



IOCH

Immunization and Other Child Health Project

Vaccination Coverage Survey of the Gaibandha Municipality

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Survey Report No. 108

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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
SNID	Sub-national Immunization Day
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 municipal areas. 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 areas. As a part of this effort, the IOCH conducted a coverage evaluation survey in the Gaibandha Municipality in March 2003.

Objectives

The overall objective of the survey was to assess the level of immunization coverage in the Gaibandha 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; and
- 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.

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 Gaibanda 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 11. 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.

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 the 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), 98% 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 of 12-23 months age group: 98% children received BCG, 85% children received three doses of OPV, 85% received three doses of DPT and 75% received measles vaccine. 75% children were fully immunized.

Valid coverage of 12-23 months age group: 98% children received BCG, 76% children received three doses of OPV, 76% received three doses of DPT and 74% received measles vaccine. 67% children were fully immunized.

Valid coverage by 12 months: 98% children received BCG, 75% children received three doses of OPV, 75% received three doses of DPT and 72% received measles vaccine. 66% children were fully immunized.

Routine immunization coverage by sex: There was no sex difference in accessing routine child immunization services. Boys' access to immunization, as measured by the crude coverage of DPT1, was similar to that of the girls (98% for boys vs. 98% for girls). However lower measles coverage and higher dropout rate from DPT1 to DPT3 for the boys than the girls resulted in lower crude FIC (Fully Immunized Children) for the boys than the girls (73% crude FIC for boys vs. 78% crude FIC for girls). The proportions of invalid doses for different antigens were relatively higher for the girls than the boys, resulting in similar valid FIC for boys to that for the girls (67% valid FIC for boys vs. 68% valid FIC for girls).

Dropout rates: Although access to child immunization was quite good (98% for DPT1), the dropout rates for different antigens were high too. There were 13% dropouts from DPT1 to DPT3 and 23% from DPT1 to measles.

Invalid doses: 6% of the DPT1 doses were administered before 6 weeks of age of the children, and 2% of the measles doses were administered before 38 weeks of age of the children. Besides, 2% of the DPT2 and 2% of the DPT3 doses were given before 4 weeks interval between the doses.

Missed opportunities: Total missed opportunities (uncorrected plus corrected) for different antigens ranged from 1% to 3%. The prevalence of uncorrected missed opportunities for different antigens ranged 0.4% - 2%. The composite index for total missed opportunities was 15, reflecting the need for further improving the quality of screening during vaccination sessions.

EPI card retention: 98% of the children interviewed were ever given EPI cards; however, EPI cards were available with 64% of the respondents at the time of interview. EPI card retention rate was 65% only, as 35% of the EPI cards were lost.

Knowledge about required visit to immunization center for full immunization: 41% of the mothers interviewed did not have any idea about how many times a child was required to be taken to an immunization center to get fully immunized; while 14% had wrong idea about it.

Only 45% of the mothers could mention correctly the number of times (i.e. 4 times) a child is required to visit immunization center to get fully immunized.

Sources of immunization services and distance of vaccination centers: Childhood immunization in this area was provided mostly by the municipal EPI outreach centers (89%), followed by the GOB EPI outreach centers (5%). NGO clinics provided EPI services to 1% of the cases only. Almost all the EPI outreach centers (96%) were located within 15 minutes walking distance from the homes of the children.

Reasons for non-immunization and partial immunization or dropout of children: The primary reasons for non-immunization of children were parents' lack of awareness of need and importance of immunization (75%), and fear of adverse reaction (25%). The primary reasons for partial immunization or dropout included lack of knowledge about the need of subsequent doses or measles vaccination for getting fully immunized (44%), and sickness of the children (29%).

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. 85% of the women received TT1. The corresponding figures for TT2, TT3 and TT4 were 82%, 58% and 33% respectively. Only 18% of the women received TT5, which provide lifelong protection against tetanus. 15% of the women never received any TT vaccine.

Age distribution of women never receiving TT immunization: The younger women, as well as older ones are less likely to receive TT vaccine. 30% of the women under 20 years and 40% of the women over 35 years of age had never received any dose of TT vaccine; while the corresponding figures ranged from 3% to 15% for the women of 20 – 35 years.

TT immunization dropout rates: TT immunization dropout rates were high. The dropout rate for TT2 to TT3 was 29%. The corresponding rates for TT3 to TT4 and TT4 to TT5 were 43% and 45% respectively. The dropout rate for TT1 to TT5 was as high as 79%, indicating that 79% of the women who received first dose of TT did not complete 5 doses TT immunization schedule.

