immunization, 86% of the women did not have correct knowledge about the number of TT doses required for a woman for full immunization. Only 14% women could correctly mention that a woman was required to receive 5 doses of TT vaccine for full immunization for lifelong protection against tetanus.

Sources of TT immunization: Majority of the women received TT vaccine from the municipal outreach centers (24%), followed by the NGO clinics (18%) and hospitals (17%). Private clinics and GOB outreach centers provided TT immunization to 16% and 14% cases respectively.

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 (63%); while 19% 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 (35%) or they were told by the health workers that 2 or 3 doses of TT were enough for them for their pregnancies, and they were not advised (by health worker) for full immunization (23%); while the health workers did not specify the date of next/subsequent doses in 16% of the cases.

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 93% 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 (56%), followed by television (45%). Relatives and neighbors as sources of information were cited by 40% of the parents; while 7% came to know about the NIDs from the IPC during home visits by the 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 (33% in 1st round and 25% in the 2nd round), parents were too busy to take their children to NID sites (50% in 2nd round), and returned from NID sites as there was a long queue (34% in 1st round and 25% in 2nd round).

Problems detected

Access to child immunization was good (97% 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 12% and DPT1 to measles was 15%). Similarly, access to TT immunization for the women 15 – 49 years was also good. 84% of the women interviewed received the first dose of TT; but TT dropout rate was very high (68% for TT1 to TT5), resulting in very low coverage of TT5 (27%), 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 (3% for DPT1, 4% for DPT2, 3% for DPT3 and 4% for measles), which further reduced the crude full immunization coverage of 80% to 70% when validity of doses was taken into account. Total missed opportunities for different antigens were also high (6% for BCG, and 4% 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, 57% and 14% respectively.

Women/mothers have a poor understanding of full immunization. 50% of the women could not mention how many times a child was required to be taken to EPI center to get fully immunized. Similarly, 86% 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 (99% for boys vs. 95% for girls). However relatively higher dropout rates and lower measles coverage for the boys than the girls resulted in a lower FIC (fully immunized children) for the boys than that for the girls (78% for boys vs. 81% for girls).

1% of the children <5 years did not receive OPV from the NID sites of the 10th NID campaign. Also, 7% 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 33% in the 1st round and 25% in the 2nd 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 come 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.



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	98	98	98
OPV1	97	95	95
OPV2	93	86	85
OPV3	87	78	77
DPT1	97	95	95
DPT2	92	86	84
DPT3	86	78	77
Measles	83	80	75
Fully immunized	80	70	68
Zero Dose	2	-	-

Table 2: Routine immunization coverage levels by gender

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	100	95	100	95	100	95
OPV1	99	95	99	89	99	89
OPV2	93	93	87	86	84	86
OPV3	86	88	77	79	77	77
DPT1	99	95	99	89	99	89
DPT2	93	91	87	84	84	84
DPT3	85	87	77	78	77	77
Measles	80	86	79	81	72	77
Fully immunized	78	81	72	69	69	67
Zero dose	0	5				

Chart-1: Drop-out rate for child immunization

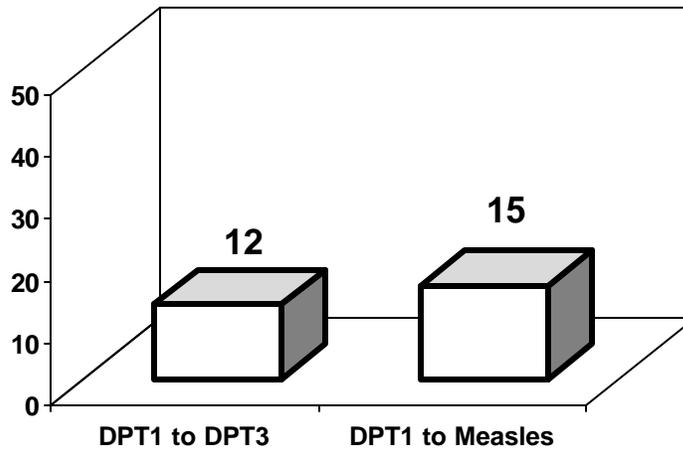


Table 3: Invalid doses of immunization provided to the children

Antigens	Percentage
DPT1	3
DPT2	4
DPT3	3
Measles	4

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	0	0	4	2	
DTP2	0	0	1	1	1	1	
DPT3	0	0	0	0	0	0	
OPV1	4	2	0	0	4	2	
OPV2	0	0	0	0	0	0	
00PV3	0	0	0	0	0	0	
Measles	4	2	4	2	8	4	
Index						29	