Invalid TT doses: A significant proportion of TT doses were invalid as they were administered before the minimum required interval between the doses. 12% of the TT3 doses were given before 6 months interval between TT2 and TT3, and as such were invalid. 47% of the TT4 doses were invalid, since they were given before one year interval between TT3 and TT4; similarly, 34% of the TT5 doses were invalid for the same reason.

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

Knowledge about full TT immunization: 77% of the women did not have correct knowledge about the number of TT doses required for a woman for full immunization. Only 23% women could correctly mention that a woman was required to receive 5 doses of TT vaccine for full immunization for lifelong protection against tetanus.

TT card retention: 83% of the women were ever given TT cards; however, TT cards were available with 23% of the women only at the time of interview. TT card retention rate was 27% only, as 73% of the TT cards were lost.

Sources of TT immunization: Majority of the women received TT vaccine from the municipal EPI outreach centers (79%), followed by GOB EPI outreach centers (11%) and hospitals (6%). NGO clinics provided immunization services to 2% of the cases only.

Reasons for non-immunization and partial immunization of women: The primary reasons for non-immunization of TT cited by majority of the women were lack of awareness of need and importance of TT immunization (41%) and fear of injection (34%). The primary reasons for partial TT immunization or dropout were that the women were not aware of the need of subsequent doses to get fully immunized against tetanus (52%), and the health workers did not specify the next dose (13%) or did not advise for 5 dose TT schedule for full TT immunization for lifelong protection (12%).

Conclusions and recommendations

Access to child immunization was quite good (98% for DPT1); but this high access dropped to 75% for fully immunized children because of dropouts of different antigens. (Dropout rate for DPT1 to DPT3 was 13% and DPT1 to measles was 23%). Similarly, access to TT immunization for the women 15 – 49 years (irrespective of their marital status) was fairly good. 85% of the women received the first dose of TT; but TT dropout rate was very high (79% for TT1 to TT5), resulting in very low coverage of TT5 (18%), 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 and women initially reached out.

- ***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 health workers. The health worker at the first contact must counsel the mother/woman properly to motivate her to return and to get herself and/or her child fully immunized. He/she must:***
 - ***explain to mother/woman the importance of full immunization, and concept of 8 doses and 4 visits required for full immunization of a child;***
 - ***tell mother/woman of reproductive age the benefit and importance of full TT immunization and the concept of 5 dose TT schedule for lifelong protection against tetanus;***
 - ***issue an EPI card/TT card dully filled out and explain the mother/woman the importance of keeping the EPI card/TT card in safe and bringing it on the next due date;***
 - ***tell the mother/woman clearly when she should come back for next doses, and inform her that the date is written in the EPI card/ TT card so that she can check it if forgets the date;***
 - ***inform the mother/woman of possible side effects of injection and how it should be handled;***
 - ***pay attention to the hospitality at the clinic/EPI center, and to supportive environment.***

- ❑ ***Program managers and field supervisors should ensure that EPI sessions are held as per plan, and at a regular and adequate interval***
- ❑ ***The service providers should be given refresher training to improve their technical skills on counseling of mothers/women on immunization***

There were also too many invalid doses in child immunization (6% for DPT1, 2% for DPT1, 2% for DPT3, and 2% for measles), which further reduced the crude full immunization coverage of 75% to 67% when validity of doses was taken into account. Total missed opportunities for different antigens ranged 1% - 3%. Like child immunization, a very high proportion of TT doses were invalid (12% for TT3, 47% for TT4 and 34% for TT5). These high rates of invalid doses and missed opportunities reflect service providers' inability to screen the clients properly.

- ❑ ***Emphasis should be given on screening of clients for immunization to avoid or reduce invalid doses and missed opportunities. The service providers must:***
 - ***screen properly each and every child/ woman to decide his/her eligibility for a specific dose of specific antigen;***
 - ***check EPI card/ EPI register/ TT card or any other record to decide on the eligibility of a particular dose of specific antigen(s);***
 - ***if a child/woman is found not eligible for a dose today, ask him/her to return at a specified date and explain the reason to her/mother clearly and patiently.***
 - ***check if there is any missed opportunity for other antigens.***
- ❑ ***The service providers should be given refresher training to improve their technical skills on screening of clients for immunization.***

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 the children for specific doses of specific antigens. Unfortunately, the retention rates of both the EPI card and TT card were very low, 65% and 27% respectively.

- ❑ ***Mothers/women should be explained the benefits and importance of EPI cards/ TT cards for immunization of themselves and their children.***
- ❑ ***Mothers should be asked to preserve the EPI card safely until the child is 5 years old, and to bring the card with them whenever they come to the clinic/ EPI center for immunization.***
- ❑ ***Women should also be asked to carefully preserve their TT cards, and to bring their TT cards with them whenever they come to clinic/ EPI center for TT immunization.***
- ❑ ***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.***

Mothers have a poor understanding of full immunization. 55% of the mothers could not mention how many times a child was required to be taken to EPI center to get fully immunized. Similarly, 77% of the women 15 – 49 years did not know how many TT doses were required for a woman for lifelong protection against tetanus.

- ❑ ***During IPC between the mother/woman and the service provider and/or at the first contact, the mother/woman should be clearly explained the importance of full***

immunization of children and women, and of the immunization schedule of full immunization for both children and women.

Lack of awareness of need and importance of immunization was cited as primary reason for non-immunization of child and women; while lack of knowledge about the need and importance of subsequent doses (or measles vaccine) to get fully immunized resulted in high drop out rates for child and TT immunization.

- ***The program should strengthen BCC activities to inform the community of importance and benefits of immunization in general, and to motivate the mothers/women to get themselves and their children fully immunized in particular. Very selective and focused mass media campaign, in addition to IPC by health workers, may also be conducted to achieve this end.***

TABLES AND FIGURES

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	98	92	92
OPV2	92	85	85
OPV3	85	76	75
DPT1	98	92	92
DPT2	92	85	85
DPT3	85	76	75
Measles	75	74	72
Fully immunized	75	67	66
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	98	98	98	98	98	98
OPV1	98	98	96	88	96	88
OPV2	90	95	87	81	87	81
OPV3	82	89	77	74	77	73
DPT1	98	98	96	88	96	88
DPT2	90	95	87	81	87	81
DPT3	82	89	77	74	77	73
Measles	73	78	72	76	71	75
Fully immunized	73	78	67	68	66	66
Zero dose	2	2	-	-	-	-

Figure 1: Drop-out rate for child immunization

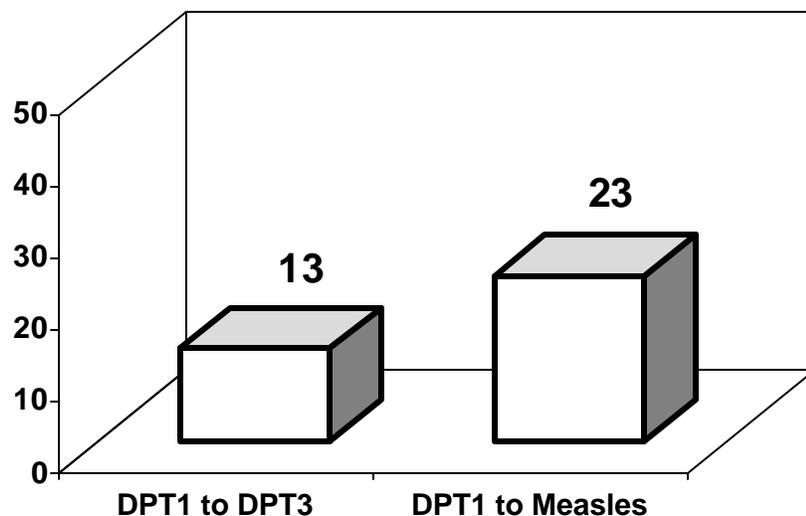


Table 3: Invalid doses of immunization provided to the children

Antigens	Percents
DPT1	6
DPT2	2
DPT3	2
Measles	2

Table 4: Missed opportunities by antigens

Name of the vaccine	Uncorrected		Corrected		Total	
	Number	Percent	Number	Percent	Number	Percent
BCG	1	0.4	4	2	5	2
DPT1	1	0.4	1	0.4	2	1
DTP2	0	0	0	0	0	0
DPT3	0	0	0	0	0	0
OPV1	1	0.4	1	0.4	2	1
OPV2	0	0	0	0	0	0
OPV3	0	0	0	0	0	0
Measles	4	2	2	1	6	3
*Index	15					

** 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	134	64
EPI card ever given	206	98
EPI card retention	134	65

Figure 2: Knowledge about required visits to immunization centers for full immunization