** 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	117	56
EPI card ever given	204	97
EPI card retention	117	57

Chart-2: Sources of child immunization services

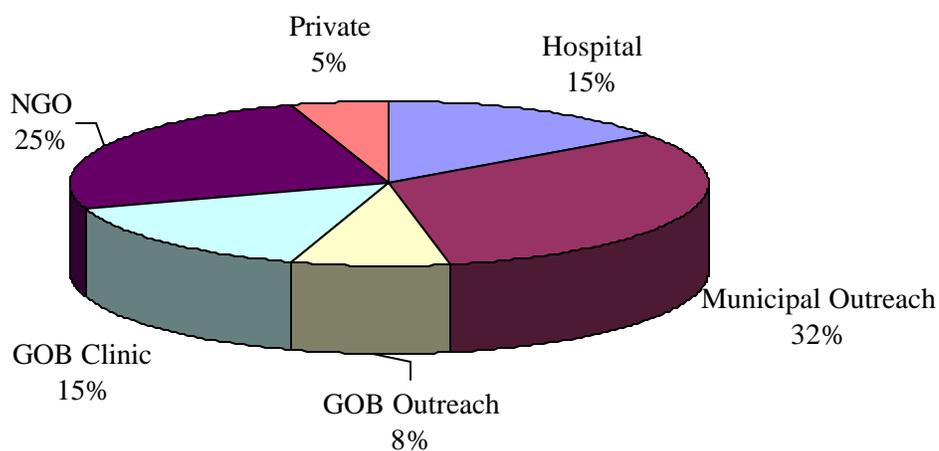


Table 6: Distance between the child's home and the vaccination site

Time (Minutes)	Number	Percentage
1-5 Min.	177	84
6-10 Min.	33	16

Chart 3: Knowledge about required visits to immunization centers for full immunization

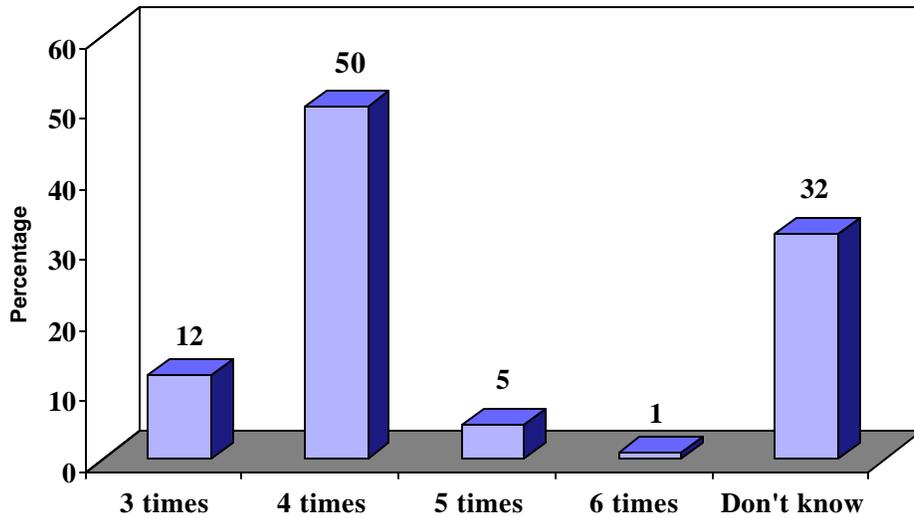


Table 7: Reasons for non-immunization and partial immunization of the children

Reasons for non-immunization or partial immunization	Non-immunized (%) (N=5)	Partially immunized (%) (N=37)
Did not know about need of immunization	80	3
Did not know about need of second dose	-	14
Did not know when to return for 2 nd /3 rd dose.	-	8
Did not know about importance of measles vaccine	-	3
Child was sick and not taken to immunization center	20	11
Child was sick and was taken to immunization center but not given by vaccinator	-	5
Mother was busy with other works	-	5
Future plan to vaccinate the child	-	3
Painful for the children	-	22
Abscess after previous vaccination	-	3
Child was not at home	-	13
Others	-	10