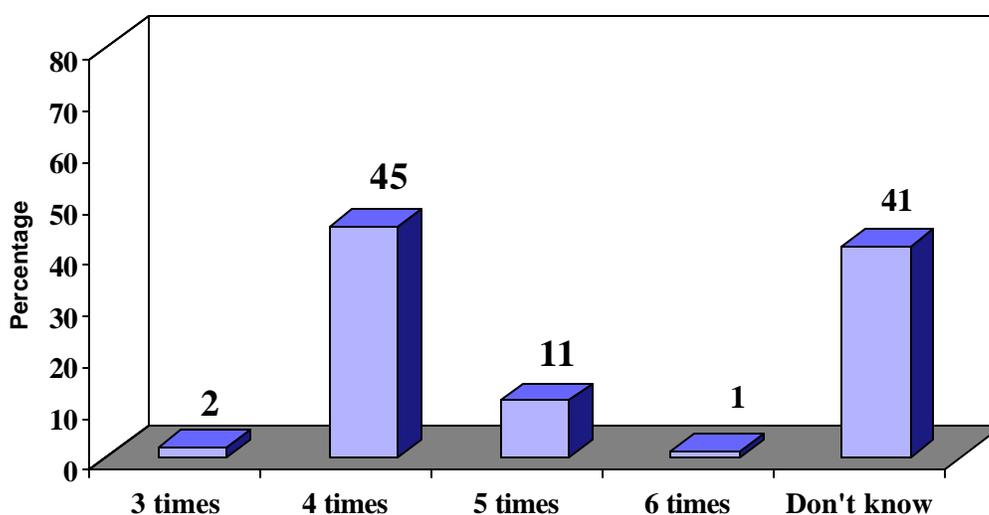


Table 6: Time required to reach the EPI center by mode of transportation

Time required	Mode of transport					
	Walking		Rickshaw		Total	
	#	%	#	%	#	%
1-5 Minutes	106	50	8	4	114	54
6-10 Minutes	89	42	-	-	89	42
11-15 Minutes	7	4	-	-	7	4
Total	202	96	8	4	210	100

Figure 3: Sources of child immunization services

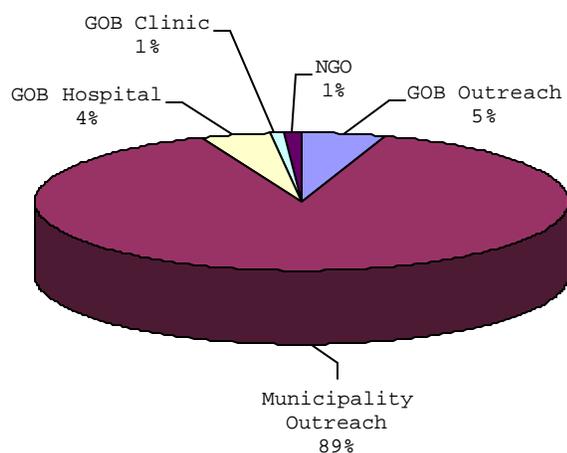


Table 7: Reasons for non-immunization and partial immunization of the children

Reasons for non-immunization or partial immunization	Non-immunized (%) (N=4)	Partially immunized (%) (N=48)
Did not know about need of immunization	75	-
Did not know about need of next dose	-	23
Did not know when to return for 2 nd /3 rd dose.	-	2
Did not know about importance of measles vaccine	-	21
Future plan to vaccinate the child	-	2
Vaccine was not available at the site	-	2
Family problem/mother sick	-	8
Vaccinator not friendly	-	2
Child was sick and not taken to immunization center	-	29
Painful for the children	25	11

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

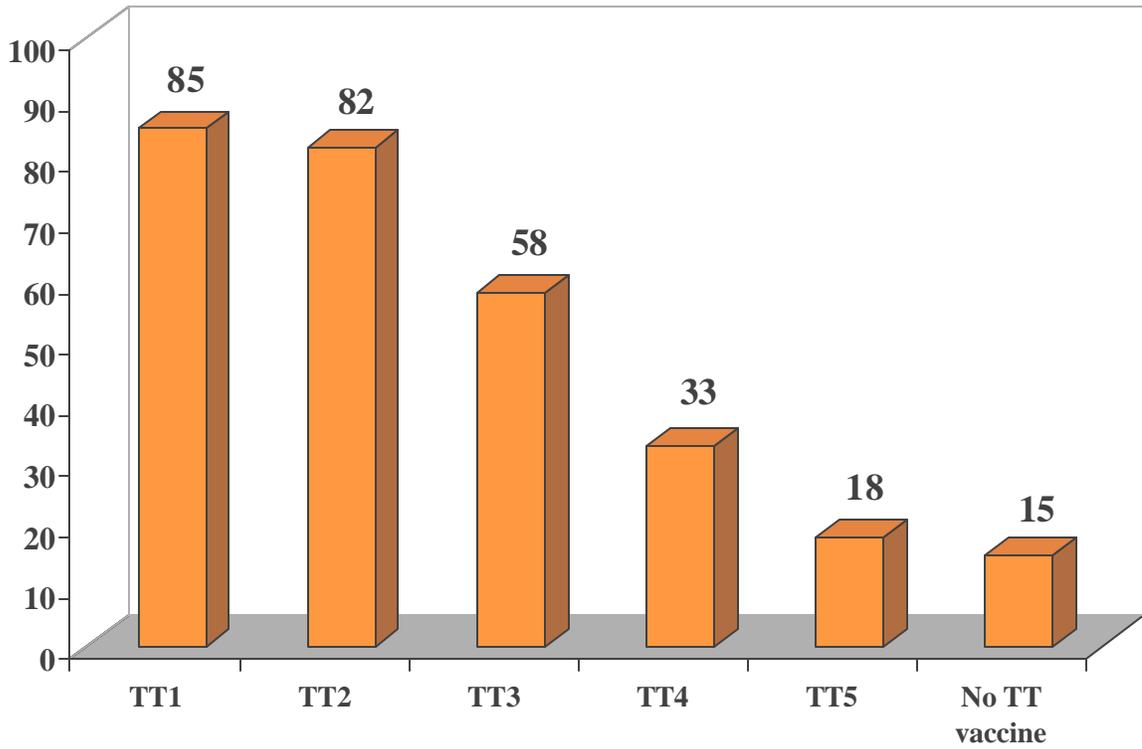


Figure 5: TT Immunization drop-out rate among women 15-49 years

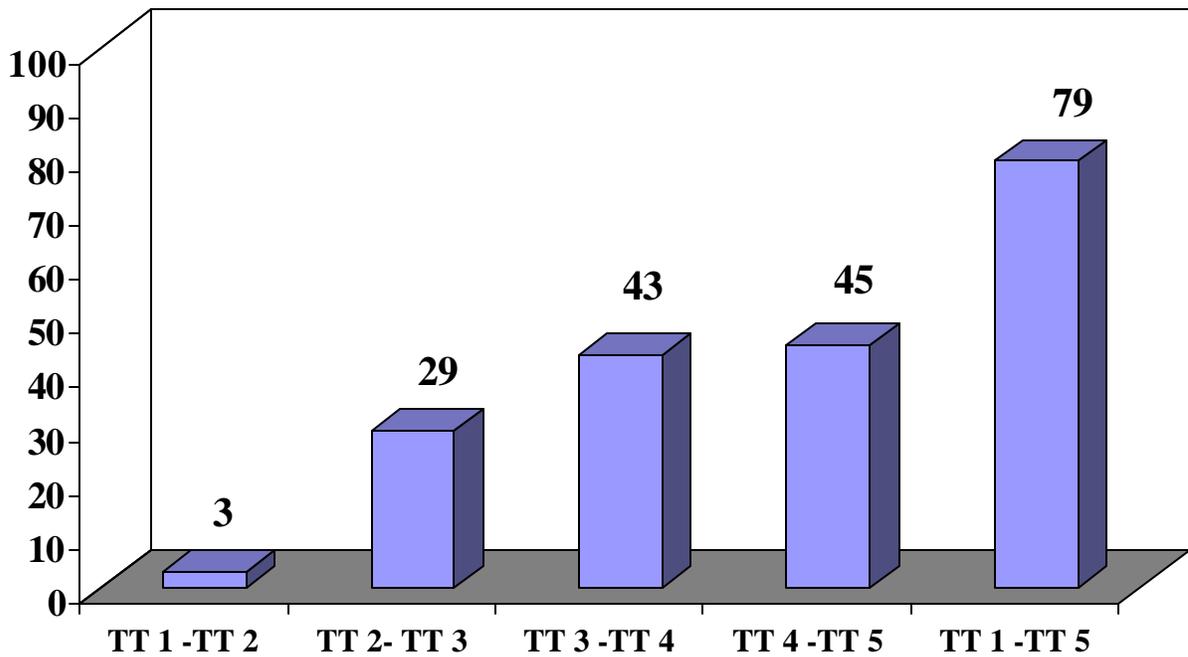


Table 8: Age distribution of women who never received TT vaccine

Age group	Received		Not received		Total	
	#	%	#	%	#	%
15-19	16	70	7	30	23	100
20-25	55	85	10	15	65	100
26-30	56	97	2	3	58	100
31-35	36	92	3	8	39	100
36-45	15	60	10	40	25	100
Total	178	85	32	15	210	100