Chart 4: Routine immunization coverage levels for TT among women 15-49 years

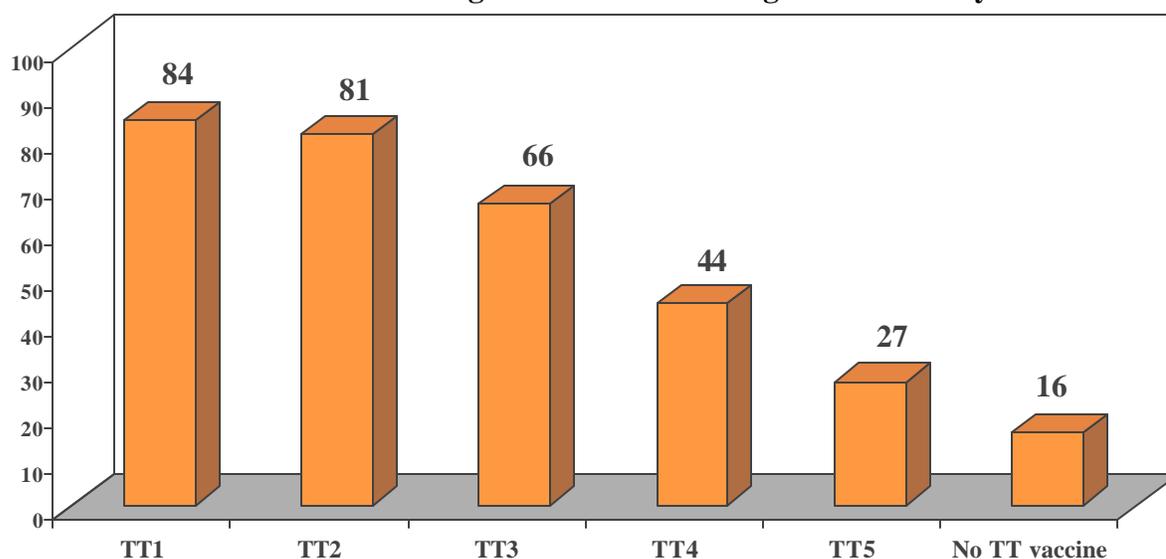


Chart 5: TT Immunization drop-out rate among women 15-49 years

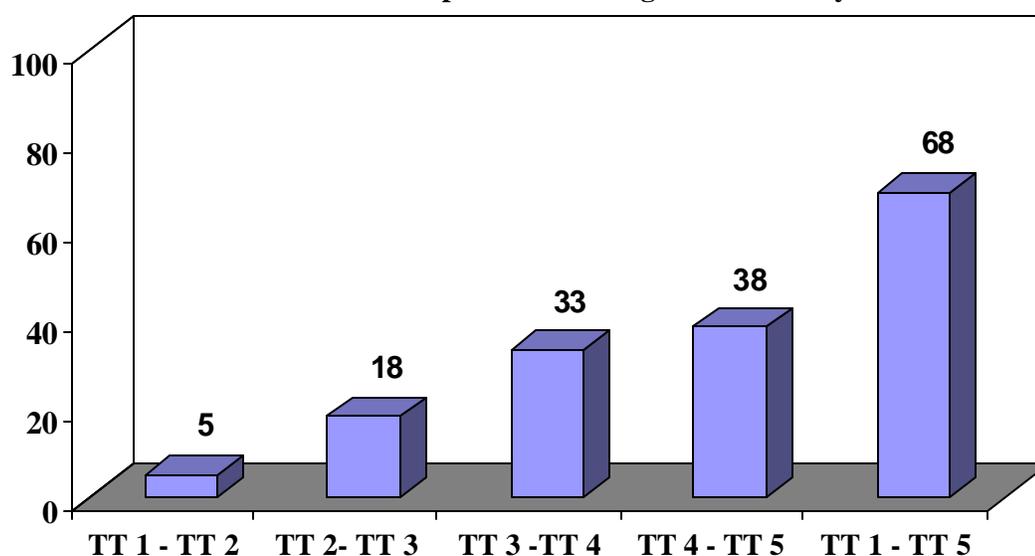


Table 8: Interval between TT1 and TT2, TT2 and TT3, TT3 and TT4, TT4 and TT5 dose

Interval between dose	<1 months		1 months+		<6 months		6 months+		<1 year		1 year +		Total	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
TT1-TT2	0	0	143	100	-	-	-	-	-	-	-	-	143	100
TT2-TT3	-	-	-	-	39	36	69	64	-	-	-	-	108	100
TT3-TT4	-	-	-	-	-	-	-	-	34	50	34	50	68	100
TT4-TT5	-	-	-	-	-	-	-	-	24	59	17	41	41	100

Table 9: Children born protected against tetanus

Status of children born protected	Number	Percentage
Protected	189	90
Not Protected	20	10

Table 10: Knowledge about number of TT doses required for life time protection against tetanus

Answers	Number	Percentage
5 doses	29	14
Don't know/ no idea	181	86

Table 11: Age distribution of women who never received TT vaccine

Age group	Received		No received		Total	
	#	%	#	%	#	%
15-19	10	53	9	47	19	100
20-25	72	87	11	13	83	100
26-30	61	94	4	6	65	100
31-35	23	88	3	12	26	100
36-45	11	65	6	35	17	100
Total	177	84	33	16	210	100

Table 12: TT cards availability and retention

Card Status	Number	Percentage
TT card available	24	12
TT card ever given	173	82
TT card retention	24	14

Chart 6: Providers of TT immunization

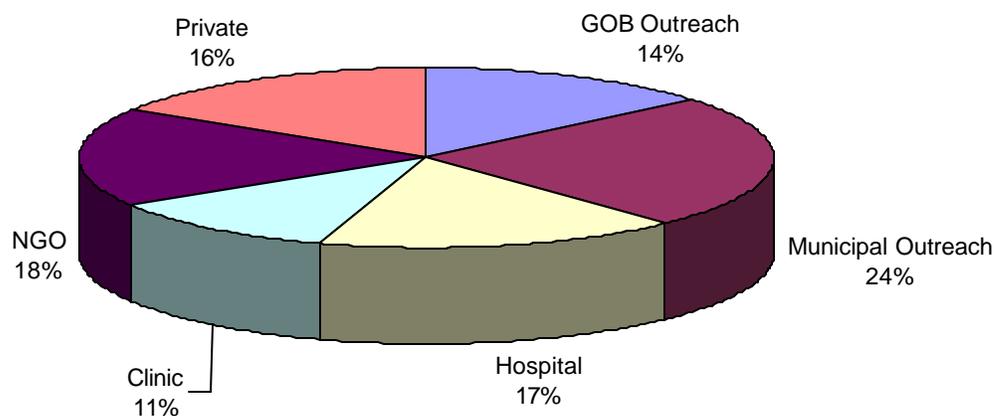


Table 13: Reasons for non-immunization and partial immunization for TT of the women

Reasons for non-immunization or partial immunization	Non-immunized (%) (N=32)	Partially immunized (%) (N=120)
Next dose is not yet due	-	23
Don't feel need for immunization	63	-
Place and/ time of immunization unknown	3	-
Health worker did not specify the next dose	-	16
As per HW advice, 2/3 TT is enough during the pregnancy	-	23
Unaware of need of next dose	-	35
In our time, TT immunization was not in practice	19	-
Fear of injection	12	1
Others	3	2

Table 14: Coverage of the 10th NID Campaign

Round	OPV (%)	Vit . A (%)
1 st round	99	93
2 nd round	99	-
Both rounds	99	-
Any round	100	-