Table 9: Interval between TT1 and TT2, TT2 and TT3, TT3 and TT4, TT4 and TT5 doses

Interval between dose	<1 months		1 months+		<6 months		6 months+		<1 year		1 year +		Total	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
TT1-TT2	0	0	148	100	-	-	-	-	-	-	-	-	148	100
TT2-TT3	-	-	-	-	12	12	85	88	-	-	-	-	97	100
TT3-TT4	-	-	-	-	-	-	-	-	26	47	29	53	55	100
TT4-TT5	-	-	-	-	-	-	-	-	10	34	19	66	29	100

Table 10: Children born protected against tetanus

Status of children born protected	Number	Percentage
Protected	203	97
Not Protected	7	3

Table 11: Knowledge about number of TT doses required for life time protection against tetanus

Answers	Number	Percentage
5 doses	49	23
Don't know/ no idea	161	77

Table 12: TT cards availability and retention

Card Status	Number	Percentage
TT card available	48	23
TT card ever given	175	83
TT card retention	48	27

Figure 6: Providers of TT immunization

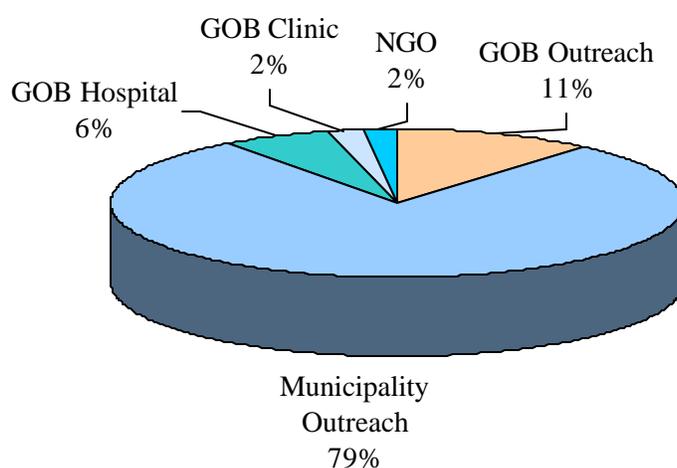


Table 13: Reasons for non-immunization and partial immunization for TT of the women

Reasons	Non-immunization (%) (N=32)	Partially immunization (%) (N=140)
Next dose is not yet due	-	18
Don't feel need for immunization	41	-
Health worker did not specify the next dose	-	13
As per HW's advice, 2/3 TT is enough during the pregnancy	-	12
Unaware of need of next dose	-	52
In our times, TT immunization was not introduced	25	-
Fear of injection	34	5

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

Ward no.	Mouza name	Mahalla name	Total HH	Total Pop.	Cluster No.
1	Devid Co. Para	Devid Co. Para	670	3983	1, 2, 3
	Mali Para	Mali Para	407	2441	4, 5
	Muhuri Para	Muhuri Para	352	2025	6
	Paschim Bridge Road	Paschim Bridge Road	331	1829	78
	Sarkar Para	Sarkar Para	349	1814	9
	Station Road	Station Road	340	1842	10
	2	Madhya Para	Madhya Para	637	3916
Master Para		Master Para	285	1721	14, 15
Palash Para		Palash Para	356	2017	16
Thana Para		Thana Para	329	1913	17
3	Barabari Para	Barabari Para	168	906	18
	Dakshin Baniarjan	Dakshin Baniarjan	376	2163	19, 20
	Kalibari Para	Kalibari Para	412	3132	21, 22
	Kuti Para	Kuti Para	399	1882	23
	Munshi Para	Munshi Para	573	3705	24, 25, 26
	Puran Bazar	Puran Bazar	348	1183	27
	Purba Bridge Road	Purba Bridge Road	169	1148	28
	Purba Kamarnai	Purba Kamarnai	247	1303	29
	Sandar Para	Sandar Para	212	1503	30

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

Ward no.	Mouza name	Mahalla name	Total HH	Total Pop.	Cluster No.	Never Vaccinated children
1	Devid Co. Para	Devid Co. Para	670	3983	1*, 2, 3	1*
3	Kalibari Para	Kalibari Para	412	3132	21*, 22	1*
	Kuti Para	Kuti Para	399	1882	23	1

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Survey coordination:

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