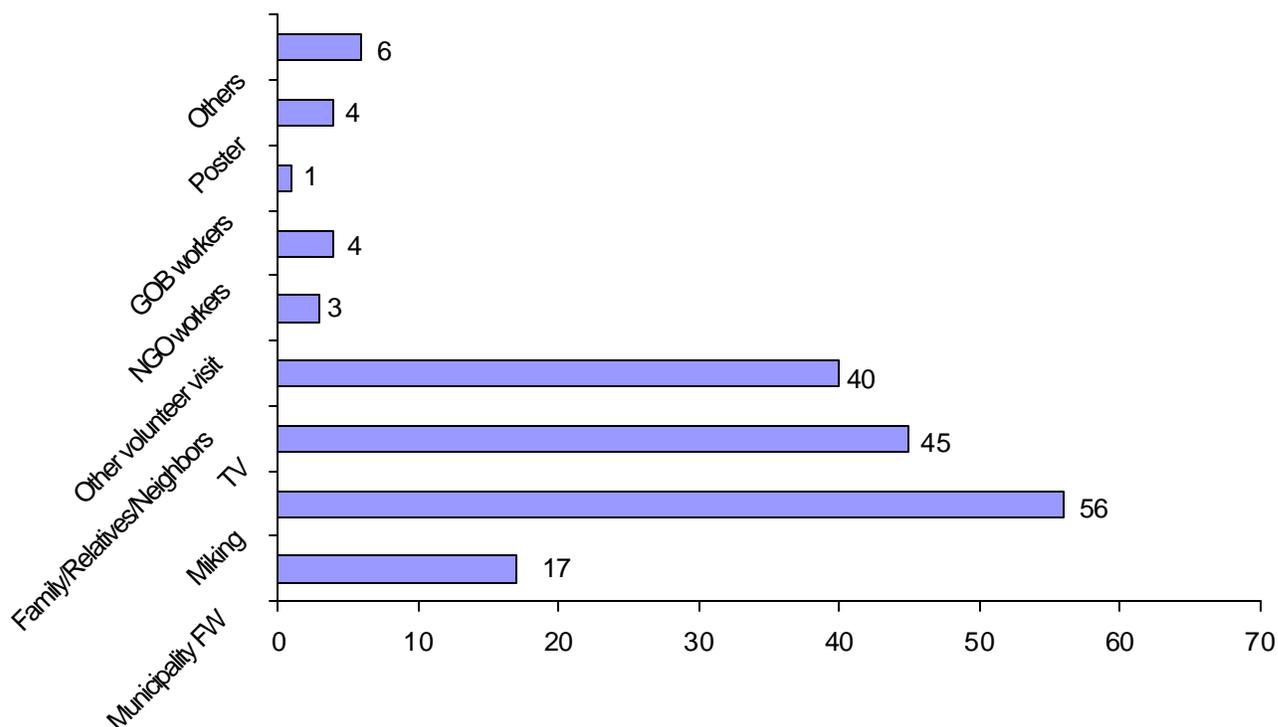
Table 15: Sources of OPV during the 10th NIDs

Sources of OPV	1 st Round		2 nd Round	
	#	%	#	%
NID site	207	99	206	99
Child to child search	2	1	3	1
Total	209	100	209	100

Table 16: Reasons for not receiving OPV from NID sites during the 10th NIDs

Reasons	1 st Round (%) (N=3)	2 nd Round (%) (N=4)
Did not know about NID	33	25
Long queue	34	25
Too busy	-	50
Others	33	-

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



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

Ward no	Mohalla Name	Total Population	Cluster No.
1	Arambagh Jute Market	3118	29
	Mirpara	1684	30
2	Isha Khan Colony	1192	27
	Tolla	5630	28
3	Khanpur	13830	23, 24
	Mission Para	4179	25
	Uttar Chashara	4658	26
4	Amla Para	3225	18
	Jute Office Area	3161	19
	Kalir Bazar	12031	20, 21
	Tolaram College	1197	22
5	Court Road	925	13
	D.N Road	8592	14
	Nayamati	3728	15
	Raily Bagan Staff Quarter	2744	16
	Sub Register Office	847	17
6	Baburail	8320	8
	Deobhog	4117	9
	Bara Deobhog	6485	10
	Paschim Deobhog	12432	11,12
7	Bhuiyan Para	3837	5
	Paikpara	1640	6
	Shah Shuja Road	9515	7
8	Bhagabangonj	1810	1
	Bangshal	1991	2
	Nalua Road	2627	3
	Syednagar	4259	4

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

Ward no.	Mohalla Name	Total Population	Cluster No.	Never vaccinated children
1	Nalua Road	2627	3	1
4	Raily Bagan Staff Quarter	2744	16	1
5	Jute Office Area	3161	19	1
6	Uttar Chashara	4658	26	2

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